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EXPLORING NEW MARKETS FOR PRESSURE RECALIBRATING INSTRUMENTS

By

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Name: Robert Edward Lindsey

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Title of Study: **EXPLORING NEW MARKETS FOR PRESSURE RECALIBRATING INSTRUMENTS**

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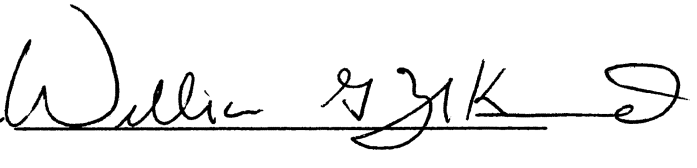
Scope and Method of Study:
This study analyzes a survey of engineers, technicians, maintenance supervisors, and others involved with the recalibration of pressure gauges to determine if markets for pressure recalibrating devices exist outside of the Oil and Gas Industries. Exploratory mail and phone questionnaires probe the usage rates and buying habits of several industries. Finally, questions concerning brand ownership and ratings will reveal market share and product awareness regarding the pressure recalibrating instrument manufacturers.

Findings and Conclusions:
Virtually all of the industries questioned are regular users of pressure recalibrating instruments. The most attractive industries were Chemical, Electrical Utilities, and General Manufacturing. Accuracy, sensativity and durability were the key product attributes, while previous experience and personal recommendations were the major buying influences. "Control Engineer" and "Chemical Engineer" appear to be the most widely read magazines in most countries and industries. Lastly, the market is dominated by Ametek and Ashcroft, while EG&G Chandler and Wallace and Tiernan lead a pack of other small share manufacturers. Overall, there appears to be a large market for pressure recalibrating devices outside of the Oil and Gas Industries. Given the condition of these two markets, pressure recalibrating manufacturers must pursue the new markets that have been identified with a comprehensive well devised plan.

ADVISOR'S APPROVAL 

EXPLORING NEW MARKETS FOR

PRESSURE RECALIBRATING DEVICES

Report Approved:

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INTRODUCTION

In the past, EG&G Chandler Engineering has marketed their line of deadweight products almost exclusively to Oil and Gas companies. Unfortunately, the 1980's have seen hard times for the Oil and Gas industries in the United States and abroad. Intense competition and a sluggish market have combined to reduce the profitability of these energy suppliers. Since Oil and Gas exploration and production have decreased, several support industries have suffered as a result. Since EG&G Chandler has planned a 15% yearly growth rate, new market segments outside of the oil and gas markets must be targeted.

The purpose of this project was to discover **1)** which industries need pressure recalibrating instruments, **2)** which companies are now serving those industries, **3)** what the needs of those industries are, and **4)** how EG&G Chandler can target its marketing strategy to meet those needs.

The first objective was to determine which industries are using pressure gauges extensively. Questions answered were: How many gauges does the typical company use? Is there a correlation between company size and gauge usage? How often do they have their equipment recalibrated? Is the equipment recalibrated in-house or by an outside service? Do geographical differences exist in the location of industries or their usage patterns? Answers to these questions determined whether a particular industry was worth pursuing. After the industries were investigated, the competition was analyzed.

A second objective was to determine which pressure recalibrating instrument companies are competing within each industry. Is market share widely scattered or is it dominated by a few companies? Do market shares differ for companies with different size and usage rates? Are the suppliers of recalibrating instruments satisfying the needs of their customers? Do geographical differences exist in

market share? These questions will allow EG&G Chandler to understand their competition.

A third objective was to classify the needs of the different industries. Which recalibrating instrument attributes are most important? Does the accuracy of their gauges affect their operating efficiency or safety? Does company size or usage rate change their needs? Does the importance of the key product attributes vary in different countries? This information will allow EG&G Chandler to understand the needs of these prospect industries.

The final objective was to determine how EG&G Chandler can meet the needs of these different industries. Which promotional tools are most influential? Which magazines are widely read within each industry? Which link in the distribution channel do companies prefer to buy from? Do geographical differences exist causing a need for different marketing strategies in different countries?

Since these objectives have been met, EG&G Chandler will know which new industries (if any) are worth pursuing. Information regarding their competition and key marketing points for each industry should help them shape their marketing strategies to target these new marketing segments. Once these segments are properly targeted, EG&G Chandler will have increased their chance of realizing a 15% growth in sales.

THEORY/RESEARCH DESIGN

The research design used for this project is an exploratory survey. This design was used to allow collection of a large range of information from a widely dispersed group of respondents at a low cost. A mail questionnaire (see Appendix Exhibit 1) and a shorter phone questionnaire (see Appendix Exhibit 2) were developed to collect the information needs for the project. A mail list was purchased from the Instrument Society of America containing a list of 3,726 individuals employed by the industries shown in Appendix Exhibit 3A. Another 276 names were added from the EG&G Chandler prospect list (see Appendix Exhibit 3B). Mail questionnaires were sent to 4,002 individuals worldwide of which 635 responded for a response rate of 15.84% (see Appendix Exhibit 4). The reason for such a low response rate was due to the fact that mail questionnaires have a notoriously low return rate. Another 250 companies were selected for a phone survey from a group of industries (see Appendix Exhibit 3C) listed in the Thomas Register of American Manufacturers. The phone survey was completed by 217 companies for a response rate of 86.4%. All of the phone surveys were conducted by Robert Lindsey.

The analysis of the data consisted of frequencies, cumulative frequencies, means, and cross tabulations. The primary cross tabulations were "by industry" and "by country."

PROSPECT INDUSTRIES

The major objective of this report was to determine which industries are in need of pressure recalibrating instruments. Important information concerning the number of gauges used, the size of the companies, the recalibration practices, and the geographic location of the industries will help determine the nature and potential of any prospect industries. Several industries showed great promise (see Table 1). (A complete analysis of each industry listing all summary statistics is shown in Appendix Exhibit 17.)

Overall, virtually all of those industries surveyed represent potentially attractive market segments (the usage figures may be over-rated slightly, since non-users are less likely to return mail surveys than users). Still, over 65% of the companies using gauges used over 100 gauges. It is important to know which industries use a large number of gauges, since the more gauges that a company uses, the more likely they are to recalibrate in-house (see Appendix Exhibit 5).

TABLE 1

Industry Usage Rates

Industry	Number of Returns	% of Returns Using Gauges
Chemicals	92	100%
Electric Utilities	34	100%
Pipes	21	100%
Nuclear	12	100%
Aerospace	8	100%
Education	21	90%
Mining	11	90%
General Manufacturing[1]	133	89%
Process Control Instruments[2]	26	88%
Engineering Construction	14	78%
Instrumentation Systems[2]	24	75%
Pressure Transducers[3]	19	63%
Distribution	25	60%
Process Equipment and Instrumentation[3]	43	59%
Consulting	43	42%
Other[4]	117	79%

1 "General Manufacturing" was a hodgepodge of all types of manufacturing. Products produced ranged from Paper to Steel and from High-Tech Computers to Septic Tanks.

2 Process Control Instruments and Instrumentation Systems will be combined to provide a proper sample size for future analysis.

3 These industries where surveyed exclusively by phone so a larger percentage of non-users were reached.

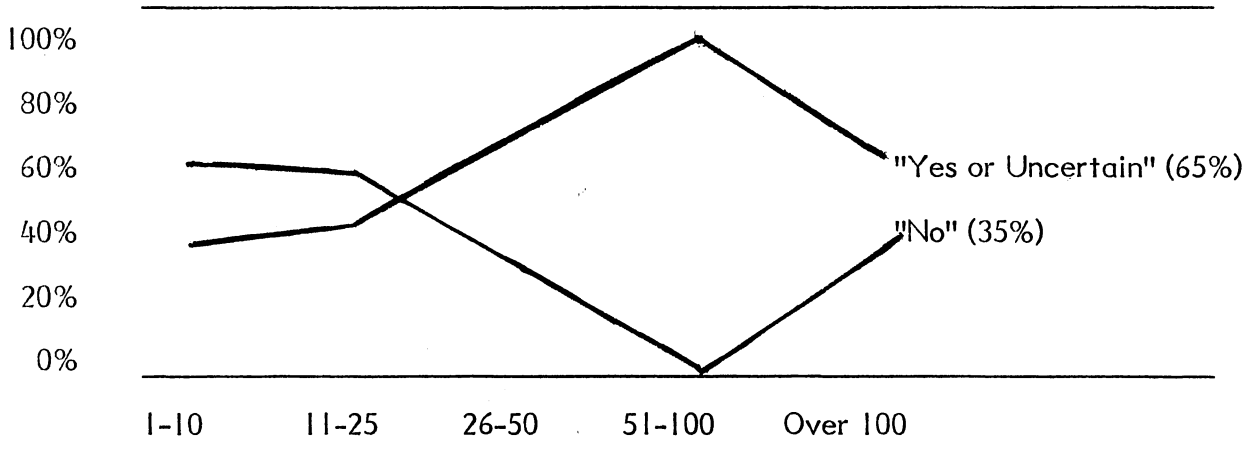
4 "Other" is comprised of several industries whose return was too small to analyze separately (i.e., Drugs, Plastics, Transportation, Water Utilities, etc.)

NOTE: for further information on any of these industries, a complete listing of summary statistics is given in Appendix Exhibit 17.

Some of the industries with the highest percentage of companies using over 100 gauges are: Mining 100%, Chemicals 92%, Electric Utilities 91%, and Engineering Construction firms 91%. Additionally, companies that hire a recalibrating service were asked if they thought they should buy a pressure recalibrating instrument. Again, as the number of gauges used increased, the more likely the company was to want a recalibrating instrument (see Table 2). Finally, the percentage of companies using gauges with different pressure ranges increased as their number of gauges used increased (see Appendix Exhibit 6).

TABLE 2

The Percentage of Companies Who Hire a Service and Feel They Should Buy:

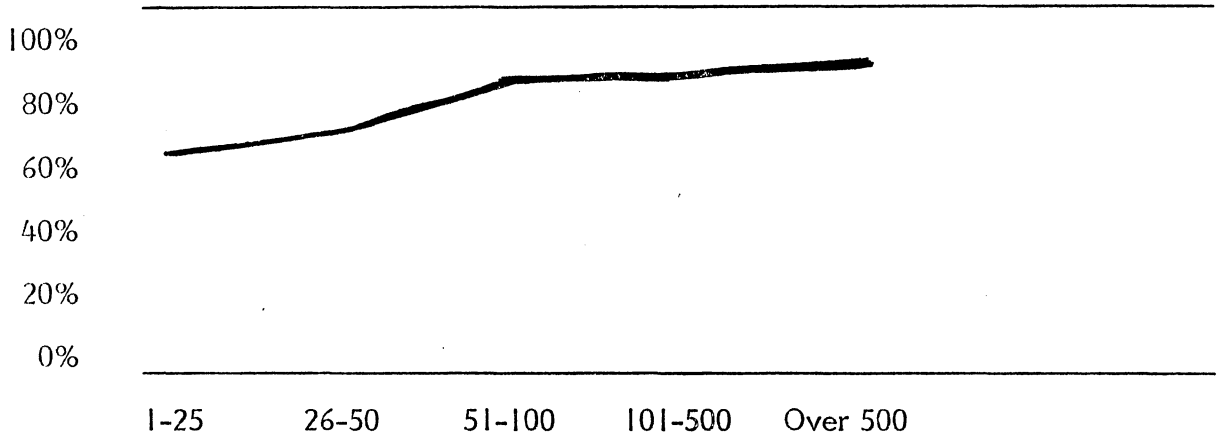


Another very strong relationship exists between the size of a company and its usage patterns. Both the percentage of companies using gauges and the number of gauges used per company increase with company size (see Table 3A and 3B). There is also a positive relationship between the size of a company and whether or not they recalibrate in-house (see Table 3C). The industries with the largest percentage of companies with more than 100 employees are: Mining 100%, Chemicals 94%, Electric Utilities 94%, Engineering Construction Firms 85%, and General Manufacturing 70%.

TABLE 3

A Correlation Between the Number of Employees and Usage Rates

A. % of Companies Using Gauges.



B. % of Companies Using Over 100 Gauges:

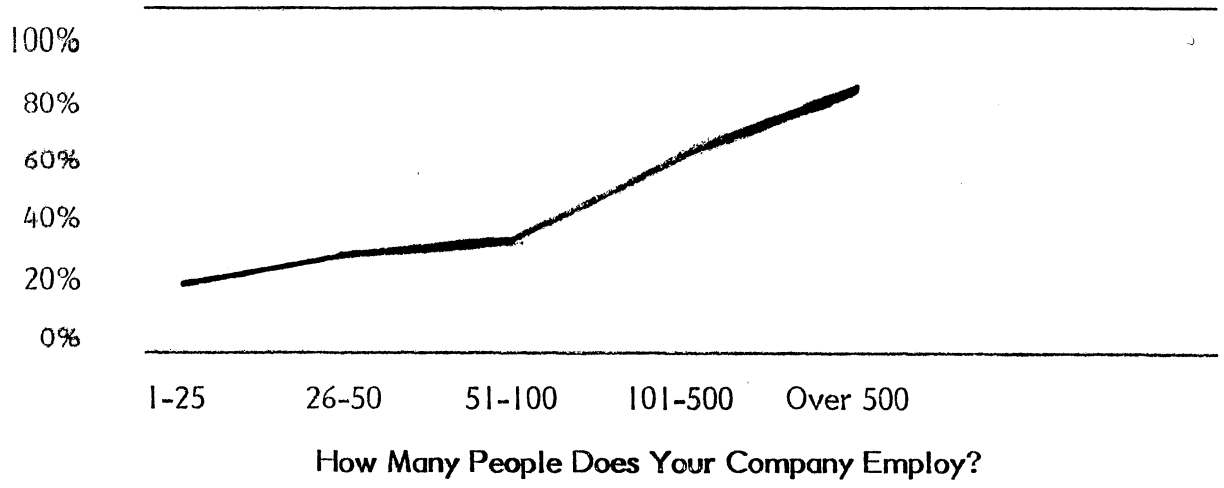
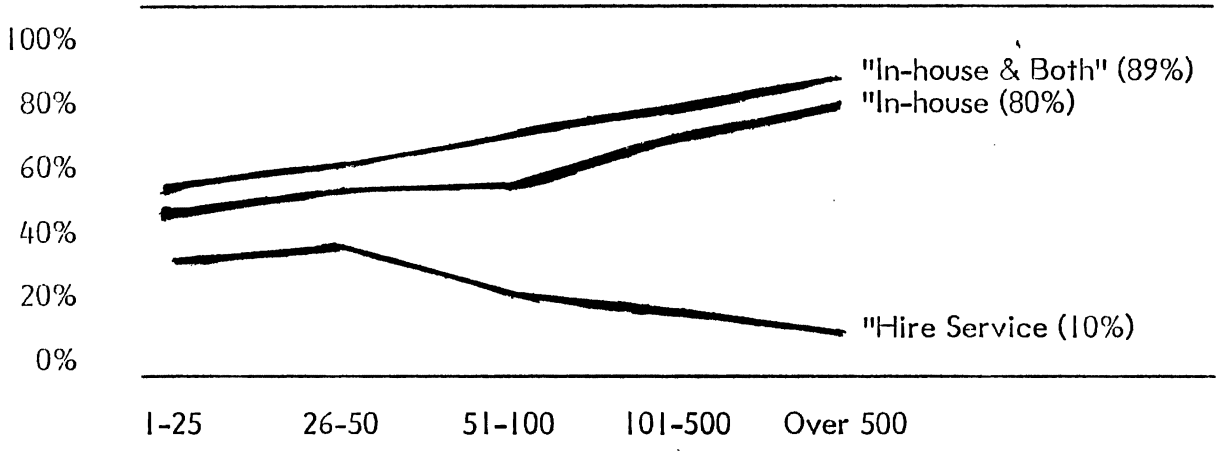


TABLE 3 (cont'd)

B. **% of Companies Recalibrating In-House:**



How Many People Does Your Company Employ?

Concerning recalibration practices, the following information was discovered. Most companies recalibrate "in-house" (72%), while 17% "hire an outside service," 9% do "both," and 2% do "neither." Some industries are more likely to "hire a service" than average such as Piping 30%, Process Equipment and Instrumentation 29%, Distribution 27%, and General Manufacturing 25%. Other industries are more likely to recalibrate "in-house" than average such as Education 95%, Mining 91%, Engineering Construction 90%, Aerospace 86%, and Electric Utilities 82%. The answer "both" would include companies that recalibrate some gauges in-house and some by an outside service and companies that recalibrate all their gauges in-house and then have their test equipment recalibrated by an outside service. Since companies could not be identified as one or the other, further analysis will not be presented. Finally, two industries dominated the "neither" category. General Manufacturing (5% "neither") and Process Equipment and Instruments (14% "neither") accounted for 75% of the "neither" replies. Since all of the "Process Equipment" surveys and half of the "General Manufacturing" surveys were gathered by phone, "neither" answers seemed more likely.

The frequency of recalibration is not consistent. Many companies (33%) recalibrate on a "variable" basis ("when necessary," "when allowed," "upon breakdown," "some monthly-some yearly," etc.). Of these, 85% own more than 100 gauges. The next largest category (31.6%), recalibrates their instruments "yearly" (40% of the companies with less than 100 gauges recalibrate "yearly"). Other frequency categories included: "Monthly" 13%, "Semi-annual" 6%, "As Required" 5.6%, "Never" 4%, "Quarterly" 3.4%, "Weekly" 1.7%, and "Daily" 1.2%. A cross-tabulation between "Company Size" and "Recalibration Frequency" produced approximately the same results as above. A cross-tabulation between "type of industry" and "recalibration frequency" produced very few cells that were over 10% plus or minus their expected value. If industries with a small sample size are excluded, only Electric Utilities (with a 47% "yearly" recalibration rate) exceeds the 10% plus or minus margin. Finally, companies who hire a recalibrating service are more likely to recalibrate yearly than companies who recalibrate in-house (46% vs. 30%, respectively).

Companies who hire an outside recalibrating service were asked whether they felt they should buy their own equipment. Of the companies that were exclusively "hire," 34% felt they should buy while 67% of the companies who both "hired" and recalibrated "in-house" felt they should purchase an instrument. Adding the "uncertain" answers to the "yes, I should buy" answers produced 50% of the "hire" group and 88% of the "both" group that are potential customers. Overall, 42% of the companies felt they should purchase a recalibrating instrument, while another 18% answered "uncertain." A cross-tabulation by industry did not produce any categories large enough for proper analysis.

The geographical location of industries proved to be fairly evenly distributed with a few exceptions. The domestic phone survey (23% of the total survey) accounted for all of the Pressure Transducers Companies and almost half of the

Piping Companies and "Process Control" related industries. The Domestic ISA mail list (28% of the total) represented 73% of the Electric Utilities, 56% of the Chemical Companies, and 46% of the "Process Control" related industries. The Canadian surveys (27%) made up 91% of the Mining Companies and 81% of the Universities surveyed. The Latin America (3.5%), Asia (3.2%), and European (4.3%) surveys had small samples but were very evenly populated by the wide array of industries.

In addition to the industries being relatively evenly spread out geographically, the number of gauges owned by each company was also fairly uniform. The mean number of gauges used by each company (on a scale of 1 = "1 to 10 gauges" to 5 = "over 100 gauges") turned out to be 3.98, which would be approximately 50 gauges per company. The country means were: Asia 4.34, Canada 4.11, combined U.S.A. 3.91, Europe 3.8, and Latin America 3.72. All of these means are within plus or minus 9% of the overall mean, so the data is fairly consistent regarding geographical usage rates. These figures are backed up by the closely related "Company Size" variable. The company size (on a scale of 1 = "1 to 25 Employees" to 5 = "Over 500 Employees") for all surveys produced a mean of 3.78, which is almost 100 employees. The country means were: Asia 4.34, Latin America 4.12, Europe 3.97, Canada 3.78, and combined U.S.A. 3.69. Here the largest difference was still only 14% greater than the mean.

In summary, virtually all of the industries mentioned are worth pursuing. The typical company uses almost 50 gauges with two-thirds using over 100 gauges. Larger companies use more gauges than smaller companies and most industries recalibrate either randomly or yearly. Most companies (72%) recalibrate in-house, while 17% hire an outside service. Finally, the industries are fairly evenly spread out worldwide and there are no large usage pattern differences between countries.

THE COMPETITION

The second objective was to analyze the competitors that sell pressure recalibrating instruments to the aforementioned industries. Areas of interest are market share, brand awareness, brand rating, and geographical differences.

Respondents were asked to name the brands of pressure recalibrating instruments owned by their companies. Since very few of the phone survey respondents knew which brands were owned, the question was eventually dropped from the phone survey. Of the mail surveys, 466 qualified for the ownership question. The ownership figures are shown in Appendix Exhibit 7. The major competitors are Ametek (owned by 61% of those companies owning pressure recalibrating instruments), Ashcroft (59%), EG&G Chandler (16%), and Wallace & Tiernan (12%). Wallace & Tiernan was a write-in answer so much of the future analysis will be omitted for this company.

Table 4A shows the market shares of the three leaders in the industries that had an acceptable sample size. Ametek and Ashcroft were very close (within 17% in all but one industry), while EG&G Chandler ranks a distant third in all but one of the industries. Since most of the companies own more than one brand, the market shares add up to over 100% in most of the categories.

In Table 4B, a cross-tabulation between ownership and company size shows that Ametek and Ashcroft are again very close, this time within 9% in all categories. While companies employing over 100 persons represent 79% of the survey, they own 83% of the Ametek instruments and 84% of the Ashcroft instruments, but only 74% of the EG&G Chandler models. Since the larger companies own more gauges this may not be a good sign for EG&G Chandler.

TABLE 4

Percentage of Companies Owning Selected Brands

A. Industry	N	Ametek	Ashcroft	EG&G Chandler
General Manufacturing	78	38%	55%	8%
Miscellaneous	61	46	62	8
Oil	64	64	56	19
Gas	42	81	43	50
Chemicals	80	74	70	4
Process Control Instruments and Instrumentation Systems	29	45	52	14
Electric Utilities	31	84	74	13

B. Company Size	N[1]	%	Ametek	Ashcroft	EG&G Chandler	Other[2]
1-25 Employees	37	7%	54%	62%	22%	38%
26-50	29	6	38	31	14	31
51-100	42	8	40	31	19	31
100-500	133	25	52	56	16	45
Over 500	283	54	61	58	13	42

C. Number of Gauges Owned	N[1]	%	Ametek	Ashcroft	EG&G Chandler	Other[2]
1-10 Gauges	58	11%	34%	43%	14%	41%
11-25	34	7	38	50	21	44
26-50	31	6	26	52	6	42
51-100	20	4	30	50	10	50
Over 100	377	73	64	57	15	41

1 Some of the N were non-owners and/or phone surveys and did not answer the ownership question, so these ownership figures are slightly deflated.

2 "Other" represents all others except DH, Mensor, Refinery Supply, Ruska, Schwein, and TI. These "Others" were write-ins.

A breakdown of brand ownership by the number of gauges owned is shown in Table 4C. Ashcroft is owned by more companies than Ametek in all of the categories except for companies owning more than 100 gauges. The category "Over 100 Gauges" accounts for 73% of the survey and represents 84% of Ametek's sales, 76% of Ashcroft's sales, and 74% of EG&G Chandler's sales.

The "Other" brands in Table 4C show that almost half of the companies in every category own small market share brands. In addition, 64% of Ametek owners own an Ashcroft instrument, 18% of the Ametek owners own an EG&G Chandler model and 11% of the Ashcroft owners own EG&G Chandler equipment. This should be encouraging to EG&G Chandler since brand loyalty is not as concrete as it is with consumer goods.

Closely related to the market share of any item is brand awareness. In the survey, the 545 mail respondents that own gauges were asked to rate the pressure recalibrating instruments of the companies previously mentioned. The percentage of companies rating each brand gives an indication of the awareness of that brand. Out of 545 responses, the percentage of companies rating each brand were: Ametek 59%, Ashcroft 57%, EG&G Chandler 20%, Ruska (next closest to EG&G Chandler) 10%, and "Others" 31%. Table 5 shows the brand awareness of the "Big Three" in selected industries. Notice that EG&G Chandler is most widely known in the oil and gas industries where their past marketing efforts have been concentrated. Other areas have some familiarity with the Chandler name even without extensive marketing efforts. Although awareness is important, the image of a brand is just as significant.

TABLE 5

Percentage of Companies Rating Each Brand by Industry

Industry	N	Ametek	Ashcroft	EG&G Chandler
General Manufacturing	67	49%	67%	21%
Miscellaneous	130	50	53	14
Oil	69	65	61	26
Gas	44	75	39	52
Chemicals	90	64	61	8
Process Control Instruments and Instrumentation Systems	38	53	47	18
Electric Utilities	33	82	70	15
Total	**471**	**60%**	**57%**	**20%**

The image of a brand can affect a company's success. A poor image can ruin or stunt the sales growth of a product. The mail survey asked respondents to rate the brands as "Excellent," Good," "Fair," or "Poor," which were given values of 1, 2, 3, and 4, respectively. Appendix Exhibit 7 gives a complete listing of the ratings received by all of the brands. Although theoretically incorrect, the ratings (which were actually rankings) were averaged to give a feel for their relative importance. Of the brands rated by at least 30 respondents, the rank in order was: Ruska 1.52, Wallace & Tiernan 1.55, Ametek 1.77, Ashcroft 1.83, EG&G Chandler 1.9, TI 1.95, Mensor 2.0, and Refinery Supply 2.17. The overall rating for all brands was 1.81 (missing values were disregarded).

The rating by the actual owners of each brand is vitally important also. A matrix of the "Big Three" owners rating each other's products is shown in Table 6. Notice how Ametek was rated the highest by the owners of all three brands. EG&G Chandler was rated higher than Ashcroft by small market share brand owners and was rated very high by EG&G Chandler owners.

TABLE 6

Ownership Ratings of the Market Leaders*

	Owner Rating of:	Ametek	Ashcroft	EG&G Chandler
1.	Ametek	1.73	1.83	1.83
2.	Ashcroft	1.76	1.78	2.02
3.	EG&G Chandler	1.71	1.97	1.73
4.	Other (small market share brands)	1.91	1.99	1.92
5.	Total	1.77	1.83	1.9

* Ratings are on a scale from Excellent = 1, Good = 2, Fair = 3, and Poor = 4.

Since 294 of the 635 mail surveys (46%) were completed by domestic U.S.A. companies, the American brands received slightly higher marks than the foreign brands. Ametek sold 55.6%, Ashcroft sold 48.6%, and EG&G Chandler sold 57% of their products to the U.S.A. which was only 46% of the survey. EG&G Chandler was even more overrated since 22% of their units were owned by companies from the EG&G Chandler mail list which accounted for only 8.5% of the mail survey. If these were disregarded, EG&G Chandler would almost drop into a tie for third in market share with Wallace & Tiernan (who would probably have had more votes if it were not a write-in). Nevertheless, EG&G Chandler was still fairly strong in international sales. Appendix Exhibit 8A shows the percentage of companies owning each of the "Big Three" brands internationally (data on Wallace & Tiernan was not available since it was a write-in). The trend of Ametek and Ashcroft domination held true in all but the European Market (Australia is not considered because of an unacceptable sample size). The low sample size may be part of the reason, but the high number of "others" probably means that U.S.A. brands just do not sell as well in Europe. This is probably caused by increased competition from foreign competitors.

The international awareness of the brands seems to follow the market shares. Ametek and Ashcroft lead the pack everywhere except in Europe, while EG&G Chandler remained a distant third, just above Wallace & Tiernan (see Appendix Exhibit 8B).

A summary of the competition information reveals that Ametek and Ashcroft dominate the pressure recalibration market in virtually every industry and country except Europe. EG&G Chandler holds down third place, slightly above Wallace & Tiernan and well above a pack of other companies. The awareness levels ran very closely to the ownership levels with another 1, 2, 3 finish for Ametek, Ashcroft, and EG&G Chandler, respectively. The product ratings produced the same order of finish, although Ruska and Wallace & Tiernan ranked higher than the "Big Three." The only geographic difference in market shares was in Europe, where U.S.A. brands did not fair well. Now that the competition has been analyzed, the customer needs will be examined.

CUSTOMER NEEDS

Customer needs were determined after respondents answered a series of questions related to product attributes and features. Table 7 shows the order in which respondents ranked eleven product attributes and features on a scale from 1 to 10, with one being most important. Most of the respondents ranked the attributes instead of rating them so the means do not reflect the exact importance, only the order of importance. The five most important attributes in order were Accuracy, Sensitivity, Durability, Ease of Operation, and Portability.

TABLE 7

Product Attributes Ranked in Order of Importance

Rank	Attribute	Mean *	Rank	Attribute	Mean
1	Accuracy	1.43	7	Wide Pressure Range	5.10
2	Sensitivity	2.98	8	Price	5.51
3	Durability	3.03	9	Service from manufacturer	5.52
4	Ease of Operation	3.88	10	Warranty, Terms & Conditions	6.77
5	Portability	4.50	11	Delivery	7.0
6	Ease & Cost of Maintenance	4.61			

*Rated on a scale from 1 = most important to 10. N=525.

Exhibit 9A shows the ranked order of product attributes by industry. Most of the industries ranked the product attributes very close to the overall rank. Out of 132 ranked positions (12 industries X 11 attributes), only six attributes were ranked two positions away from their overall rank. Most important of these changes were the Piping and Education industries ranking portability as being third most important instead of fifth. Only small differences (less than 5% overall) occurred between the mean ratings of each attribute by Ametek, Ashcroft, & EG&G

Chandler owners. No major differences occurred between the mean ratings of companies hiring on outside recalibrating service and those companies that recalibrate in-house. Appendix Exhibit 10 shows the write-in responses to the product attribute question. The predominate answers were repeatability, precision, adaptability, and easy to read dials with adjustable location.

Another significant consumer need involves the importance of accurate gauges toward the efficiency of the company. Respondents were asked "Do you think that accurate gauges and test equipment could increase your operating efficiency?" Excluding phone surveys (which asked a slightly different question), the overall responses were: Definitely Yes 49%, Probably Yes 32%, Uncertain 7%, Probably Not 10%, and Definitely Not 1.4%. Coding the responses from "Definitely Yes" = 1 to "Definitely Not" = 5, resulted in an overall mean of 1.83.

The need for accuracy to increase efficiency is positively related to the number of gauges used. Disregarding the "uncertain" responses, the percentage of respondents that felt they definitely or probably could increase their operating efficiency with accurate gauges was: 1-10 gauges (69%), 11-100 gauges (80%) and over 100 gauges (90%).

Rating the ability of accurate gauges to increase efficiency (on a scale from Definitely Yes = 1 to Definitely No = 5) showed that companies recalibrating in-house produced a mean of 1.83, while companies hiring on outside service had a mean of 2.11. This could mean that companies requiring a higher degree of accuracy are more likely to recalibrate in-house. Those hiring a service were separated into two groups, those who felt they should buy a recalibrating instrument, and those who felt they should not buy an instrument. When measured on the same 5 point scale, the "should buy's" had a mean of 1.73, while the "should not buy's" had a 2.4 mean (a 16% difference). Thus, respondents who felt that they should buy are much more likely to feel that accurate gauges can increase their

operating efficiency. There were no major differences between industries regarding efficiency.

Next, the respondents were asked if they felt that accurate gauges could affect their operating safety. The mail responses were: Definitely Yes 49%, Probably Yes 27%, Uncertain 8%, Probably Not 13%, and Definitely Not 3%. The mean was 1.92, on a scale from 1 = Definitely Yes to 5 = Definitely Not.

As with efficiency, the more gauges a company owned, the more likely they were to think that accurate gauges could increase their operating safety. Companies who recalibrate in-house were more likely than companies who hire an outside service to think that accurate gauges could increase their operating safety (means of 1.99 and 2.31, respectively). Finally, of those hiring a service, those that felt they should buy returned a mean of 1.73, while those who felt they should not buy had a safety mean of 2.68 (a 24% difference).

Excluding phone surveys, 76% of the respondents felt that gauges could definitely or probably increase their operating safety. Electric Utilities (84%) and Chemical companies (83%) were even more likely to think that their safety could be increased with accurate gauges, while Process Control Instruments and Instrumentation Systems industries (60% average) were less likely to feel that accurate gauges could increase their safety. Some other industries had high or low averages but were not mentioned due to low sample sizes.

Another customer need that may become even more important in the future is the capability of a pressure recalibrating device to transmit data directly to a computer. When mail respondents were asked if they needed a recalibrating instrument to computer hook-up, their answers were 17% Definitely Yes, 25% Probably Yes, 20% Uncertain, 27% Probably Not, and 11% Definitely Not. There was not a significant relationship between the number of gauges owned and the need for a computer hook-up.

On a scale of 1 = Definitely Yes to 5 = Definitely Not, companies that hire a recalibrating service rated their computer link need at 2.85, while companies who recalibrated in-house produced a mean of 2.91. Of the "hire a service" companies, the ones that felt they should buy returned a mean of 2.92, those that felt they should not buy gave a mean of 2.83, and those that were uncertain about buying their own equipment rated their computer link need at 2.36. Either the companies that hire a service are over-estimating their need for a computer link, or they have complex recalibration needs that require outside expertise.

Overall, 42% of the companies "definitely" or "probably" felt that their recalibration equipment needed a computer hook-up. Over 55% of the Process Control and Instrumentation Companies felt they definitely or probably needed a computer link while only 28% of the Chemical companies felt the need for computer transmittable equipment. Although they had small samples of only 12 and 18, respectively, the Nuclear (67%) and Education (61%) had very high percentages of companies desiring computer accessible recalibrating instruments.

Internationally, the ranking of product attributes was only slightly less cohesive than the industry ratings (see Appendix Exhibit 9B). Out of 66 ranked cells (11 attributes x 6 industries, excluding Australia), 6% (vs. 4.5% for industries) were more than two positions away from the overall position. Latin America's rating of "Ease and Cost of Maintenance" as fourth most important (instead of sixth) and Europe's rating of "Wide-Pressure Range" as fifth (instead of seventh) were the only "two position" changes in the top five attributes. Price was not ranked higher than eight by any of the countries.

Regarding the question on whether accurate gauges can increase efficiency, four of the areas had a mean of between 1.63 and 1.87, a difference of only 6%. Asia had a mean of 1.41, while Canada had a mean of 1.97, a difference of 14% (see Appendix Exhibit 11). Therefore Asians are more likely and Canadians are less

likely than average to feel that accurate gauges can increase their operating efficiency. The phone survey asked if the accuracy of the gauges affect the efficiency of the company. This slightly different wording produced a mean of 2.31 compared to a mail survey mean of 1.83 (a 12% difference overall).

The question on accurate gauges and safety showed four of the six regions within 4% of the mean (see Appendix Exhibit 11). Asia, with a mean of 1.24, and Latin America, with a mean of 1.46, were 17% and 11.5% away from the overall mean of 1.92, respectively. Since these regions are less developed than U.S.A., Canada, and Europe, it seems logical that they would be more likely to feel that accurate gauges could increase their safety. The phone survey question asked respondents if they felt the accuracy of their gauges could affect their operating safety. The changed question produced a mean of 2.7, which is 19.5% away from the original mean of 1.92.

Concerning the need for computer accessible recalibrating equipment, four of the six areas were within 2% of the overall 2.88 mean (see Appendix Exhibit 11). The European countries, who had a mean of 2.32, may have more of a need for a computer hook-up, but with a sample size of 28, the 14% difference from the mean may not be significant. The domestic EG&G Chandler mail list responses recorded a mean of 3.17 which is 7% higher than the mean. The phone survey asked the respondent, "Do you think it would be important for your company to own a pressure recalibrating device capable of transmitting data directly to a computer?" This question produced a mean of 3.26 which is 9% away from the other mean of 2.88.

Overall, the attributes that are most important to the different industries are: Accuracy, Sensitivity, Durability, Ease of Operation, Portability, and Ease and Cost of Maintenance, respectively. Almost 81% of the respondents felt that accurate gauges could definitely or probably increase their operating efficiency.

Another 76% of the respondents felt that accurate gauges definitely or probably could increase their operating safety. Finally, 42% of the respondents felt that their calibrating equipment should definitely or probably be capable of transmitting data directly to a computer.

MARKETING STRATEGY

The fourth and final objective was to determine how EG&G Chandler can meet the needs of the new prospect industries. A rating of the promotional tools will help determine which are most influential. A readership list of magazines will show which are most appropriate for specific industries. Respondents were also asked which link in the distribution channel they preferred to deal with. All of these sub-topics will then be analyzed from a geographic standpoint to determine if any major regional differences exist.

Respondents were asked to rate from 1 to 10 (with one being very influential) on how much a set of influences might affect their purchase decision. The final ratings of these influences (on a scale of 1 to 10) in order from most to least influential were: Previous Experience With Supplier's Product (1.61), Personal Recommendation (3.07), Seminars or Demonstrations (3.6), Exhibitions/Trade Shows (4.47), Sales Presentation (4.51), and Advertising 5.35). Since most respondents ranked the influences instead of rating each one, the means do not reflect the exact importance, only the order of importance. As mentioned previously, it is theoretically incorrect to average these values. The averages are shown to give a feel for the relative importance. Appendix Exhibit 12A shows the rankings of the influences by industry. The rankings are very consistent for the top three (Previous Experience, Personal Recommendation, and Seminars/Demonstrations, respectively), but there is a close race between "Exhibitions/Trade Shows" and "Sales Presentations." Advertising" was rated least influential by all industries except one. The write-in answers are shown in Appendix Exhibit 13. Trial usage or in-house testing represented 58% of the answers.

Although advertising was rated least influential, a minimal amount is necessary to increase and/or continue brand image and awareness. A listing of the most read magazines is shown in Table 8. The "Intech" rating is over-rated since an "Intech" mail list was used for the majority (68%) of the survey. The

EG&G Chandler - Thomas Register figures are probably a lot more accurate since a specific magazine mail list was not used. Notice how "Intech" drops to 7% and 9% in the non-ISA ratings.

TABLE 8

Readership Ratings of Selected Magazines

Magazine	Reader %[1]	Adjusted %[2]	EG&G, T.R. %[3]	"IAN"[4]
"Intech"	47.7%	41.7%	7%	9%
"Control Engineer"	25.8	22	11	18
"Chemical Engineer"	15.6	13.9	11	6
"Instrument & Control Systems"	11.8	10.3	3	24
"Oil & Gas Journal"	11.1	10.6	20	3
"Plant Engineer"	8.1	7.6	9	13.6
"Hydrocarbon Processing"	6.7	5.4	8	
"Machine Design"	6.5	6.	17	31.8
	N=576	N=545	N=118	N=66

1. This column represents the entire survey, of which 68% were from an "Intech" mail list.

2. The adjusted column subtracted the readers who did not own any gauges before calculating the percentages.

3. This column represents the EG&G Chandler mail list and the Thomas Register phone survey which accounted for 32% of the responses.

4 This column was the result of an identical survey conducted by "IAN" magazine.

Some magazines were read by a larger number of industries than other magazines (see Appendix Exhibit 14A). Seven of the eight industries that had a large sample size had "Control Engineer" as one of the three most read magazines (excluding "Intech"). Other magazines rated frequently in the top three were: "Instrument & Control Systems" (4 of 8), "Chemical Engineer" (3 of 8), "Machine Design" (2 of 8), and "Hydrocarbon Processing" (2 of 8).

In the phone survey, respondents were asked: "If your company were to purchase a recalibrating instrument, who do you think you would prefer to buy from?" Out of 98 returns, the responses were 47% Factory Representative, 39% Factory Direct, and 14% Dealership. A survey by "IAN" magazine produced the following from 47 responses: 62% Factory Direct, 28% Factory Representative, and 11% Dealership. Combining all 145 responses showed 46% preferred Factory Direct, 40% wanted a Factory Representative, and 13% desired a Dealership. All of these surveys were from U.S.A. companies. The main reason for preferring Factory Direct was "lower cost." The main reason for preferring a Factory Representative was "technical assistance."

A cross tabulation by country produced similar results to the overall survey. Appendix Exhibit 12B shows the same order of influence as the overall ratings with another close race between "Exhibition/Trade Shows" and "Sales Presentations."

Concerning magazine readership, five regions were evaluated (U.S.A., Canada, Latin America, Asia, and Europe) with the U.S.A. having three lists (I.S.A., EG&G Chandler, and Thomas Register). Disregarding "Intech," the magazines listed in the top three the most were: "Chemical Engineer" (6 out of 7 lists or 85%), "Control Engineer" (71%), "Oil & Gas Journal" (43%), and "Hydrocarbon Processing" (29%). Appendix Exhibit 14B shows the top magazines for each country.

In conclusion, "Previous Experience" and "Personal Recommendation" are the most important influences on the purchase decision. However, since these are totally uncontrollable, seminars, demonstrations, exhibitions, and trade shows should be attended whenever possible. All forms of promotion should provide an invitation for a sales presentation.

Based on the cross tabulations, "Control Engineer" and "Chemical Engineer" appear to be the best magazines for advertising. They are both in the top three most widely read magazines in most industries and most countries. They both did

well in all three surveys (I.S.A., Phone, and "IAN" surveys). Finally, their content is so diverse that less overlap will exist than if two similar magazines were used. Other promising magazines are: "Intech, "I&CS," and "Machine Design."

Most companies prefer to buy from either a factory representative or factory direct. Since EG&G Chandler desires to market worldwide, factory representatives must be used in order to properly cover all areas. However, since such a large number of companies wish to buy factory direct, this option should also be kept available.

LIMITATIONS

The results of the mail survey showed that 546 of the 634 companies used pressure gauges or instruments (86%) while the phone survey showed that only 116 of 218 companies used pressure gauges (53%). Since individuals whose companies do not use gauges would be less likely to return the mail survey, the phone survey percentage of 53% may be more representative of the sample population. Therefore, several of the industry usage rates may be lower than the rates suggested in this project. However, this does not mean that the industries mentioned are not worth targeting.

On the phone surveys, approximately 100 "No" surveys were not properly recorded due to interviewer error or interruption of the interview. These "No's" were used to determine the phone survey usage rate which became 53%. They were not recorded in the industry usage rates except for "Pressure Transducers" and "Process Equipment and Instrumentation."

The Latin American, Asian, European, and Australian surveys produced a 14.57% return, but due to the low number sent, only 102 surveys were returned. Projecting the results of 102 surveys as being representative of four continents seems foolish. However, since the results were very similar to the overall results, these countries should still be targeted. After all, gauges need to be recalibrated regardless of what language the operator speaks.

Overall, the results were very consistent. A comparison between N=422 and N=862 was conducted on the 60 questions (see Appendix Exhibit 15). The largest changes (up to 17%) were in "ownership percentages" and "awareness" (percentage rating each brand). This should be expected since American brands were being rated by foreigners. Two other questions ("If you hire a service, should you buy?" and "Who do you prefer to buy from?" had answers with percentage changes of 7% and 6% respectively, but these questions had only been answered by 66 respondents

out of the initial group. Disregarding those exceptions, only one of the remaining answers (a 10% change in ownership of gauges less than 2,000 p.s.i.) had a percentage change above 3.6%. Considering the change in responses was so small, the results should be regarded as being very consistent.

As a back up check, the same survey was conducted by "IAN" magazine. The differences between the EG&G Chandler survey and the "IAN" survey are shown in Appendix Exhibit 16. Out of 105 computations, only 24 (22%) were more than 10% off and only 5 (4%) were more than 20% off. The question on "awareness" (percentage of companies rating each brand) produced 29% of the responses that were 10% off and 60% of the responses that were 20% off. The only questions with major changes were: "Awareness," "If you hire, should you buy?" "Who would you prefer to buy from?" and "Ownership." These four questions (34% of the 105 computations) produced 58% of the 10% off responses and 100% of the 20% off responses. Finally, three of the five responses that were 20% off occurred on questions with responses of only 16, 3, and 3. Since the results of the two surveys were so similar, the overall results should be regarded as highly accurate.

SUMMARY

The main objective of this project was to discover new industries outside of the Oil and Gas Markets that use pressure recalibrating instruments on a regular basis. Secondary objectives were to analyze the competition, determine the primary recalibrating needs of the industries, and formulate a marketing strategy to target any new segments.

A mail questionnaire was returned by 15.84% of the 4,002 companies that were selected for the survey. A phone list of 250 companies resulted in an 86.4% response rate. Almost 78% of the companies responding used pressure gauges or pressure testing instruments while 81% of those using gauges recalibrated their instruments in-house.

EG&G Chandler gauges were owned by at least 16% of the companies responding, far behind Ametek (61%) and Ashcroft (59%). As an indication of brand awareness, EG&G Chandler was rated by 20% of the respondents owning gauges, while Ametek (59%) and Ashcroft (57%) were rated by several more companies.

The respondents rated eleven product attributes from 1 = most important to 10, and virtually all of the industries agreed on the five most important attributes. In order they were: **1)** Accuracy, **2)** Sensitivity, **3)** Durability, **4)** Ease of Operation, and **5)** Portability. Approximately 81% of the respondents felt that accurate gauges could increase their operating efficiency and 76% felt that accurate gauges could increase their operating safety. Disregarding the "Uncertain" responses, 52.5% of the companies felt that their pressure recalibrating equipment should be capable of transmitting data directly to a computer.

The most important influences on the purchase decision in order were: **1)** Previous Experience, **2)** Personal Recommendation, **3)** Seminars or Demonstrations, **4)** Exhibitions/Trade Shows, **5)** Sales Presentations, and **6)** Advertising. About 47%

of the respondents preferred to buy from a factory representative, 39% preferred to buy factory direct, and 14% preferred to buy from a dealership. The most read magazines and their readership rates were: "Intech" 48%, "Control Engineer" 26%, "Chemical Engineer" 16%, "I & C S" 12%, and "Oil & Gas Journal" 11%.

Based on these results, EG&G Chandler should target most, if not all, of the industries mentioned in the report. Initially, they should focus on the Chemical, Electric Utilities, Education, Consulting, and Process Control and Instrumentation related industries. These industries use the most gauges or are in a position to recommend recalibrating instruments to other companies.

Since EG&G Chandler is so far behind Ametek and Ashcroft, they must increase their brand awareness and availability to these new markets. Since EG&G Chandler has a strong product line and has done well against Ametek and Ashcroft in the Oil and Gas markets, they should be able to compete strongly in these other markets after a period of time.

Promotional activities should stress the ability of EG&G Chandler products to satisfy the primary product attribute needs mentioned earlier. Appealing to the customers' need for accurate gauges to increase their operating efficiency and safety could expand the customers' need for pressure recalibrating instruments.

"Previous Experience" and "Personal Recommendations" could be incorporated into EG&G Chandler's advertising themes. Seminars, trade shows, and exhibitions should be attended frequently (even if by factory representatives) to increase EG&G Chandler's brand awareness. All forms of promotion should encourage sales presentations from the home office or a factory representative.

A direct sales effort should be used to increase brand awareness and to gain more indepth information about the needs of the new target markets. This knowledge can then be transferred to a network of factory representatives surrounding the world. If these factory representatives are properly informed and

motivated, EG&G Chandler should be able to steadily increase their sales in almost any industry chosen.

Advertising should emphasize the primary product attributes previously mentioned. Several magazines appear to be potentially attractive for EG&G Chandler's advertising. Foremost of these are "Control Engineer" and "Chemical Engineer." Other possibilities include "Intech," "I&CS," and "Machine Design."

Since EG&G Chandler will be new to these markets, it will take a lot of time and money before they are as successful as they have been in the Oil and Gas Markets. Awareness can not be purchased overnight and indepth knowledge of each industries' needs can not be read from a book. However, with strong products, a commitment to excel, and a team of well informed representatives, EG&G Chandler should prosper in the long run.

CONCLUSIONS AND RECOMMENDATIONS

With respect to the first objective, virtually all of the industries mentioned are regular users of pressure recalibrating instruments. Even the industries that had below a 75% usage rate are still attractive targets. Pressure Transducer and Process Equipment and Instrumentation manufacturers produce equipment that needs to be recalibrated after a period of time. If EG&G Chandler equipment could be specified in the owner's manual of these companies' equipment, then an unlimited number of sales could result. By placing a marked order form within the owner's manual, the companies' could be compensated for sales resulting from their recommendation. Similarly, consulting firms and distribution centers may not use a lot of gauges, but by sending these companies product information and signing Dealer Representative Contracts, they would be more likely to recommend EG&G Chandler equipment.

The most attractive industries to target are Chemical, Electric Utilities, General Manufacturing, Education, Process Control and Instrumentation Systems, Mining, and Consulting. All of these industries have a large usage rate or have the ability to specify or recommend EG&G Chandler equipment. Large companies within each industry are more attractive since they use more gauges and are more likely to recalibrate in-house.

Ametek and Ashcroft dominate the pressure recalibrating market in virtually every industry worldwide (although to a lesser extent in Europe). EG&G Chandler ranks a distant third in all markets and industries. Since almost all companies own more than one brand of pressure recalibrating instrument, EG&G Chandler could increase their sales by marketing directly to the industries that they have neglected in the past. An increase in promotional activities will increase their brand awareness and availability to these new target segments.

The primary needs of the customers should become the key marketing and selling points for EG&G Chandler. Respondents from all industries and countries have rated the same attributes as most important. In order, these key attributes are **1)** Accuracy, **2)** Sensitivity, **3)** Durability, **4)** Ease of Operation, and **5)** Portability. Since these attributes were consistently ranked most important, EG&G Chandler should determine how well their products meet these needs. If necessary, changes should be considered. Future promotional activities should focus on these key attributes.

Two other key selling points are efficiency and safety. Approximately 81% of the respondents felt that accurate gauges could increase their operating efficiency and 76% of the respondents felt that accurate gauges could increase their operating safety. Since efficiency and safety are so important, an appeal to companies to check the accuracy of their gauges to ensure their efficiency and safety would probably be noticed more than another "buy me" slogan.

Respondents were asked if their recalibrating equipment should be capable of transmitting data directly to a computer. Disregarding the 20% that were "Uncertain," 52.5% of the respondents felt that they definitely or probably should have equipment that is capable of transmitting data directly to a computer. As time passes, more and more companies will probably feel the need for computer compatible pressure recalibrating instruments. EG&G Chandler would be wise to analyze this subject in more depth in the next few years.

Although "previous experience with supplier's products" and "personal recommendations" were rated the most important influences on the purchase decision, they are almost completely uncontrollable by EG&G Chandler. However, advertising could incorporate impartial non-biased owners giving personal recommendations about EG&G Chandler products. These testimonial plugs by third parties are usually more believable than information from a company spokesman.

Seminars, demonstrations, exhibitions, and trade shows should usually be attended whenever possible, even if by a factory representative, if necessary. Although costly, these shows increase EG&G Chandler's visibility and allows potential customers to evaluate the products. Take-home literature and brochures could prolong brand awareness and should include order forms or information for requesting a sales presentation.

A direct sales effort should be made by EG&G Chandler to reach the new target industries. Although expensive, this technique will increase brand awareness and will allow EG&G Chandler to better understand the needs of these industries.

Although advertising was the least influential activity, EG&G Chandler must use this medium to increase brand awareness in the new industries that they target. Advertising could initially attract the reader with mention of the efficiency or safety theme and could then focus on the key product attributes. Third party testimonials could highlight a satisfied customer and would be very effective if they were well known or regarded as an expert. Many customers would probably jump at the chance to get their picture in an advertisement and would probably do it free of charge. Alternatively, the advertisement could be made to read like an article and would thus be read by more individuals. All ads should provide information for a sales presentation.

"Control Engineer" and "Chemical Engineer" appear to be the most appropriate magazines for advertising to the new market segments. Both are widely read in all countries and industries. Also, since their editorial content is so different, there would be less overlap than if two similar magazines were used. Other potentially attractive magazines are "Intech," "I&CS," and "Machine Design."

Due to the size and location of EG&G Chandler's new target markets, the number of factory representatives must be increased worldwide. Incentives, contests, and publicity should be used to motivate sales representatives.

Communication and feedback could strengthen the bonds of a good working relationship and assure that the rep's marketing information and goals are up to date. Since several customers prefer to deal factory direct, this option should also remain available.

In closing, there are several industries outside of the Oil and Gas industries that use pressure recalibrating instruments. It will take a lot of time and money before EG&G Chandler will become a leading supplier to these industries. Realistically, EG&G Chandler must look to these new industries to ensure long term growth. However, given EG&G Chandler's strong product line and commitment to excellence, their future looks a lot brighter than most other oil and gas related companies.

BIBLIOGRAPHY

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APPENDIX EXHIBIT 1

Oklahoma State University

COLLEGE OF BUSINESS ADMINISTRATION

STILLWATER, OKLAHOMA 74078
(405) 624-5064

September 18, 1985

Your opinions are important. Technology can be very complex. The need for precise measurements can be crucial at times. Safety and profitability may require the use of gauges that give accurate readings; but different industries may have different needs, and different pressure gauges might be used in different environments.

Your company has been selected from a group of technical industries to participate in a study regarding pressure measuring and recalibrating instruments. Your opinions are needed because the needs of your industry for accurate testing equipment must be known before they can be met. If you feel that someone other than yourself is more qualified to complete the questionnaire, please help by forwarding it to them.

You may be assured of complete confidentiality. Only a report showing summary information will be seen by the sponsor company. Your name will never be placed on the questionnaire.

Thank you for your assistance.

Sincerely,

Robert Lindsey

Robert Lindsey
M.B.A. Candidate

William G. Zikmund

Dr. William G. Zikmund
Thesis Director
Graduate College
Oklahoma State University
Stillwater, Oklahoma

CENTENNIAL DECADE
1980 • 1990

Questionnaire

1. Does your company use any pressure gauges and/or pressure testing instruments?

☐ Yes ☐ No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

☐ 1 to 10 ☐ 11 to 25 ☐ 26 to 50 ☐ 51 to 100 ☐ over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

☐ Less than 4″ H_2O
☐ 4″ to 200″ H_2O
☐ 10″ to 1600″ H_2O
☐ Less than 500 p.s.i.
☐ Less than 2000 p.s.i.
☐ Less than 20,000 p.s.i.
☐ Less than 50,000 p.s.i.
☐ Other _____

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

☐ Hire a Service ☐ Done In-House (If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

☐ Yes ☐ No ☐ Uncertain

6. How often do you recalibrate your pressure instruments?

☐ Weekly
☐ Monthly
☐ Annually
☐ Never
☐ Other _____

7. How many of the following brands of pressure calibrating instruments does your company own?

___ Ametek (M&G)
___ Ashcroft (Dresser)
___ EG&G Chandler
___ DH
___ Mensor
___ Refinery Supply
___ Ruska
___ Schwien
___ TI
___ Other _____

8. How would you rate the pressure calibrating instruments of the following companies?

	Excellent	Good	Fair	Poor	Do Not Know
Ametek (M&G)	☐	☐	☐	☐	☐
Ashcroft (Dresser)	☐	☐	☐	☐	☐
EG&G Chandler	☐	☐	☐	☐	☐
DH	☐	☐	☐	☐	☐
Mensor	☐	☐	☐	☐	☐
Refinery Supply	☐	☐	☐	☐	☐
Ruska	☐	☐	☐	☐	☐
Schwien	☐	☐	☐	☐	☐
TI	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐

(Over)

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

☐	☐	☐	☐	☐
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not

10. Do you think that accurate gauges and test equipment could increase your operating safety?

☐	☐	☐	☐	☐
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

☐	☐	☐	☐	☐
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

___ Sensitivity
___ Portability
___ Accuracy
___ Delivery
___ Durability
___ Price
___ Ease and cost of maintenance
___ Warranty, terms, and conditions
___ Service from manufacturer
___ Wide pressure range
___ Ease of operation
___ Other _____

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

___ Personal recommendation
___ Advertising
___ Previous experience with supplier's products
___ Exhibitions/Trade Shows
___ Sales presentations
___ Seminars or demonstrations
___ Other _____

14. What is your primary, job-related responsibility?

_____

15. What is your company's primary field of business?

_____

16. How many people does your company employ?

☐ 1 to 25 ☐ 26 to 50 ☐ 51 to 100 ☐ 101 to 500 ☐ over 500

17. Please name the business publications (at least three) that you read regularly:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

APPENDIX EXHIBIT 2

Sample Phone Questionnaire

---

1. Does your company use any pressure gauges and/or pressure testing instruments?

___ Yes ___ No (If "No," skip to Question #9.)

2. How many pressure gauges and pressure testing instruments does your company use?

___ 1 to 10 ___ 11 to 25 ___ 26 to 50 ___ 51 to 100 ___ over 100

3. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

___ Hire a Service ___ Done In-House ___ Both ___ Neither

4. How often do you recalibrate your pressure instruments?

___ Weekly	___	___ Daily	___
___ Monthly	___	___ As Required	___
___ Annually	___	___ Variably	___
___ Semi-Annual	___	___ Never	___
___ Quarterly	___	___ Other	___

_____

5. Do you think that the accuracy of your gauges and test equipment could affect your operating efficiency?

Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
___	___	___	___	___

6. Do you think that the accuracy of your gauges and test equipment could affect your operating safety?

Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
___	___	___	___	___

7. Do you think it would be important for your firm to own a pressure recalibrating instrument capable of transmitting data directly to a computer?

Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
____	____	____	____	____

8. If your company were to purchase a pressure recalibrating instrument, who do you think they would prefer to buy from?

Factory Direct	Dealership	Factory Rep.
____	____	____
____	____	____

9. What is your company's primary field of business?

_____

10. How many people does your company employ?

___ 1 to 25 ___ 26 to 50 ___ 51 to 100 ___ 101 to 500 ___ over 500

11. Please name the business publications (at least three) that you read regularly:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

APPENDIX EXHIBIT 3

Summary of Sample Populations

A. Domestic I.S.A. Mail List N=1407

Number of Returns	Percent of Returns	Industry	Job Functions*
29	12%	Petroleum	C, G, & I (only)
14	6	Gas	C, G, & I (only)
52	22	Chemicals	C, G, & I (only)
4	2	Nuclear Products	C, G, & I (only)
1	.5	Aerospace and Ordiance	C, G, & I (only)
12	5	Instrumentation Systems	C, G, & I (only)
11	5	Process Control Instruments	C, G, & I (only)
24	10	Utilities	C, G, & I (only)
7	3	Engineering Construction Firms	C, G, & I (only)
8	3	Mining (1), Drugs (2), Plastics (5)	
74	31	Others received: Pipes (8), Manufacturing (28), Consulting (12), Misc. (16), Distribution (8), Transp. (2).	
236	100%		

B. Foreign I.S.A. Mail List N=2319

No. Sent	No. Ret.	% Ret.	Locations	Industry	Job Functions*
1,619	232	13.8%	Canada Summary	(Misc. Industries)	C, G, & I (only)
258	30	11.6	Latin America Summary	(Misc. Industries)	C, G, & I (only)
442	72	16.2	Foreign Countries Summary	(Misc. Industries)	C, G, & I (only)

* C = Systems Design Engineering and Applied Research & Development.
G = Operations
I = Education

Appendix Exhibit 3 (cont'd)

B. EG&G Chandler Engineering Prospect Mail List N=276

Industry	Number of Returns	Number of Returns
Gas	16	29%
Manufacturing	9	17
Miscellaneous	8	15
Oil	6	11
Counsulting	4	7
Distribution	4	7
Electric Utilities	2	4
Chemicals	1	2
Education	1	2
Others	3	5
	54	100%

C. Thomas Register Phone List N=250

Industry	
Oil:	Refineries, Re-refineries, Storage, Recovery, Equipment Petrochemical: Plants, By-products.
Gas:	Derivatives, Processing, Stand-by, Purification, Separation, Recovery, Storage, Natural, Propane.
Piping:	High Pressure, Process
	Pressure Transducers
	Process Equipment and Instrumentation

APPENDIX EXHIBIT 4

Number Returned by Country

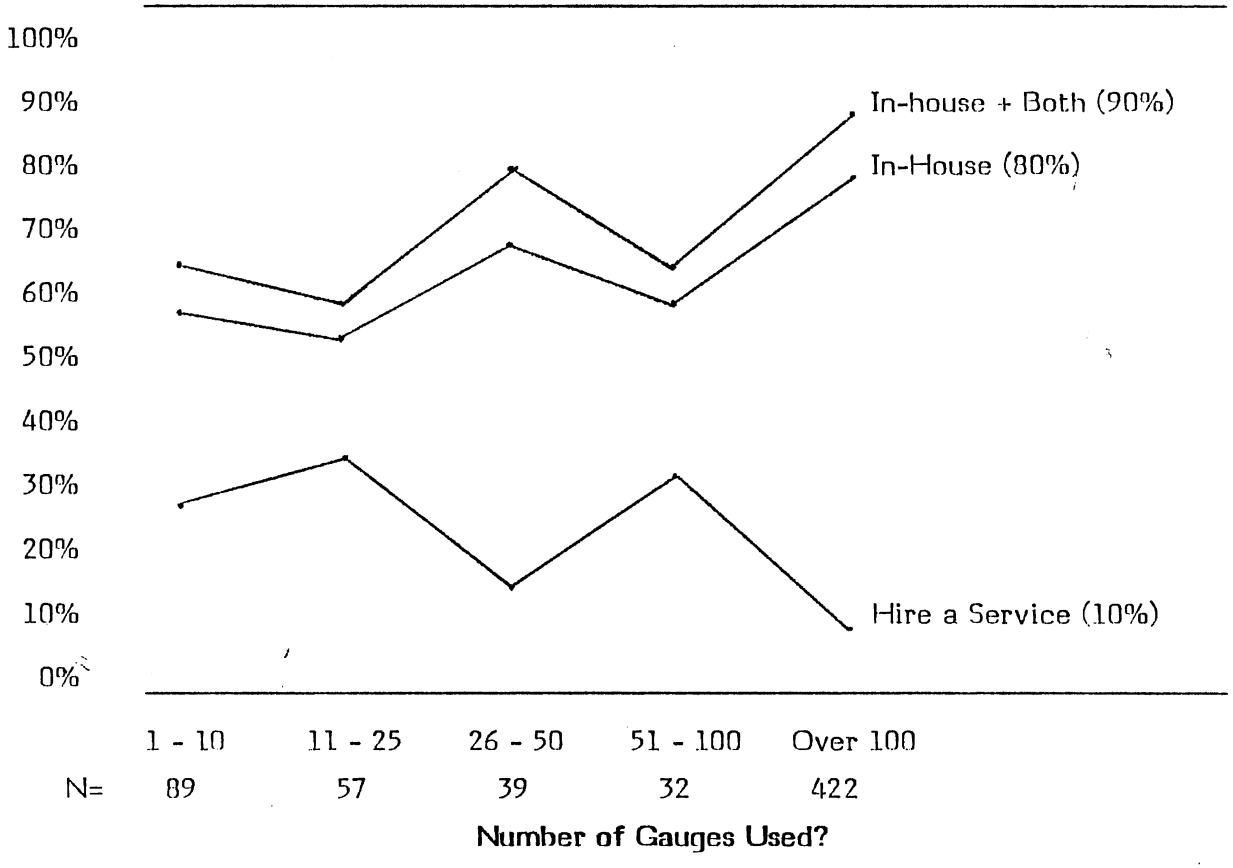
Country	Number Sent	Number Returned	Percent Returned	Percent "Yes"
Domestic I.S.A. Mail List	1,407	240	16.9	87.5
Canada	1,619	232	13.8	83
Latin America	258	30	11.6	90
Asia	139	28	20.1	93
Europe	263	37	14	73
Australia	40	7	17.5	100
Domestic EG&G Chandler List	276	54	19.5	89
Domestic Thomas Register List	250	218	86	54
Total Mailed	4,002	634	15.84%	
Phone & Mail	4,252	852	20%	

Number Returned by Industry

Industry	Number Returned	% of Returns
Petroleum	83	11
Gas	48	6.3
Chemicals	92	12.2
Electric Utilities	34	4.4
Consulting	43	5.6
Manufacturing	133	17.7
Instrumentation Systems	26	3.3
Process Control Instruments	24	3.1
Process Equipment & Instrumentation	43	5.6
Prressure Transducers	19	2.4
Distribution	25	3.2
Pipes	21	2.7
Education	21	2.7
Miscellaneous	99	13
Other:	70	9
(Mining (11), Drugs (2), Plastics (6), Nuclear (12), Aerospace (8), Water Utilities (4), Engineering Construction (14), Unknown (7), Transportation (6))	781	91.7%
Phone "No's"	71	8.3
	852	**100%**

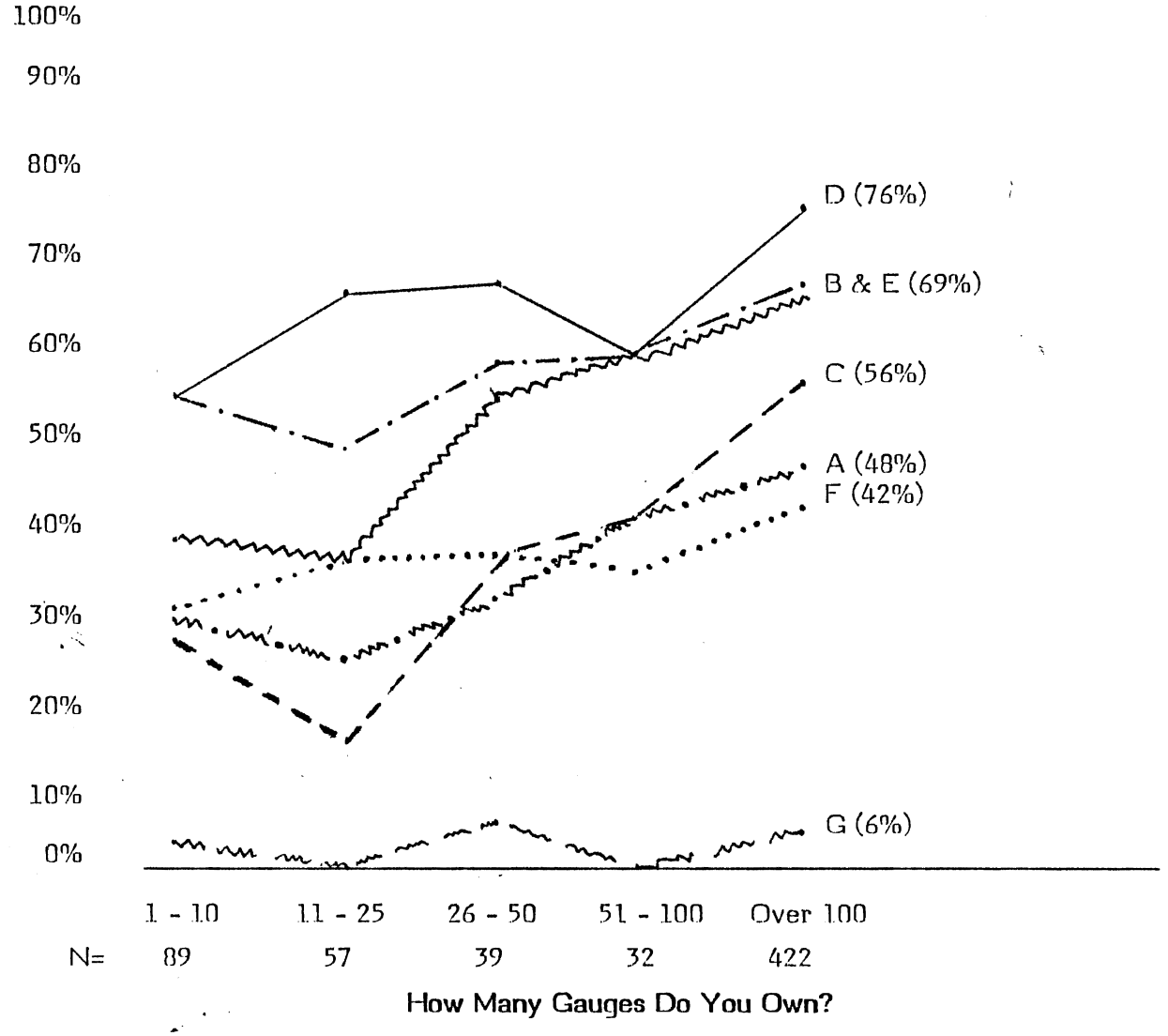
APPENDIX EXHIBIT 5

% of Companies Recalibrating In-House or Hiring a Service



APPENDIX EXHIBIT 6

% of Companies Owning Each Gauge Range



A = Less than 4" H_2O

B = 4" to 200" H_2O

C = 10" to 1,600" H_2O

D = Less than 500 p.s.i.

E - Less than 2,000 p.s.i.

F = Less than 20,000 p.s.i.

G = Less than 50,000 p.s.i.

APPENDIX EXHIBIT 7

Market Shares & Ratings of the Pressure Recalibrating Brands

	Company	Number Owned	Percentage[1]	Rating[2]	Number Rating
1.	Ametek	284	61	1.77	326
2.	Ashcroft	277	59	1.83	318
3.	EG&G Chandler	76	16	1.9	111
4.	Wallace & Tiernan*	56	12	1.55	38
5.	Refinery Suply	32	7	2.17	40
6.	Ruska	29	6	1.52	57
7.	TI	29	6	1.95	44
8.	Mensor	27	6	2.0	47
9.	Budenberg*	23	5	1.43	16
10.	Heise*	22	5	1.4	15
11.	Wika*	18	4	1.81	11
12.	Meriam*	13	3	1.43	7
13.	D H	11	2	1.92	27
14.	Marsh*	10	2	2.12	8
15.	Schwein	3	.6	2.11	17
16.	Other[3] *	209	45	1.65	171

1. "Percentage" is the number of companies owning each brand out of the 466 mail list companies that own recalibrating instruments.

2. Based on a scale from 1 to 4 where Excellent = 1, Good = 2, Fair = 3, and Poor = 4.

3. "Other" includes Wallace & Tiernan, Mensor, Budenberg, Heise, Wika, Meriam, Marsh, and others that were not mentioned enough to be presented in this list. All of these were write-ins on the mail survey, therefore their market shares could have been larger if they would have had the aided recall advantage.

* These write-ins may be over rated since they did not receive the "across-the-board" fair or poor ratings.

APPENDIX EXHIBIT 8

A. Percentage of Companies Owning Each Brand

Country	N	Ametek	Ashcroft	EG&G Chandler	Other
Domestic ISA Mail List	176	78%	65%	15%	32%
Domestic EG&G Chandler Mail List	42	60	55	40	29
Total Domestic	218	74	63	20	31
Canada	151	58	68	17	55
Latin America	26	35	42	8	54
Asia	24	50	58	4	63
Europe	22	23	18	5	73
Australia	6	33	-0-	-0-	83
Total N=466		**61%**	**59%**	**16%**	**45%**

B. Percentage of Companies Rating Each Brand

Country	N	Ametek	Ashcroft	EG&G Chandler	Other
Domestic ISA Mail List	209	75%	64%	21%	23%
Domestic EG&G Chandler Mail List	48	56	54	50	25
Total Domestic	257	72	62	27	26
Canada	187	47	54	15	33
Latin America	27	52	52	12	38
Asia	26	58	69	8	50
Europe	27	19	15	-0-	52
Australia	6	50	33	17	67
Total N=545		**59%**	**57%**	**20%**	**31%**

NOTE: The ownership percentages were based on the number of companies recalibrating in-house. The awareness percentages were based on the number of companies owning pressure gauges regardless of who recalibrates their equipment.

APPENDIX EXHIBIT 9

Product Attributes Ranked in Order of Importance[1]

		Product Attributes[2]											
A.	Industry	A	B	C	D	E	F	G	H	I	J	K	N
	Pipes	1	4	2	6	3	5	8	7	9	10	11	21
	Manufacturing	1	3	2	4	6	5	7	8	9	10	11	129
	Consulting	1	2	3	4	5	6	7	9	8	10	11	42
	Miscellaneous	1	2	3	5	4	6	7	8	9	10	11	97
	Distribution	1	4	2	3	6	5	7	8	9	10	11	25
	Pressure Transducers	*	*	*	*	*	*	*	*	*	*	*	19[3]
	Oil	1	2	3	4	6	5	7	9	8	10	11	82
	Gas	1	2	3	4	5	6	7	9	8	10	11	48
	Chemicals	1	3	2	4	5	6	7	9	8	11	10	90
	Other	1	2	3	4	5	6	7	9	8	11	10	67
	Process Control Instruments	1	2	3	4	5	6	7	9	8	10	11	49[4]
	Process Equipment & Instrumentation	*	*	*	*	*	*	*	*	*	*	*	43[3]
	Electric Utilities	1	3	2	4	5	6	7	8	9	11	10	33
	Education	1	2	4	5	3	8	6	7	9	10	11	21

1. Based on a scale from 1 = most important to 10.

2.
- A. Accuracy
- B. Sensitivity
- C. Durability
- D. Ease of Operation
- E. Portability
- F. Ease & Cost of Maintenance
- G. Wide Pressure Range
- H. Price
- I. Service from Manufacturer
- J. Warranty, Terms, & Conditions
- K. Delivery
- N. Number of Responses

3. Phone Survey

4. Includes Instrumentation Systems.

Appendix Exhibit 9 (Cont'd)

B.	Country	Product Attributes[1] A	B	C	D	E	F	G	H	I	J	K	N
	Domestic I.S.A Mail List	1	3	2	4	6	5	7	9	8	11	10	239
	Canada	1	2	3	4	5	7	6	8	9	10	11	225
	Latin America	1	2	3	5	6	4	7	8	9	10	11	30
	Asia	1	2	3	4	5	6	7	9	8	10	11	28
	Europe	1	2	3	4	6	7	5	9	8	10	11	37
	Australia	1	3	2	5	4	7	9	8	6	10	11	7
	EG&G Chandler	1	3	2	4	6	5	9	8	7	10	11	54
	Domestic Thomas Register	*	*	*	*	*	*	*	*	*	*	*	217[3]

1. Based on a scale from 1 = most important to 10.

2.
A. Accuracy
B. Sensitivity
C. Durability
D. Ease of Operation
E. Portability
F. Ease & Cost of Maintenance
G. Wide Pressure Range
H. Price
I. Service from Manufacturer
J. Warranty, Terms, & Conditions
K. Delivery
N. Number of Responses

3. Phone Survey

4. Includes Instrumentation Systems.

APPENDIX EXHIBIT 10

Write-In Answers Ranking the Product Attributes

N	Rank	
	1	Overpressure with Stability
	1	Consistency in Accuracy with Minimum Maintenance
	1	Upgrading of Instrument
4	1	Repeatability
2	2	Repeatability
	4	Repeatability
	1	Repeatability (precision)
	-	"Repeatability - Absolute accuracy can be sacrificed to repeatability in some applications."
	1	Precision
	2	Precision
	4	Precision
	3	Adaptability
	-	Adaptability
	1	Parts Availability
	3	Digital Display
	2	"Recalibration & Certification within Australia by National Standard Traceable Facility."
	3	"Size, Visability, and Clearness of markings (like the ability to be able to set dial location for good visability)."
	1	"Manufacturer must have an honest, reliable, distributor."
	-	Safe Operation
	1	Traceability to Physical Standards
	2	East of Reading
	3	Self Diagnastics
	1	Stability

NOTE: Ratings are based on a scale from 1 = most important to 10.

APPENDIX EXHIBIT 11

Consumer Ratings on Efficiency, Safety, and Computers

Country	N	Efficiency[1]	Safety[2]	Computer[3]
Domestic ISA Mail List	204	1.82	1.93	2.96
Domestic EG&G Chandler List	48	1.75	2.04	3.17
Canada	193	1.97	2.08	2.81
Latin America	30	1.63	1.46	2.86
Asia	29	1.41	1.24	2.93
Europe	28	1.64	1.85	2.32
Domestic Thomas Register[4]	113	2.31	2.7	3.26
Total (excludes Thomas Register. N=540, 540, and 543, respectively)		1.83	1.92	2.88

1. From the question "Do you think that accurate gauges and test equipment could increase your operating efficiency?" Mean ratings are shown based on a scale from 1 = Definitely Yes to 5 = Definitely Not.

2. From the question "Do you think that accurate gauges and test equipment could increase your operating safety?" Mean ratings are shown based on a scale from 1 = Definitely Yes to 5 = Definitely Not.

3. From the question "Should the calibrating instrument be capable of transmitting data directly to a computer?? Mean ratings are shown based on a scale from 1 = Definitely Yes to 5 = Definitely Not.

4. Thomas Register surveys were conducted by phone and the questions used were "Do you think that the accuracy of your gauges could affect your operating efficiency/safety?" and "Do you think that it would be important for your firm to own a pressure recalibrating device capable of transmitting data directly to a computer?

APPENDIX EXHIBIT 12

Rankings of Promotional Tools

A. Industry	A	B	C	D	E	F	N
Pipes	1	2	3	4	5	6	21
General Manufacturing	1	2	3	5	4	6	129
Consulting	1	2	3	4	5	6	42
Miscellaneous	1	2	3	4	5	6	97
Distribution	1	2	3	5	4	6	25
Pressure Tranducers	*	*	*	*	*	*	19
Oil	1	2	3	4	5	6	82
Gas	1	2	3	5	4	6	90
Chemicals	1	2	3	5	4	6	90
Other	1	2	3	4	5	6	67
Process Control Instrumentation	1	2	3	4	6	5	49
Process Equipment & Instrumentation	*	*	*	*	*	*	43
Electric Utilities	1	2	3	4	5	6	33
Education	1	2	5	4	3	6	21

1. A. Previous Experience with Supplier's Product
   B. Personal Recommendation
   C. Seminars or Demonstrations
   D. Exhibitions/Trade Shows
   E. Sales Presentations
   F. Advertising
   N. Number of Responses

NOTE: Ratings are based on a scale from 1 = most influential to 10 - least influential.

Appendix Exhibit 12 (Cont'd)

B.	Country	Rankings of Promotional A	B	C	D	E	F	N
	Domestic ISA Mail List	1	2	3	4	5	6	239
	Canada	1	2	3	5	4	6	225
	Latin America	1	3	2	5	4	6	30
	Asia	1	3	2	5	4	6	28
	Europe	1	2	3	4	5	6	37
	Australia	1	2	3	4	5	4	7
	EG&G Chandler	1	2	3	5	4	6	54
	Domestic Thomas Register	*	*	*	*	*	*	217

1. A. Previous Experience with Supplier's Product
   B. Personal Recommendation
   C. Seminars or Demonstrations
   D. Exhibitions/Trade Shows
   E. Sales Presentations
   F. Advertising
   N. Number of Responses

NOTE: Ratings are based on a scale from 1 = most influential to 10 = least influential.

APPENDIX EXHIBIT 13

Write-in Rating of Purchase Influences

Rating	
1	Technical specification
2	Manufacturer's specification
4	Recommendation of approval bodies
1	In-house testing
1	Field test
1	On-site trial
2	Technical evaluation by our engineers
-	Hands-on use
-	Available to us in the field of trial use
3	Product handbook availability
5	Who is distributor, & price/delivery
1	Test (loan for say 6 months)
1	Field testing
-	Trial use
1	In-house quality evaluation
1	Manufacturing literature
1	Reference lists
3	Sending detailed literature
3	Service trial

NOTE: Ratings are on a scale of 1 to 10 with one being most influential.

APPENDIX EXHIBIT 14

Readership Ratings by Industry and Country

A.	Industry	Most Read Magazines
	General Manufacturing	"Intech" 29%, "Machine Design" 18%, "Plant Engineer" 17%
	Consulting Firms	"Intech" 51%, "Control Engineer" 42%, "Hydrocarbon Processing" 21%
	Miscellaneous	"Intech" 52%, "Control Engineer" 25%, "Chemical Engineering" 16%
	Oil	"Intech" 49%, "Oil & Gas Journal" 38%, "Control Engineer" 26%
	Gas	"Intech" 29%, "Oil & Gas Journal" 27%, "Pipeline & Gas" 22%
	Chemicals	"Intech" 60%, "Control Engineer" 43%, "Chemical Engineer" 26%
	Process Control & Instrumentation Systems	"Intech" 63%, "Control Engineer" 30%, "I & C S" 15%,
	Electric Utilities	"Intech" 46%, "Power" 42%, "Control Engineer" 31%
B.	Country	
	Domestic ISA	"Intech" 55%, "Control Engineer" 43%, "I & C S" 22%, "Chemical Engineer" 16%
	EG&G Chandler	"Oil & Gas Journal" 25%, "Pipeline & Gas Journal" 25%, "Control Engineer" 16%
	Thomas Register	"Machine Design" 24%, "Oil & Gas Journal" 7%, "Chemical Engineer" 12%
	Canada	"Intech" 58%, "Process Equipment & Controls" 16%, "Chemical Engineer" 11%
	Latin America	"Intech" 58%, "Control Engineer" 37%, "Chemical Engineer" 29%
	Asia	"Intech" 50%, "Control Engineer" 39%, "Hydrocarbon Processing" 32%
	Europe	"Intech" 73%, "Chemical Engineer" 33%, "Control Engineer" 30%

Appendix Exhibit 15

Difference between N=422 to N=852

Domestic ISA Mail ___
Canada ___
Latin America ___
ASIA ___

Europe ___
Australia ___
EG&G Chandler Mail ___
Thomas Register ___

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

   N=___ +2.8% Yes -2.8% No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

   N=___ ___ 1 to 10 -1.5% 11 to 25 +1% 26 to 50 +.8% 51 to 100 -.5% over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

   N=___

-2%	Less than 4" H_2O	___	-10%	Less than 2000 p.s.i.	___
-2%	4" to 200" H_2O	___	-4%	Less than 20,000 p.s.i.	___
+3%	10" to 1600" H_2O	___	-2%	Less than 50,000 p.s.i.	___
-3%	Less than 500 p.s.i.	___	-1%	Other _____	___

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

   N=___ -2.5% Hire a Service +3% Done In-House -.5% Both -.5% Neither

   (If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

   N=___ +7% Yes -5% No -2% Uncertain

6. How often do you recalibrate your pressure instruments?

   N=___

___	Weekly	___	-1%	Daily	___
-2%	Monthly	___	+1%	As Required	___
+3%	Annually	___	+5.2%	Variably	___
-3%	Semi-Annual	___	-1.8%	Never	___
-1%	Quarterly	___		Other	___

   _____

7. How many of the following brands of pressure calibrating instruments does your company own?

N=___

-17%	Ametek (M&G)	___	-2%	DH	___	-1%	Ruska	___
-8%	Ashcroft (Dresser)	___	-2%	Mensor	___	+.1%	Schwien	___
-5%	EG&G Chandler	___	-2%	Refinery S.	___	-1%	TI	___
+4%	Other _____	___						

8. How would you rate the pressure calibrating instruments of the following companies?

N=___

Mean	N		%	Mean	N		%
-.03	___	Ametek (M&G)	-15%	+.2	___	Mensor	-3%
-.07	___	Ashcroft (Dresser)	-9%	-.03	___	Refinery S.	-4%
-.1	___	EG&G Chandler	-6%	-.03	___	Ruska	-4%
+.12	___	DH	-3%	+.11	___	Schwien	-2%
+.25	___	Other _____	+5%	-.05	___	TI	-3%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
+.04	-2.6%	+2.4%	+.1%	+1%	-1%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
-.01	-.4%	-1%	+1%	+2%	-1.6%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
-.14	+3.6%	+1.5%	-.5%	-3%	-1.4%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N=___

Mean		Rank	Mean		Rank
-.02	Sensitivity	-1	+.31	Ease and cost of maintenance	+1
+.1	Portability	-1	+.07	Warranty, terms, and conditions	-
+.03	Accuracy	-	+.22	Service from manufacturer	+2
+.2	Delivery	-	+.2	Wide pressure range	-
+.13	Durability	+1	+.18	Ease of operation	-
+.01	Price	-1	-.22	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=___

Mean		Rank	Mean		Rank
+.17	Personal recommendation	-	+.07	Exhibitions/Trade Shows	-
-.15	Advertising	-	-.09	Sales presentations	-
-.11	Previous experience w/ supplier's products	-	-.1	Seminars or demonstrations	-
			+.34	Other _____	-

Who would you prefer to buy from?

Factory Direct	Dealership	Factory Rep.
+4%	+2%	-6%
___	___	___

14. What is your primary, job-related responsibility?

N=___ _____

15. What is your company's primary field of business?

N=___ _____

16. How many people does your company employ?

N=___

___ - 1 to 25 -1% 26 to 50 - 51 to 100 - 101 to 500 +2% over 500

17. Please name the business publications (at least three) that you read regularly:

N=___

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

Appendix Exhibit 16

Difference between EG&G Chandler Survey and IAN Survey

EG&G Chandler Survey N=852

IAN Survey N= 71

Domestic ISA Mail ___ Europe ___

Canada ___ Australia ___

Latin America ___ EG&G Chandler Mail ___

ASIA ___ Thomas Register ___

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

   N=___ +1% Yes -1% No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

   N=___ -3% 1 to 10 +2% 11 to 25 +3% 26 to 50 -3% 51 to 100 +1% over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

   N=___

+1%	Less than 4" H_2O	___	-14% Less than 2000 p.s.i. ___
-6%	4" to 200" H_2O	___	-2% Less than 20,000 p.s.i. ___
-9%	10" to 1600" H_2O	___	0 Less than 50,000 p.s.i. ___
+12%	Less than 500 p.s.i.	___	-1% Other _____ ___

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

   N=___ +17% Hire a Service -6% Done In-House -9% Both -2% Neither

   (If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

   IAN

   N= 16 -17% Yes +23% No -5% Uncertain

6. How often do you recalibrate your pressure instruments?

   N=___

0	Weekly	___	-1%	Daily	___
+1%	Monthly	___	-4%	As Required	___
+3%	Annually	___	-17%	Variably	___
-2%	Semi-Annual	___	+13%	Never	___
-2%	Quarterly	___		Other	___

   _____

7. How many of the following brands of pressure calibrating instruments does your company own?

N=___

+8%	Ametek (M&G)	___	-2%	DH	___	+3%	Ruska	___
+10%	Ashcroft (Dresser)	___	+3%	Mensor	___	-1%	Schwien	___
-13%	EG&G Chandler	___	-4%	Refinery S.	___	+3%	TI	___
-14%	Other _____	___						

8. How would you rate the pressure calibrating instruments of the following companies?

N=___

Mean	N		%	Mean	N		%
-.04	___	Ametek (M&G)	-13%	+.25	___	Mensor	-2%
-.1	___	Ashcroft (Dresser)	-11%	+.83	___	Refinery S.	-2%
+.43	___	EG&G Chandler	-9%	+.48	___	Ruska	+3%
+.74	___	DH	+1%	+.29	___	Schwien	+6%
-.05	___	Other _____	-22%	+.05	___	TI	+1%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
+.02	-9%	+13%	-3%	+1%	-1%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
+.17	-13%	+11%	-3%	+7%	-3%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
-.1	-4%	+11%	+4%	-12%	+2%

Appendix Exhibit 16 (continued)

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N=___

Mean		Rank	Mean		Rank
+.24	Sensitivity	0	+.47	Ease and cost of maintenance	-1
+.8	Portability	+1	+.37	Warranty, terms, and conditions	0
+.01	Accuracy	0	-.1	Service from manufacturer	-1
+.24	Delivery	0	+.26	Wide pressure range	0
+.19	Durability	-1	+.4	Ease of operation	0
+.14	Price	+1	___	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=___

		Rank			Rank
-.27	Personal recommendation	0	+.01	Exhibitions/Trade Shows	+1
-.4	Advertising	0	-.2	Sales presentations	-1
-.04	Previous experience w/ supplier's products	0	+.2	Seminars or demonstrations	0
			___	Other _____	___

Who would you prefer to buy from?

Factory Direct	Dealership	Factory Rep.
+23%	-3%	-19%
___	___	___

14. What is your primary, job-related responsibility?

N=___ _____

15. What is your company's primary field of business?

N=___ General Manufacturing +26% Instrumentation -2%
Chemicals +8% Electric Utilities 0

16. How many people does your company employ?

N=___

Mean
-.09

0 1 to 25 +4% 26 to 50 -2% 51 to 100 +2% 101 to 500 -4% over 500

17. Please name the business publications (at least three) that you read regularly:

N=___

1. Intech -39%
2. Control Eng. -89%
3. Chemical Eng. -10%
4. Plant Eng. +6%
5. Hydrocarbon Proc. -7%
6. Machine Design +25%
   I&CS +12%

APPENDIX EXHIBIT 17

Order of Summary Statistics by Industry and Country

All Surveys	N = 852
Preliminary Results	N = 422
Difference Between N = 422 and N = 852	
IAN Surveys	N = 71
Difference Between IAN and All Surveys	
Pipes	N = 21
General Manufacturing	N = 129
Consulting Firms	N = 42
Miscellaneous Industries	N = 97
Distribution	N = 25
Pressure Transducers	N = 19
Oil	N = 82
Gas	N = 48
Chemicals	N = 48
Other	N = 67
Process Control Instruments and Instrumentation Systems	N = 49
Process Equipment and Instrumentation	N = 43
Electric Utilities	N = 33
Education	N = 21
Domestic ISA	N = 239
Canada	N = 225
Latin America	N = 30
Asia	N = 28
Europe	N = 37
Australia	N = 7
Domestic EG&G Chandler List	N = 54
Domestic Thomas Register	N = 217

All Surveys

N=752 + 100 = 852
Non-recorded telephone "No's"

240	Domestic ISA Mail	28%	37	Europe	4.3%
232	Canada	27%	7	Australia	.8%
30	Latin America	3.5%	54	EG&G Chandler Mail	6.3%
28	ASIA	3.2%	217	Thomas Register	25.5%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N=___ 662 (77.6%) Yes 190 (22.3%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=646 92 (14%) 1 to 10 57 (9%) 11 to 25 39 (6%) 26 to 50 33 (5%) 51 to 100 425 (66%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=543

237	Less than 4" H_2O	44%	339	Less than 2000 p.s.i.	62%
355	4" to 200" H_2O	65%	219	Less than 20,000 p.s.i.	40%
268	10" to 1600" H_2O	49%	38	Less than 50,000 p.s.i.	7%
343	Less than 500 p.s.i.	72%	27	Other _____	5%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=655 113 (17%) Hire a Service 470 (72%) Done In-House 60 (9%) Both 12 (2%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N=125 53 (42%) Yes 50 (40%) No 22 (18%) Uncertain

6. How often do you recalibrate your pressure instruments?

N=597

11	Weekly	2%	7	Daily	1%
78	Monthly	13%	34	As Required	6%
18	Annually	31%	196	Variably	33%
38	Semi-Annual	6%	24	Never	4%
21	Quarterly	4%		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 466

284	Ametek (M&G)	61%	11	DH	2%	29	Ruska	6%
277	Ashcroft (Dresser)	59%	27	Mensor	6%	3	Schwien	.6%
76	EG&G Chandler	16%	32	Refinery S.	7%	29	TI	6%
209	Other _____	45%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 545

Mean	N		%	Mean	N		%
1.77	320	Ametek (M&G)	59%	2.	47	Mensor	9%
1.83	309	Ashcroft (Dresser)	57%	2.17	40	Refinery S.	7%
1.9	108	EG&G Chandler	20%	1.52	55	Ruska	10%
1.92	23	DH	4%	2.11	17	Schwien	3%
1.65	167	Other _____	31%	1.95	44	TI	8%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 540	263	173	40	56	8
	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
Mean 1.83	49%	32%	7%	10%	1.4%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 540	264	148	44	70	14
	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
Mean 1.92	49%	27%	8%	13%	3%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 543	95	138	106	145	59
	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
Mean 2.88	17%	25%	20%	27%	11%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= between 525 to 501

Mean		Rank	Mean		Rank
2.98	Sensitivity	2	4.61	Ease and cost of maintenance	6
4.5	Portability	5	6.77	Warranty, terms, and conditions	10
1.43	Accuracy	1	5.52	Service from manufacturer	9
7	Delivery	11	5.1	Wide pressure range	7
3.03	Durability	3	3.88	Ease of operation	4
5.51	Price	8	2.28	Other _____	

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 98

Mean		Rank	Mean		Rank
3.07	Personal recommendation	2	4.47	Exhibitions/Trade Shows	4
5.35	Advertising	6	4.51	Sales presentations	5
1.61	Previous experience w/ supplier's products	1	3.6	Seminars or demonstrations	3
			2.04	Other _____	

Who would you prefer to buy from?

	Factory Direct	Dealership	Factory Rep.
N	38	14	46
%	39	14	47

14. What is your primary, job-related responsibility?

N=___ _____

15. What is your company's primary field of business?

	N	%		N	%
Instruments	158	29	Maintenance	59	10.8
Operations/Supervisors	134	24.7	Sys. Design	53	9.7
Engineers	62	11.4	Education	20	3.6

16. How many people does your company employ?

N=740

96 1 to 25 — 66 26 to 50 — 63 51 to 100 — 182 101 to 500 — 333 over 500

mean=3.79 — 13% — 9% — 9% — 25% — 45%

17. Please name the business publications (at least three) that you read regularly:

N=576

		N	%
1.	"Intech"	275	47.7%
2.	"Control Engineer"	149	25.8%
3.	"Chemical Engineer"	90	15.6%
	"I&CS"	64	11.8%
4.	"Oil & Gas Journal"	64	11.1%
	"Plant Engineer"	47	8.1%
5.	"Hydrocarbon Processing	39	6.7%
6.	"Machine Design"	38	6.5%

Preliminary Results N=422

Domestic ISA Mail 58%
Canada 1%
Latin America 1%
ASIA 1%

Europe 5%
Australia 1%
EG&G Chandler Mail 11%
Thomas Register 23%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N=422 316 Yes (74.8%) 106 No (25.1%) (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=306 42 1 to 10 (14%) 32 11 to 25 (10.5%) 15 26 to 50 (5%) 13 51 to 100 (4.2%) 204 over 100 (66.5%)

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=235

108	Less than 4" H_2O	46%	169	Less than 2000 p.s.i.	72%
157	4" to 200" H_2O	67%	106	Less than 20,000 p.s.i.	44%
123	10" to 1600" H_2O	9%	20	Less than 50,000 p.s.i.	9%
176	Less than 500 p.s.i.	75%	9	Other _____	4%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=30 59 Hire a Service (19%) 214 Done In-House (69%) 28 Both (9.5%) 19 Neither (2.5%)
(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N=66 23 Yes (35%) 30 No (45%) 13 Uncertain (20%)

6. How often do you recalibrate your pressure instruments?

N=190

5	Weekly	2%	6	Daily	2%
44	Monthly	15%	13	As Required	5%
82	Annually	28%	82	Variably	27.8%
27	Semi-Annual	9%	17	Never	5.8%
17	Quarterly	5%		Other	

7. How many of the following brands of pressure calibrating instruments does your company own?

N=190

149	Ametek (M&G)	78%	7	DH	4%	14	Ruska	7%
128	Ashcroft (Dresser)	67%	16	Mensor	8%	1	Schwien	5%
40	EG&G Chandler	21%	18	Refinery S.	9%	14	TI	7%
78	Other _____	41%						

8. How would you rate the pressure calibrating instruments of the following companies?

N=235

Mean	N		%	Mean	N		%
1.8	173	Ametek (M&G)	74%	1.8	28	Mensor	12%
1.9	154	Ashcroft (Dresser)	66%	2.2	25	Refinery S.	11%
2.0	62	EG&G Chandler	26%	1.57	33	Ruska	14%
1.8	18	DH	8%	2.0	12	Schwien	5%
1.4	60	Other _____	26%	2.0	27	TI	11%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=309
mean=1.88

163	80	20	30	16
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
52%	26%	6.4%	10%	5%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=308
mean=2.05

149	80	18	35	26
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
48%	26%	6%	11%	8.5%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=277
mean=3.06

43	61	51	80	42
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
15%	22%	18.5%	29%	15%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 237

Mean		Rank	Mean		Rank
3.0	Sensitivity	3	4.3	Ease and cost of maintenance	5
4.4	Portability	6	6.7	Warranty, terms, and conditions	10
1.4	Accuracy	1	5.3	Service from manufacturer	7
6.8	Delivery	11	5.3	Wide pressure range	7
2.9	Durability	2	3.7	Ease of operation	4
5.5	Price	9	2.4	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 66

Mean		Rank	Mean		Rank
2.9	Personal recommendation	2	4.4	Exhibitions/Trade Shows	4
5.5	Advertising	6	4.6	Sales presentations	5
1.5	Previous experience w/ supplier's products	1	3.7	Seminars or demonstrations	3
			2.4	Other _____	___

Who would you prefer to buy from?

N=66

Factory Direct	Dealership	Factory Rep.
23	8	35
35%	12%	53%

14. What is your primary, job-related responsibility?

N=___ _____

15. What is your company's primary field of business?

N=___ _____

16. How many people does your company employ?

N=345

45	1 to 25	35	26 to 50	31	51 to 100	85	101 to 500	149	over 500
	13%		10%		9%		25%		43%

mean=3.74

17. Please name the business publications (at least three) that you read regularly:

N=___

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

Difference between N=422 to N=852

Domestic ISA Mail ___
Canada ___
Latin America ___
ASIA ___

Europe ___
Australia ___
EG&G Chandler Mail ___
Thomas Register ___

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

   N=___ +2.8% Yes -2.8% No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

   N=___ ___ 1 to 10 -1.5% 11 to 25 +1% 26 to 50 +.8% 51 to 100 -.5% over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

   N=___

-2%	Less than 4" H_2O	___	-10%	Less than 2000 p.s.i.	___
-2%	4" to 200" H_2O	___	-4%	Less than 20,000 p.s.i.	___
+3%	10" to 1600" H_2O	___	-2%	Less than 50,000 p.s.i.	___
-3%	Less than 500 p.s.i.	___	-1%	Other _____	___

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

   N=___ -2.5% Hire a Service +3% Done In-House -.5% Both -.5% Neither

   (If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

   N=___ +7% Yes -5% No -2% Uncertain

6. How often do you recalibrate your pressure instruments?

   N=___

___	Weekly	___	-1%	Daily	___
-2%	Monthly	___	+1%	As Required	___
+3%	Annually	___	+5.2%	Variably	___
-3%	Semi-Annual	___	-1.8%	Never	___
-1%	Quarterly	___		Other	___

   _____

7. How many of the following brands of pressure calibrating instruments does your company own?

N=___

-17%	Ametek (M&G)	___	-2%	DH	___	-1%	Ruska	___
-8%	Ashcroft (Dresser)	___	-2%	Mensor	___	+.1%	Schwien	___
-5%	EG&G Chandler	___	-2%	Refinery S.	___	-1%	TI	___
+4%	Other _____	___						

8. How would you rate the pressure calibrating instruments of the following companies?

N=___

Mean	N		%	Mean	N		%
-.03	___	Ametek (M&G)	-15%	+.2	___	Mensor	-3%
-.07	___	Ashcroft (Dresser)	-9%	-.03	___	Refinery S.	-4%
-.1	___	EG&G Chandler	-6%	-.03	___	Ruska	-4%
+.12	___	DH	-3%	+.11	___	Schwien	-2%
+.25	___	Other _____	+5%	-.05	___	TI	-3%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
+.04	-2.6%	+2.4%	+.1%	+1%	-1%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
-.01	-.4%	-1%	+1%	+2%	-1.6%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
-.14	+3.6%	+1.5%	-.5%	-3%	-1.4%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N=___

Mean		Rank	Mean		Rank
-.02	Sensitivity	-1	+.31	Ease and cost of maintenance	+1
+.1	Portability	-1	+.07	Warranty, terms, and conditions	-
+.03	Accuracy	-	+.22	Service from manufacturer	+2
+.2	Delivery	-	+.2	Wide pressure range	-
+.13	Durability	+1	+.18	Ease of operation	-
+.01	Price	-1	-.22	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=___

Mean		Rank	Mean		Rank
+.17	Personal recommendation	___	+.07	Exhibitions/Trade Shows	___
-.15	Advertising	___	-.09	Sales presentations	___
-.11	Previous experience w/ supplier's products	___	-.1	Seminars or demonstrations	___
			+.34	Other _____	___

Who would you prefer to buy from?

Factory Direct	Dealership	Factory Rep.
+4%	+2%	-6%
___	___	___

14. What is your primary, job-related responsibility?

N=___ _____

15. What is your company's primary field of business?

N=___ _____

16. How many people does your company employ?

N=___

___ 1 to 25 -1% 26 to 50 ___ 51 to 100 ___ 101 to 500 +2% over 500

17. Please name the business publications (at least three) that you read regularly:

N=___

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

"IAN" SURVEYS

N = 71

Domestic ISA Mail ___
Canada ___
Latin America ___
ASIA ___

Europe ___
Australia ___
EG&G Chandler Mail ___
Thomas Register ___

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 71 — 56 (79%) Yes — 15 (21%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= N=55 — 6 (10.9%) 1 to 10 — 6 (10.9%) 11 to 25 — 5 (9%) 26 to 50 — 1 (1.8%) 51 to 100 — 37 (67.2%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 56					
25	Less than 4" H_2O	44.6%	27	Less than 2000 p.s.i.	48.2%
33	4" to 200" H_2O	58.9%	21	Less than 20,000 p.s.i.	37.59%
21	10" to 1600" H_2O	37.5%	4	Less than 50,000 p.s.i.	7.1%
47	Less than 500 p.s.i.	83.9%	2	Other _____	3.6%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 47 — 16 (34%) Hire a Service — 31 (65.9%) Done In-House — ___ Both — ___ Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 16 — 4 (25%) Yes — 10 (62.5%) No — 2 (12.5%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 55					
1	Weekly	1.8%	___	Daily	___
8	Monthly	14.3%	1	As Required	1.8%
19	Annually	33.9%	9	Variably	16.1%
2	Semi-Annual	3.6%	___	Never	___
1	Quarterly	1.8%	___	Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 31

24	Ametek (M&G)	68.5%	0	DH	0%	3	Ruska	8.5%
24	Ashcroft (Dresser)	68.5%	3	Mensor	8.5%	0	Schwien	0%
1	EG&G Chandler	2.8%	1	Refinery S.	2.8%	3	TI	8.5%
11	Other _____	31.4%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 56

Mean	N		%	Mean	N		%
1.73	26	Ametek (M&G)	46.4%	2.25	4	Mensor	7.19%
1.73	26	Ashcroft (Dresser)	46.4%	3	3	Refinery S.	5.3%
2.33	6	EG&G Chandler	10.7%	2	7	Ruska	12.5%
2.66	3	DH	5.3%	2.4	5	Schwien	8.9%
1.6	5	Other _____	8.99%	2	5	TI	8.9%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 55

22	25	2	6	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
40%	45%	3.6%	11%	0%

Mean 1.85

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 55

20	21	3	11	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
36%	38%	5.4%	20%	0%

Mean 2.09

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 55

7	20	13	8	7
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
12.7%	36%	23.6%	14.5%	12.7%

Mean 2.78

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 49

Mean		Rank	Mean		Rank
3.22	Sensitivity	2	5.08	Ease and cost of maintenance	5
5.30	Portability	6	7.14	Warranty, terms, and conditions	10
1.44	Accuracy	1	5.42	Service from manufacturer	8
7.24	Delivery	11	5.36	Wide pressure range	7
3.22	Durability	2	4.28	Ease of operation	4
5.65	Price	9	___	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 45

Mean		Rank	Mean		Rank
2.8	Personal recommendation	2	4.48	Exhibitions/Trade Shows	5
4.95	Advertising	6	4.31	Sales presentations	4
1.57	Previous experience w/ supplier's products	1	3.8	Seminars or demonstrations	3
			___	Other _____	___

Who would you prefer to buy from?

	Factory Direct	Dealership	Factory Rep.
N=47	N 29	5	13
	% 61.7%	10.6%	27.6%

14. What is your primary, job-related responsibility?

N=___ _____

15. What is your company's primary field of business?

N= 69		N	%		N	%
	Manufacturing		42%	Instrumentation		8.6%
	Chemical		18.8%	Electrical Utilities		4.3%
				Other		26.3%

16. How many people does your company employ?

N= 71

9 1 to 25 9 26 to 50 5 51 to 100 19 101 to 500 29 over 500

17. Please name the business publications (at least three) that you read regularly:

N= 66

		%			%
1.	IAN	39.9%	4.	Design News	16.6%
2.	Machine Design	31.8%	5.	Plant Eng.	13.6%
3.	I&CS	24%	6.	Intech	9%
	Control Eng.	18%		Chemical Eng	6%
				Oil & Gas Journal	3%

DIFFERENCE BETWEEN "IAN" SURVEY AND ALL SURVEYS

EG&G CHANDLER SURVEY N=852
IAN SURVEY N= 71

Domestic ISA Mail ___
Canada ___
Latin America ___
ASIA ___

Europe ___
Australia ___
EG&G Chandler Mail ___
Thomas Register ___

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N=___ +1% Yes -1% No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=___ -3% 1 to 10 +2% 11 to 25 +3% 26 to 50 -3% 51 to 100 +1% over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=___

+1%	Less than 4" H_2O	___	-14%	Less than 2000 p.s.i.	___
-6%	4" to 200" H_2O	___	-2%	Less than 20,000 p.s.i.	___
-9%	10" to 1600" H_2O	___	0	Less than 50,000 p.s.i.	___
+12%	Less than 500 p.s.i.	___	-1%	Other _____	___

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=___ +17% Hire a Service -6% Done In-House -9% Both -2% Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

IAN
N=16 -17% Yes +23% No -5% Uncertain

6. How often do you recalibrate your pressure instruments?

N=___

0	Weekly	___	-1%	Daily	___
+1%	Monthly	___	-4%	As Required	___
+3%	Annually	___	-17%	Variably	___
-2%	Semi-Annual	___	___	Never	___
-2%	Quarterly	___		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N=___

+8%	Ametek (M&G)	___	-2%	DH	___	+3%	Ruska	___
+10%	Ashcroft (Dresser)	___	+3%	Mensor	___	-1%	Schwien	___
-13%	EG&G Chandler	___	-4%	Refinery S.	___	+3%	TI	___
-14%	Other _____	___						

8. How would you rate the pressure calibrating instruments of the following companies?

N=___

Mean	N		%	Mean	N		%
.04	___	Ametek (M&G)	-13%	+.25	___	Mensor	-2%
-.1	___	Ashcroft (Dresser)	-11%	+.83	___	Refinery S.	-2%
+.43	___	EG&G Chandler	-9%	+.48	___	Ruska	+3%
+.74	___	DH	+1%	+.29	___	Schwien	+6%
-.05	___	Other _____	-22%	+.05	___	TI	+1%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
+.02	-9%	+13%	-3%	+1%	-1%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
+.17	-13%	+11%	-3%	+7%	-3%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=___

Mean	Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
-.1	-4%	+11%	+4%	-12%	+2%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N=___

Mean		Rank	Mean		Rank
+.24	Sensitivity	0	+.47	Ease and cost of maintenance	-1
+.8	Portability	+1	+.37	Warranty, terms, and conditions	0
+.01	Accuracy	0	-.1	Service from manufacturer	-1
+.24	Delivery	0	+.26	Wide pressure range	0
+.19	Durability	-1	+.4	Ease of operation	0
+.14	Price	+1	___	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=___

		Rank			Rank
-.27	Personal recommendation	0	+.01	Exhibitions/Trade Shows	+1
-.4	Advertising	0	-.2	Sales presentations	-1
-.04	Previous experience w/ supplier's products	0	+.2	Seminars or demonstrations	0
			___	Other _____	___

Who would you prefer to buy from?

Factory Direct	Dealership	Factory Rep.
+23%	-3%	-19%
___	___	___

14. What is your primary, job-related responsibility?

N=___ _____

15. What is your company's primary field of business?

N=___

General Manufacturing	+26%	Instrumentation	-2%
Chemicals	+ 8%	Elecric Utilities	0

16. How many people does your company employ?

N=___

Mean 0 1 to 25 +4% 26 to 50 -2% 51 to 100 +2% 101 to 500 -4% over 500
-.09

17. Please name the business publications (at least three) that you read regularly:

N=___

1. Intech	-39%	4. Plant Eng.	+6%
2. Control Eng	- 8%	5. Hydrocarbon Proc	-7%
3. Chemical Eng	-10%	6. Machine Design	+25%
I & C	=12%	Oil & Gas Journal	-8%

Pipes (P=1)

(Manufacturers & Pipeline Construction)

Domestic ISA Mail 38%
Canada 14%
Latin America 0%
ASIA 0%

Europe 0%
Australia 0%
EG&G Chandler Mail 0%
Thomas Register 48%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 21 — 21 (100%) Yes — 0 (0%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=21 — 7 (35%) 1 to 10 — 1 (5%) 11 to 25 — 0 (0%) 26 to 50 — 2 (10%) 51 to 100 — 10 (50%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 11

1	Less than 4" H_2O	9%	9	Less than 2000 p.s.i.	82%
5	4" to 200" H_2O	45%	7	Less than 20,000 p.s.i.	58%
2	10" to 1600" H_2O	18%	1	Less than 50,000 p.s.i.	9%
8	Less than 500 p.s.i.	73%	1	Other _____	9%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 20 — 6 (30%) Hire a Service — 11 (55%) Done In-House — 3 (15%) Both — 0 (0%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 6 — 3 (50%) Yes — 0 (0%) No — 3 (50%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 17

0	Weekly	0%	2	Daily	12%
3	Monthly	18%	0	As Required	0%
4	Annually	23%	4	Variably	23%
4	Semi-Annual	23%	0	Never	0%
0	Quarterly	0%		Other	

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 14

6	Ametek (M&G)	43%	0	DH	0%	1	Ruska	7%
3	Ashcroft (Dresser)	21%	0	Mensor	0%	0	Schwien	0%
5	EG&G Chandler	36%	1	Refinery S.	7%	0	TI	0%
2	Other _____	14%						

8. How would you rate the pressure calibrating instruments of the following companies?

N=11

Mean	N		%	Mean	N		%
2	9	Ametek (M&G)	82%	2	1	Mensor	9%
1.8	7	Ashcroft (Dresser)	64%	2	2	Refinery S.	18%
1.4	5	EG&G Chandler	45%	2.5	2	Ruska	18%
2	1	DH	9%	2	1	Schwien	9%
1.5	2	Other _____	18%	2	1	TI	9%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 21

mean=1.8

13	3	2	2	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
62%	14%	9%	9%	5%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 21

mean=2.14

13	2	0	2	4
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
62%	9%	0%	9%	19%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=17

mean=3.0

2	1	9	4	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
12%	6%	53%	23%	6%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N=11

Mean		Rank	Mean		Rank
3.4	Sensitivity	4	3.9	Ease and cost of maintenance	5
3.3	Portability	3	7.2	Warranty, terms, and conditions	10
1.3	Accuracy	1	5.0	Service from manufacturer	9
7.4	Delivery	11	4.9	Wide pressure range	8
3.2	Durability	2	4.6	Ease of operation	6
4.7	Price	7	___	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=11

Mean		Rank	Mean		Rank
2.5	Personal recommendation	2	3.7	Exhibitions/Trade Shows	4
6	Advertising	6	4.5	Sales presentations	5
2	Previous experience w/ supplier's products	1	3.1	Seminars or demonstrations	3
			1	Other _____	___

Who would you prefer to buy from?

	Factory Direct	Dealership	Factory Rep.
N=10	4 40%	2 20%	4 40%

14. What is your primary, job-related responsibility?

N=___ 54% Instruments 18% Operations/Supervisors

15. What is your company's primary field of business?

N=___ Pipes: Manufacturers & Pipeline Construction

16. How many people does your company employ?

N=21

mean=3.14 2 (9%) 1 to 25 | 6 (28%) 26 to 50 | 3 (14%) 51 to 100 | 7 (33%) 101 to 500 | 3 (14%) over 500

17. Please name the business publications (at least three) that you read regularly:

N=14

		N	%		
1.	"Oil & Gas Journal"	5	36%	4.	_____
2.	"Intech"	4	28%	5.	_____
3.	"Plant Engineer"	2	14%	6.	_____

N=129

Domestic ISA Mail 22%
Canada 24%
Latin America 3%
ASIA ___

Europe ___
Australia ___
EG&G Chandler Mail 7%
Thomas Register 37%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N=129 115 (89%) Yes 14 (11%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=111 22 (20%) 1 to 10 19 (17%) 11 to 25 7 (6%) 26 to 50 7 (6%) 51 to 100 56 (50%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=67

32	Less than 4" H_2O	53%	4	Less than 2000 p.s.i.	62%
39	4" to 200" H_2O	61%	32	Less than 20,000 p.s.i.	50%
32	10" to 1600" H_2O	50%	5	Less than 50,000 p.s.i.	8%
47	Less than 500 p.s.i.	73%	7	Other _____	11%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=112 28 (25%) Hire a Service 69 (62%) Done In-House 9 (8%) Both 6 (5%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N=24 11 (46%) Yes 10 (42%) No 3 (12%) Uncertain

6. How often do you recalibrate your pressure instruments?

N=108

3	Weekly	3%	2	Daily	2%
11	Monthly	10%	4	As Required	4%
29	Annually	27%	33	Variably	30%
14	Semi-Annual	13%	___	Never	___
4	Quarterly	4%		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 78

28	Ametek (M&G)	36%	2	DH	3%	4	Ruska	5%
41	Ashcroft (Dresser)	53%	1	Mensor	1%	1	Schwien	1%
6	EG&G Chandler	8%	0	Refinery S.	0	6	TI	8%
38	Other _____	49%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 67

Mean	N		%	Mean	N		%
1.91	33	Ametek (M&G)	49%	2.83	6	Mensor	9%
1.91	45	Ashcroft (Dresser)	67%	3	3	Refinery S.	4%
2.21	14	EG&G Chandler	21%	9	9	Ruska	13%
2	5	DH	7%	6	6	Schwien	9%
1.76	29	Other _____	43%	9	9	TI	13%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 114

Mean	58 Definitely Yes	30 Probably Yes	5 Uncertain	11 Probably Not	10 Definitely Not
1.99	51%	26%	4%	10%	9%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= ___

Mean	53 Definitely Yes	21 Probably Yes	10 Uncertain	14 Probably Not	15 Definitely Not
	47%	18%	9%	12%	13%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= ___

Mean	15 Definitely Yes	18 Probably Yes	16 Uncertain	25 Probably Not	19 Definitely Not
3.16	16%	19%	17%	27%	20%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= Between 66 to 61

Mean		Rank	Mean		Rank
3.52	Sensitivity	3	4.50	Ease and cost of maintenance	5
4.94	Portability	6	6.89	Warranty, terms, and conditions	10
1.55	Accuracy	1	5.51	Service from manufacturer	9
7.44	Delivery	11	5.00	Wide pressure range	7
2.65	Durability	7	3.62	Ease of operation	4
5.40	Price	8	1.71	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=37

Mean		Rank	Mean		Rank
3.15	Personal recommendation	2	4.60	Exhibitions/Trade Shows	5
5.30	Advertising	6	4.40	Sales presentations	4
1.51	Previous experience w/ supplier's products	1	3.44	Seminars or demonstrations	3
			1.67	Other _____	___

Who would you prefer to buy from?

Factory Direct	Dealership	Factory Rep.
13	6	18
35%	16%	49%

14. What is your primary, job-related responsibility?

N=68

17	Supervisors	25%	11 Maintenance	16%
14	Instruments	20%	10 Engineers	15%

15. What is your company's primary field of business?

N=___ Original Equipment Manufacturers

16. How many people does your company employ?

N= 125

Mean=3.86 9% 1 to 25 10% 26 to 50 11% 51 to 100 25% 101 to 500 45% over 500

17. Please name the business publications (at least three) that you read regularly:

N=___

1.	Intech	27	29%	4. Control Eng.	14	15%
2.	Machine Design	17	18%	5. Chemical Eng.	11	12%
3.	Plant Engineer	16	17%	6. Design News	10	11%
	I & CS	8	8%	Oil & Gas Journal	7	7%

Consulting Firms (P=3)

Domestic ISA Mail 28%
Canada 28%
Latin America 7%
ASIA 5%

Europe 16%
Australia 0%
EG&G Chandler Mail 10%
Thomas Register 0%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N=42 17 Yes (40%) 25 No (60%) (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=16 4 (25%) 1 to 10 — 4 (25%) 11 to 25 — 1 (6%) 26 to 50 — 0 (0%) 51 to 100 — 7 (44%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=17

7	Less than 4" H_2O	41%	9	Less than 2000 p.s.i.	53%
12	4" to 200" H_2O	70%	7	Less than 20,000 p.s.i.	41%
6	10" to 1600" H_2O	35%	0	Less than 50,000 p.s.i.	0%
12	Less than 500 p.s.i.	70%	0	Other _____	0%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=17 3 (18%) Hire a Service — 10 (59%) Done In-House — 3 (18%) Both — 1 (6%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N=4 1 (25%) Yes — 2 (50%) No — 1 (25%) Uncertain

6. How often do you recalibrate your pressure instruments?

N=16

0	Weekly	0%	0	Daily	0%
3	Monthly	19%	1	As Required	6%
4	Annually	25%	5	Variably	31%
1	Semi-Annual	6%	2	Never	12%
0	Quarterly	0%		Other	—

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 17

7	Ametek (M&G)	54%	1	DH	8%	1	Ruska	8%
10	Ashcroft (Dresser)	77%	0	Mensor	0%	0	Schwien	0%
1	EG&G Chandler	8%	1	Refinery S.	8%	2	TI	15%
3	Other _____	23%						

8. How would you rate the pressure calibrating instruments of the following companies?

N=17

Mean	N		%	Mean	N		%
1.58	12	Ametek (M&G)	70%	1.67	3	Mensor	18%
1.75	16	Ashcroft (Dresser)	94%	0	0	Refinery S.	0%
2.0	4	EG&G Chandler	23%	1.0	1	Ruska	6%
2.0	1	DH	6%	3.0	1	Schwien	6%
2.0	1	Other _____	6%	1.5	2	TI	12%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=19
mean=2.0

10	4	1	3	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
53%	21%	5%	16%	5%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=20
mean=1.95

10	5	2	2	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
50%	25%	10%	10%	5%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=19
mean=2.42

5	8	1	3	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
26%	42%	5%	16%	10%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N=21

Mean		Rank	Mean		Rank
2.3	Sensitivity	2	5.4	Ease and cost of maintenance	6
5.0	Portability	5	7.1	Warranty, terms, and conditions	10
1.4	Accuracy	1	6.0	Service from manufacturer	8
7.7	Delivery	11	5.6	Wide pressure range	7
3.3	Durability	3	4.2	Ease of operation	4
6.4	Price	9	___	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=21

Mean		Rank	Mean		Rank
3.1	Personal recommendation	2	4.4	Exhibitions/Trade Shows	4
5.6	Advertising	6	4.4	Sales presentations	5
1.1	Previous experience w/ supplier's products	1	3.3	Seminars or demonstrations	3
			3.5	Other _____	___

Who would you prefer to buy from?

N=0

Factory Direct	Dealership	Factory Rep.
___	___	___
___	___	___

14. What is your primary, job-related responsibility?

N=21

5	Instruments	3	Systems Design
4	Supervisors	3	Maintenance

15. What is your company's primary field of business?

N=___ Consulting firms

16. How many people does your company employ?

N=42

mean=2.7

~~14~~	1 to 25	~~4~~	26 to 50	~~8~~	51 to 100	~~12~~	101 to 500	~~4~~	over 500
33%		9%		19%		28%		9%	

17. Please name the business publications (at least three) that you read regularly:

N=33

		N	%		
1.	"Intech"	17	51%	4.	_____
2.	"Control Engineer"	14	42%	5.	_____
3.	~~"Hydrocarbon Processing"~~	~~7~~	~~21%~~	6.	_____
	~~"Chemical Engineer"~~	~~6~~	~~18%~~		
	"I&CS"	6	18%		

Miscellaneous Industries

Domestic ISA Mail 16%
Canada 56%
Latin America 7%
ASIA 4%

Europe 7%
Australia 0%
EG&G Chandler Mail 0%
Thomas Register 0%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 97 — 74 (76%) Yes — 23 (24%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 73 — 13 (18%) 1 to 10 — 7 (10%) 11 to 25 — 4 (5%) 26 to 50 — 5 (7%) 51 to 100 — 44 (60%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 72

27	Less than 4" H_2O	36%	33	Less than 2000 p.s.i.	46%
42	4" to 200" H_2O	58%	25	Less than 20,000 p.s.i.	35%
31	10" to 1600" H_2O	43%	3	Less than 50,000 p.s.i.	4%
47	Less than 500 p.s.i.	65%	1	Other _____	1%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 74 — 12 (16%) Hire a Service — 55 (74%) Done In-House — 6 (8%) Both — 1 (1%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 16 — 8 (50%) Yes — 6 (37.5%) No — 2 (12.5%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 71

1	Weekly	1%	0	Daily	0%
7	Monthly	10%	4	As Required	6%
24	Annually	34%	23	Variably	32%
3	Semi-Annual	4%	7	Never	10%
2	Quarterly	3%		Other	

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 61

27	Ametek (M&G)	44%	0	DH	0%	5	Ruska	8%
36	Ashcroft (Dresser)	59%	6	Mensor	10%	0	Schwien	0%
5	EG&G Chandler	8%	6	Refinery S.	10%	4	TI	7%
29	Other _____	48%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 74

Mean	N		%	Mean	N		%
1.9	33	Ametek (M&G)	45%	1.5	9	Mensor	12%
2.0	40	Ashcroft (Dresser)	54%	3.0	2	Refinery S.	3%
2.2	9	EG&G Chandler	12%	1.5	8	Ruska	11%
1.6	3	DH	4%	2.0	2	Schwien	3%
1.7	24	Other _____	32%	2.0	7	TI	9%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 75
mean=1.86

35	24	8	7	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
47%	32%	11%	9%	1%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 73
mean=2.02

33	21	6	10	3
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
45%	29%	8%	14%	4%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 74
mean=2.6

21	16	16	13	8
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
28%	22%	22%	18%	11%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N=71

Mean		Rank	Mean		Rank
3.2	Sensitivity	2	4.8	Ease and cost of maintenance	6
4.5	Portability	4	6.6	Warranty, terms, and conditions	10
1.4	Accuracy	1	5.6	Service from manufacturer	9
6.8	Delivery	11	4.9	Wide pressure range	7
3.6	Durability	3	4.5	Ease of operation	5
5.2	Price	8	1.0	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=71

Mean		Rank	Mean		Rank
3.1	Personal recommendation	2	4.3	Exhibitions/Trade Shows	4
4.9	Advertising	6	4.7	Sales presentations	5
1.6	Previous experience w/ supplier's products	1	3.6	Seminars or demonstrations	3
			1.0	Other _____	___

Who would you prefer to buy from?

N=0	Factory Direct	Dealership	Factory Rep.
	___	___	___
	___	___	___

14. What is your primary, job-related responsibility?

N=72

29%	Instruments	15%	Engineers	12%	Maintenance
18%	Operations/Supervisors			12%	Systems Design

15. What is your company's primary field of business?

N=___ Miscellaneous

16. How many people does your company employ?

N=97

mean=3.36

23	1 to 25	10	26 to 50	8	51 to 100	21	101 to 500	35	over 500
24%		10%		8%		22%		36%	

17. Please name the business publications (at least three) that you read regularly:

N=61

		N	%			N	%
1.	"Intech"	32	52%	4.	"I&CS"	5	8%
2.	"Control Engineer"	15	25%	5.	"Machine Design"	4	7%
3.	"Chemical Engineer"	10	16%	6.	"Plant Engineer"	4	7%

Distribution

(P=5)

Domestic ISA Mail 32%
Canada 32%
Latin America 0%
ASIA 8%

Europe 4%
Australia 0%
EG&G Chandler Mail 16%
Thomas Register 8%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 25 — 15 Yes (60%) — 10 No (40%) (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 13 — 4 (27%) 1 to 10 — 1 (7%) 11 to 25 — 1 (7%) 26 to 50 — 1 (7%) 51 to 100 — 8 (53%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 13

3	Less than 4" H_2O	23%	10	Less than 2000 p.s.i.	77%
7	4" to 200" H_2O	54%	6	Less than 20,000 p.s.i.	46%
7	10" to 1600" H_2O	54%	0	Less than 50,000 p.s.i.	0%
9	Less than 500 p.s.i.	69%	0	Other _____	0%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 15 — 4 (27%) Hire a Service — 11 (73%) Done In-House — 0 (0%) Both — 0 (0%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 3 — 0 (0%) Yes — 3 (100%) No — 0 (0%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 14

0	Weekly	0%	0	Daily	0%
2	Monthly	14%	0	As Required	0%
6	Annually	43%	4	Variably	29%
1	Semi-Annual	7%	0	Never	0%
1	Quarterly	7%		Other	

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 11

6	Ametek (M&G)	55%	0	DH	0%	1	Ruska	9%
6	Ashcroft (Dresser)	55%	1	Mensor	9%	0	Schwien	0%
4	EG&G Chandler	36%	1	Refinery S.	9%	2	TI	18%
1	Other _____	9%						

8. How would you rate the pressure calibrating instruments of the following companies?

N=13

Mean	N		%	Mean	N		%
1.7	7	Ametek (M&G)	54%	4.0	1	Mensor	8%
1.8	8	Ashcroft (Dresser)	62%	0.0	0	Refinery S.	0%
2.0	5	EG&G Chandler	38%	1.0	2	Ruska	15%
4.0	1	DH	8%	0.0	0	Schwien	0%
2.0	1	Other _____	8%	1.5	2	TI	15%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 15
mean=1.67

9	4	1	0	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
60%	27%	7%	0%	7%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=15
mean=2.26

7	3	1	2	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
47%	20%	7%	13%	13%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 13
mean=2.76

2	4	2	5	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
15%	31%	15%	38%	0%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 13

Mean		Rank	Mean		Rank
3.4	Sensitivity	4	4.3	Ease and cost of maintenance	5
4.4	Portability	6	6.7	Warranty, terms, and conditions	10
1.3	Accuracy	1	6.2	Service from manufacturer	9
7.2	Delivery	11	4.7	Wide pressure range	7
3.0	Durability	2	3.2	Ease of operation	3
5.3	Price	8	0	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 13

Mean		Rank	Mean		Rank
3.3	Personal recommendation	2	3.9	Exhibitions/Trade Shows	5
5.7	Advertising	6	3.7	Sales presentations	4
1.7	Previous experience w/ supplier's products	1	3.4	Seminars or demonstrations	3
			0	Other _____	___

Who would you prefer to buy from?

N=0

Factory Direct	Dealership	Factory Rep.
___	___	___
___	___	___

14. What is your primary, job-related responsibility?

N=13

38% Marketing/Sales — 15% Engineers
23% Operations/Supervisor — 15% miscellaneous

15. What is your company's primary field of business?

N=___ Distribution

16. How many people does your company employ?

N=25

mean=2.44

1 to 25	26 to 50	51 to 100	101 to 500	over 500
10	6	1	4	4
40%	24%	4%	16%	16%

17. Please name the business publications (at least three) that you read regularly:

N= 20

		N	%
1.	"Intech"	11	55%
2.	"Control Engineer"	6	30%
3.	"Oil & Gas Journal"	4	20%
4.			
5.			
6.			

Pressure Transducers (P=7)

Domestic ISA Mail 0%
Canada 0%
Latin America 0%
ASIA 0%

Europe 0%
Australia 0%
EG&G Chandler Mail 0%
Thomas Register 100%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 19 — 12 (63%) Yes — 7 (37%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 11 — 5 (45%) 1 to 10 — 2 (18%) 11 to 25 — 1 (9%) 26 to 50 — 2 (18%) 51 to 100 — 1 (9%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 0

___	Less than 4" H_2O	___	___	Less than 2000 p.s.i.	___
___	4" to 200" H_2O	___	___	Less than 20,000 p.s.i.	___
___	10" to 1600" H_2O	___	___	Less than 50,000 p.s.i.	___
___	Less than 500 p.s.i.	___	___	Other _____	___

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 12 — 1 (8%) Hire a Service — 6 (50%) Done In-House — 5 (42%) Both — 0 Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 0 ___ Yes ___ No ___ Uncertain

6. How often do you recalibrate your pressure instruments?

N= 0

___	Weekly	___	___	Daily	___
___	Monthly	___	___	As Required	___
___	Annually	___	___	Variably	___
___	Semi-Annual	___	___	Never	___
___	Quarterly	___		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 0

___	Ametek (M&G)	___	___	DH	___	___	Ruska	___
___	Ashcroft (Dresser)	___	___	Mensor	___	___	Schwien	___
___	EG&G Chandler	___	___	Refinery S.	___	___	TI	___
___	Other _____	___						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 0

Mean	N		%	Mean	N		%
___	___	Ametek (M&G)	___	___	___	Mensor	___
___	___	Ashcroft (Dresser)	___	___	___	Refinery S.	___
___	___	EG&G Chandler	___	___	___	Ruska	___
___	___	DH	___	___	___	Schwien	___
___	___	Other _____	___	___	___	TI	___

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 12
mean=1.91

8	1	0	2	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
67%	8%	0%	17%	8%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 12
mean=2.58

3	1	1	4	3
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
25%	8%	8%	33%	25%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 11
mean=1.54

9	0	1	0	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
82%	0%	9%	0%	9%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 0

		Rank			Rank
___	Sensitivity	___	___	Ease and cost of maintenance	___
___	Portability	___	___	Warranty, terms, and conditions	___
___	Accuracy	___	___	Service from manufacturer	___
___	Delivery	___	___	Wide pressure range	___
___	Durability	___	___	Ease of operation	___
___	Price	___	___	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 0

		Rank			Rank
___	Personal recommendation	___	___	Exhibitions/Trade Shows	___
___	Advertising	___	___	Sales presentations	___
___	Previous experience w/ supplier's products	___	___	Seminars or demonstrations	___
			___	Other _____	___

Who would you prefer to buy from?

N=9

Factory Direct	Dealership	Factory Rep.
6	1	2
~~67%~~	~~11%~~	~~22%~~

14. What is your primary, job-related responsibility?

N=___ _____

15. What is your company's primary field of business?

N=___ Pressure Transducers

16. How many people does your company employ?

N= 11

3	1 to 25	2	26 to 50	0	51 to 100	6	101 to 500	0	over 500
mean=2.81	27%		18%		0%		55%		0%

17. Please name the business publications (at least three) that you read regularly:

N= 7

		N	%		
1.	"Measurement &Control"	3	43%	4.	_____
2.	"Control Engineer"	2	29%	5.	_____
3.	"Design News"	2	29%	6.	_____
	"ASME"	2	29%		

Oil
(many were oil & gas)

(P=10)

Domestic ISA Mail 35%
Canada 23%
Latin America 6%
ASIA 6%

Europe 5%
Australia 0%
EG&G Chandler Mail 7%
Thomas Register 15%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 82 — 81 (99%) Yes — 1 (1%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 80 — 3 (4%) 1 to 10 — 4 (5%) 11 to 25 — 1 (1%) 26 to 50 — 3 (4%) 51 to 100 — 68 (86%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 71

32	Less than 4" H_2O	46%	50	Less than 2000 p.s.i.	71%
46	4" to 200" H_2O	66%	32	Less than 20,000 p.s.i.	46%
30	10" to 1600" H_2O	43%	6	Less than 50,000 p.s.i.	9%
50	Less than 500 p.s.i.	71%	4	Other _____	6%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 79 — 15 (19%) Hire a Service — 60 (76%) Done In-House — 4 (5%) Both — 0 (0%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 15 — 9 (60%) Yes — 4 (27%) No — 2 (13%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 75

3	Weekly	4%	1	Daily	1%
14	Monthly	19%	8	As Required	11%
15	Annually	20%	23	Variably	31%
5	Semi-Annual	7%	2	Never	3%
4	Quarterly	5%		Other	

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 64

40	Ametek (M&G)	63%	2	DH	3%	1	Ruska	2%
36	Ashcroft (Dresser)	56%	2	Mensor	3%	0	Schwien	0%
12	EG&G Chandler	19%	6	Refinery S.	9%	3	TI	5%
25	Other _____	39%						

8. How would you rate the pressure calibrating instruments of the following companies?

N=69

Mean	N		%	Mean	N		%
1.7	45	Ametek (M&G)	65%	2	4	Mensor	6%
1.8	42	Ashcroft (Dresser)	61%	2	7	Refinery S.	10%
1.7	18	EG&G Chandler	26%	1.4	5	Ruska	7%
1.8	6	DH	9%	2	2	Schwien	3%
1.6	21	Other _____	30%	2	4	TI	6%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 79 mean=1.84

36	31	2	8	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
46%	39%	3%	10%	3%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 80 mean=1.87

40	24	4	10	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
50%	30%	5%	13%	3%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 78 mean=2.91

13	21	12	24	8
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
17%	27%	15%	31%	10%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 69

Mean		Rank	Mean		Rank
2.7	Sensitivity	2	4.7	Ease and cost of maintenance	5
5.0	Portability	6	6.8	Warranty, terms, and conditions	10
1.4	Accuracy	1	5.8	Service from manufacturer	8
7.3	Delivery	11	5.2	Wide pressure range	7
3.4	Durability	3	3.9	Ease of operation	4
6.1	Price	9	4.3	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 65

Mean		Rank	Mean		Rank
2.9	Personal recommendation	2	4.4	Exhibitions/Trade Shows	4
5.4	Advertising	6	4.7	Sales presentations	5
1.9	Previous experience w/ supplier's products	1	3.4	Seminars or demonstrations	3
			3.2	Other _____	___

Who would you prefer to buy from?

N=11

Factory Direct	Dealership	Factory Rep.
3	0	8
27%	0%	73%

14. What is your primary, job-related responsibility?

N= ___ 35% Instruments 16% Engineers 24% Operations/Supervisors 13% Systems Design 7% Maintenance

15. What is your company's primary field of business?

N= ___ Oil (some were oil & gas)

16. How many people does your company employ?

N= 81

mean=4.39 2 (2.4%) 1 to 25 | 4 (5%) 26 to 50 | 5 (6%) 51 to 100 | 19 (23%) 101 to 500 | 51 (63%) over 500

17. Please name the business publications (at least three) that you read regularly:

N= 68

		N	%
1.	"Intech"	33	49%
2.	"Oil & Gas Journal"	26	38%
3.	"Control Engineer"	18	26%
	"Hydrocarbon Processing"	14	21%
4.	"Chemical Engineering"	13	19%
5.	"I&CS"	11	16%
6.	"Plant Engineer"	5	7%

Domestic ISA Mail 29%
Canada 27%
Latin America 0%
ASIA 0%

Europe 0%
Australia 0%
EG&G Chandler Mail 33%
Thomas Register 8%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 48 — 48 (100%) Yes — 0 (0%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 46 — 1 (2%) 1 to 10 — 4 (9%) 11 to 25 — 2 (4%) 26 to 50 — 4 (9%) 51 to 100 — 35 (76%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 42

11	Less than 4" H_2O	26%	33	Less than 2000 p.s.i.	79%
28	4" to 200" H_2O	67%	7	Less than 20,000 p.s.i.	17%
16	10" to 1600" H_2O	38%	2	Less than 50,000 p.s.i.	5%
30	Less than 500 p.s.i.	71%	2	Other _____	5%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 48 — 5 (10%) Hire a Service — 39 (81%) Done In-House — 3 (6%) Both — 1 (2%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 7 — 2 (29%) Yes — 4 (57%) No — 1 (14%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 47

0	Weekly	0%	0	Daily	0%
15	Monthly	32%	0	As Required	0%
8	Annually	17%	18	Variably	38%
2	Semi-Annual	4%	2	Never	4%
2	Quarterly	4%		Other _____	

7. How many of the following brands of pressure calibrating instruments does your company own?

N=42

34	Ametek (M&G)	81%	2	DH	5%	3	Ruska	7%
18	Ashcroft (Dresser)	43%	2	Mensor	5%	0	Schwien	0%
21	EG&G Chandler	50%	12	Refinery S.	29%	1	TI	2%
12	Other _____	29%						

8. How would you rate the pressure calibrating instruments of the following companies?

N=44

Mean	N		%	Mean	N		%
1.5	33	Ametek (M&G)	75%	1.3	3	Mensor	7%
2.0	17	Ashcroft (Dresser)	39%	2	14	Refinery S.	32%
1.6	23	EG&G Chandler	52%	1.6	5	Ruska	11%
1.6	3	DH	7%	2	1	Schwien	2%
1.5	10	Other _____	23%	2	3	TI	7%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=48 mean=1.93

26	9	5	6	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
54%	19%	10%	13%	4%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=48 mean=2.04

22	13	5	5	3
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
46%	27%	10%	28%	15%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=46 mean=3.02

8	10	8	13	7
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
17%	22%	17%	28%	15%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 44

Mean		Rank	Mean		Rank
2.3	Sensitivity	2	3.9	Ease and cost of maintenance	6
3.7	Portability	5	6.0	Warranty, terms, and conditions	10
1.1	Accuracy	1	5.3	Service from manufacturer	8
6.4	Delivery	11	5.1	Wide pressure range	7
3.1	Durability	3	3.3	Ease of operation	4
5.3	Price	9	1	Other _____	

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=43

Mean		Rank	Mean		Rank
2.4	Personal recommendation	2	4.6	Exhibitions/Trade Shows	5
5.9	Advertising	6	4.4	Sales presentations	4
1.4	Previous experience w/ supplier's products	1	3.4	Seminars or demonstrations	3
			0	Other _____	

Who would you prefer to buy from?

N=4

Factory Direct	Dealership	Factory Rep.
1	0	3
25%	0%	75%

14. What is your primary, job-related responsibility?

N= ___

36% Instruments
36% Operations/Supervisors
9% Maintenance
7% Systems Design
7% Engineers

15. What is your company's primary field of business?

N= ___ Gas

16. How many people does your company employ?

N=48

mean=3.7

1 to 25	26 to 50	51 to 100	101 to 500	over 500
8	2	8	8	22
17%	4%	17%	17%	46%

17. Please name the business publications (at least three) that you read regularly:

N=41

		N	%
1.	"Intech"	12	29%
2.	"Oil & Gas Journal"	11	27%
3.	'Pipeline & Gas Journal"	9	22%
	" Pipeline Industry"	7	17%
4.	"Hydrocarbon Processing"	5	12%
5.	"Chemical Engineer"	4	10%
6.	"Control Engineer"	3	7%

N = 90

Domestic ISA Mail 58%
Canada 26%
Latin America 3%
ASIA 8%

Europe 4%
Australia 0%
EG&G Chandler Mail 1%
Thomas Register 0%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 90 — 90 (100%) Yes — 0 (0%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 88 — 2 (2%) 1 to 10 — 0 (0%) 11 to 25 — 2 (2%) 26 to 50 — 3 (3%) 51 to 100 — 81 (92%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 90

46	Less than 4" H_2O	51%	59	Less than 2000 p.s.i.	66%
65	4" to 200" H_2O	72%	30	Less than 20,000 p.s.i.	33%
51	10" to 1600" H_2O	57%	6	Less than 50,000 p.s.i.	7%
65	Less than 500 p.s.i.	72%	5	Other _____	6%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 90 — 10 (11%) Hire a Service — 69 (77%) Done In-House — 11 (12%) Both — ___ Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 20 — 11 (55%) Yes — 5 (25%) No — 4 (20%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 86

0	Weekly	0%	___	Daily	___
8	Monthly	9%	3	As Required	3%
34	Annually	40%	36	Variably	42%
2	Semi-Annual	2%	___	Never	___
2	Quarterly	2%		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 80

58	Ametek (M&G)	73%	0	DH	0%	3	Ruska	4%
55	Ashcroft (Dresser)	69%	2	Mensor	3%	0	Schwien	0
3	EG&G Chandler	4%	0	Refinery S.	0%	2	TI	3%
31	Other _____	39%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 90

Mean	N		%	Mean	N		%
1.67	58	Ametek (M&G)	64%	2.5	2	Mensor	2%
1.69	55	Ashcroft (Dresser)	61%	0	0	Refinery S.	0%
2.14	7	EG&G Chandler	8%	2	3	Ruska	3%
0	0	DH	0%	0	0	Schwien	0%
1.75	24	Other _____	27%	1.67	3	TI	3%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=87

Mean	40 Definitely Yes	26 Probably Yes	9 Uncertain	2 Probably Not	0 Definitely Not
1.92	46%	30%	10%	14%	0%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=87

Mean	41 Definitely Yes	31 Probably Yes	5 Uncertain	10 Probably Not	0 Definitely Not
1.82	47%	36%	6%	11%	0%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=90

Mean	6 Definitely Yes	19 Probably Yes	17 Uncertain	31 Probably Not	17 Definitely Not
3.38	7%	21%	19%	34%	19%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= Between 83-89

		Rank			Rank
3.41	Sensitivity	3	4.84	Ease and cost of maintenance	5
4.55	Portability	5	7.17	Warranty, terms, and conditions	11
1.51	Accuracy	1	5.48	Service from manufacturer	8
6.96	Delivery	10	4.94	Wide pressure range	7
2.97	Durability	2	4.16	Ease of operation	4
5.58	Price	9	2	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= Between 83-89

Mean		Rank	Mean		Rank
2.98	Personal recommendation	2	4.48	Exhibitions/Trade Shows	5
5.41	Advertising	6	4.42	Sales presentations	4
1.5	Previous experience w/ supplier's products	1	3.75	Seminars or demonstrations	3
			2.25	Other _____	___

Who would you prefer to buy from?

Factory Direct	Dealership	Factory Rep.
___	___	___
___	___	___

14. What is your primary, job-related responsibility?

N= ___

Instruments	33%	Maintenance	17%
Operations/supervisors	25%	Engineers	12%
		Systems design	10%

15. What is your company's primary field of business?

N= ___ Chemicals

16. How many people does your company employ?

N= 90

Mean=4.61

0	1 to 25	3	26 to 50	2	51 to 100	22	101 to 500	63	over 500
0%		3%		2%		24%		70%	

17. Please name the business publications (at least three) that you read regularly:

N= 81

1.	Intech	60%	49		
2.	Control Eng.	43%	35		
3.	Chemical Eng	26%	21		
	I & CS	17%	14		
4.	Plant Eng.	15%	12		
5.	Chemical Proc	14%	11		
6.	Hydrocarbon Proc	9%	7		
	Control & Instrumentation	7%	6		

Other (P=.,6,21,22,30,40,71,80)

Domestic ISA Mail 39%
Canada 34%
Latin America 3%
ASIA 3%

Europe 7%
Australia 0%
EG&G Chandler Mail 4%
Thomas Register 9%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 67 62 (93%) Yes 5 (7%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 62 0 (0%) 1 to 10 4 (6%) 11 to 25 3 (5%) 26 to 50 1 (2%) 51 to 100 54 (87%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 55

32	Less than 4" H_2O	58%	34	Less than 2000 p.s.i.	62%
41	4" to 200" H_2O	75%	25	Less than 20,000 p.s.i.	45%
34	10" to 1600" H_2O	62%	5	Less than 50,000 p.s.i.	9%
46	Less than 500 p.s.i.	84%	1	Other _____	2%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 60 5 (8%) Hire a Service 50 (83%) Done In-House 5 (8%) Both 0 (0%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 6 3 (50%) Yes 3 (50%) No 0 (0%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 7

___	Weekly	2%	___	Daily	2%
___	Monthly	7%	___	As Required	7%
___	Annually	28%	___	Variably	39%
___	Semi-Annual	7%	___	Never	2%
___	Quarterly	7%		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 55

31	Ametek (M&G)	56%	4	DH	7%	3	Ruska	5%
26	Ashcroft (Dresser)	47%	4	Mensor	7%	0	Schwien	0%
9	EG&G Chandler	16%	2	Refinery S.	4%	5	TI	9%
28	Other _____	51%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 56

Mean	N		%	Mean	N		%
1.6	32	Ametek (M&G)	57%	2	6	Mensor	11%
1.7	29	Ashcroft (Dresser)	52%	2	2	Refinery S.	4%
1.7	9	EG&G Chandler	16%	1.5	4	Ruska	7%
1.5	4	DH	7%	2	1	Schwien	2%
1.6	25	Other _____	45%	1.8	5	TI	9%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 58

32	15	2	6	3
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
55%	26%	3%	10%	5%

mean=1.84

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=56

26	15	5	5	5
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
46%	27%	9%	9%	9%

mean=2.07

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 56

9	16	7	16	8
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
16%	29%	13%	29%	14%

mean=2.96

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= ?

Mean		Rank	Mean		Rank
2.8	Sensitivity	3	5.3	Ease and cost of maintenance	6
4.6	Portability	5	7.0	Warranty, terms, and conditions	11
1.3	Accuracy	1	5.4	Service from manufacturer	7
6.8	Delivery	10	5.6	Wide pressure range	8
2.8	Durability	2	3.9	Ease of operation	4
5.8	Price	9	2.3	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= ?

Mean		Rank	Mean		Rank
3.5	Personal recommendation	2	4.5	Exhibitions/Trade Shows	4
5.4	Advertising	6	4.6	Sales presentations	5
1.4	Previous experience w/ supplier's products	1	3.8	Seminars or demonstrations	3
			0	Other _____	___

Who would you prefer to buy from?

	Factory Direct	Dealership	Factory Rep.
N=4	0	0	4
	0%	0%	100%

14. What is your primary, job-related responsibility?

N= 53

38% Instruments — 11% Systems Design
23% Operations/Supervisors — 11% Engineer

15. What is your company's primary field of business?

N= ___

21% Eng. Construction	12% Aerospace	9% Plastics
15% Mining	10% Unknown	6% Water Utilities
15% Nuclear	9% Transportation	3% Drugs

16. How many people does your company employ?

N= 67

mean=4.36

3	1 to 25	1	26 to 50	1	51 to 100	25	101 to 500	37	over 500
5%		2%		2%		37%		55%	

17. Please name the business publications (at least three) that you read regularly:

N= ?

	N	%		N	%
1. "Intech"	?	54%	4. "Hydrocarbon Processing"	?	11%
2. "Control Engineer"		30%	5. "Oil & Gas Journal"		11%
3. "Chemical Engineer"		16%	6. "Plant Engineer"		7%
"I&CS"		11%	"Machine Design"		5%

Process Control Instruments & Instrumentation Systems

(P=50&60)

Domestic ISA Mail 47%
Canada 33%
Latin America 6%
ASIA 4%

Europe 4%
Australia 2%
EG&G Chandler Mail 0%
Thomas Register 4%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N=49 40 (82%) Yes 9 (18%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=40 16 (40%) 1 to 10 5 (13%) 11 to 25 3 (8%) 26 to 50 0 (0%) 51 to 100 16 (40%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=38

19	Less than 4" H_2O	50%	22	Less than 2000 p.s.i.	58%
25	4" to 200" H_2O	66%	17	Less than 20,000 p.s.i.	45%
22	10" to 1600" H_2O	58%	7	Less than 50,000 p.s.i.	18%
31	Less than 500 p.s.i.	34%	4	Other _____	11%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=40 11 (28%) Hire a Service 25 (63%) Done In-House 4 (10%) Both 0 (0%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N=13 2 (15%) Yes 9 (69%) No 2 (15%) Uncertain

6. How often do you recalibrate your pressure instruments?

N=41

0	Weekly	0%	0	Daily	0%
6	Monthly	15%	2	As Required	5%
15	Annually	37%	9	Variably	22%
2	Semi-Annual	5%	1	Never	2%
1	Quarterly	2%		Other	

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 29

13	Ametek (M&G)	45%	0	DH	0%	2	Ruska	7%
14	Ashcroft (Dresser)	48%	2	Mensor	7%	0	Schwien	0%
3	EG&G Chandler	10%	2	Refinery S.	7%	1	TI	3%
18	Other _____	62%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 38

Mean	N		%	Mean	N		%
2	20	Ametek (M&G)	53%	1.8	5	Mensor	13%
2	18	Ashcroft (Dresser)	47%	2.7	4	Refinery S.	11%
2.1	7	EG&G Chandler	18%	1.6	8	Ruska	21%
.2	2	DH	5%	2	2	Schwien	5%
1.3	11	Other _____	29%	1.6	3	TI	8%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 40 mean=1.85

17	15	5	3	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
43%	38%	13%	8%	0%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 40 mean=2.27

18	6	5	9	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
45%	15%	13%	23%	5%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 39 mean=2.74

5	16	9	7	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
13%	41%	23%	18%	5%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 36

Mean		Rank	Mean		Rank
2.3	Sensitivity	2	4.7	Ease and cost of maintenance	6
4.6	Portability	5	6.6	Warranty, terms, and conditions	10
1.3	Accuracy	1	5.2	Service from manufacturer	8
6.9	Delivery	11	5.0	Wide pressure range	7
2.8	Durability	3	3.3	Ease of operation	4
5.4	Price	9	1.7	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 37

Mean		Rank	Mean		Rank
3.0	Personal recommendation	2	4.8	Exhibitions/Trade Shows	6
4.6	Advertising	5	4.1	Sales presentations	4
1.5	Previous experience w/ supplier's products	1	3.6	Seminars or demonstrations	3
			1.5	Other _____	___

Who would you prefer to buy from?

N=2	Factory Direct	Dealership	Factory Rep.
	2	0	0
	100%		

14. What is your primary, job-related responsibility?

N=___

26% Operations/Supervisor	13% Executives
18% Systems Design	11% Instruments
16% Maintenance	8% Engineers

15. What is your company's primary field of business?

N=___

48% Process Control Instruments
52% Instrumentation Systems

16. How many people does your company employ?

N=48

mean=2.91

14	1 to 25	8	26 to 50	6	51 to 100	8	101 to 500	12	over 500
29%		17%		13%		17%		25%	

17. Please name the business publications (at least three) that you read regularly:

N=40

		N	%			N	%
1.	"Intech"	25	63%	4.	"Machine Design"	5	13%
2.	"Control Engineer	12	30%	5.	"Chemical Engineer"	4	10%
3.	"I&CS"	6	15%	6.	"Design News"	4	10%

Domestic ISA Mail 0%
Canada 0%
Latin America 0%
ASIA 0%

Europe 0%
Australia 0%
EG&G Chandler Mail 0%
Thomas Register 100%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N=43 21 (49%) Yes 22 (51%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=18 9 (50%) 1 to 10 1 (6%) 11 to 25 5 (28%) 26 to 50 2 (11%) 51 to 100 1 (6%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=0

0	Less than 4" H_2O	0	Less than 2000 p.s.i.
0	4" to 200" H_2O	0	Less than 20,000 p.s.i.
0	10" to 1600" H_2O	0	Less than 50,000 p.s.i.
0	Less than 500 p.s.i.	0	Other _____

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=21 7 (33%) Hire a Service 10 (48%) Done In-House 1 (5%) Both 3 (14%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N=0 ___ Yes ___ No ___ Uncertain

6. How often do you recalibrate your pressure instruments?

N=0

___	Weekly	___	Daily
___	Monthly	___	As Required
___	Annually	___	Variably
___	Semi-Annual	___	Never
___	Quarterly	___	Other _____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 0

___	Ametek (M&G)	___	___	DH	___	___	Ruska	___
___	Ashcroft (Dresser)	___	___	Mensor	___	___	Schwien	___
___	EG&G Chandler	___	___	Refinery S.	___	___	TI	___
___	Other _____	___						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 0

Mean	N		%	Mean	N		%
___	___	Ametek (M&G)	___	___	___	Mensor	___
___	___	Ashcroft (Dresser)	___	___	___	Refinery S.	___
___	___	EG&G Chandler	___	___	___	Ruska	___
___	___	DH	___	___	___	Schwien	___
___	___	Other _____	___	___	___	TI	___

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 21 mean=2.76

7	4	0	7	3
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
33%	19%	0%	33%	14%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 21 mean=2.09

8	4	1	5	3
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
38%	19%	5%	24%	14%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 21 mean=4.4

0	1	0	6	8
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
0%	5%	0%	40%	53%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 0

		Rank			Rank
___	Sensitivity	___	___	Ease and cost of maintenance	___
___	Portability	___	___	Warranty, terms, and conditions	___
___	Accuracy	___	___	Service from manufacturer	___
___	Delivery	___	___	Wide pressure range	___
___	Durability	___	___	Ease of operation	___
___	Price	___	___	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 0

		Rank			Rank
___	Personal recommendation	___	___	Exhibitions/Trade Shows	___
___	Advertising	___	___	Sales presentations	___
___	Previous experience w/ supplier's products	___	___	Seminars or demonstrations	___
			___	Other _____	___

Who would you prefer to buy from?

N=20	Factory Direct	Dealership	Factory Rep.
	8	5	7
	40%	25%	35%

14. What is your primary, job-related responsibility?

N=___ _____

15. What is your company's primary field of business?

N=___ Process Equipment & Instrumentation

16. How many people does your company employ?

N= 21

3	1 to 25	3	26 to 50	5	51 to 100	6	101 to 500	4	over 500
14%		14%		24%		29%		19%	

17. Please name the business publications (at least three) that you read regularly:

N= 13

		N	%			N	%
1.	"Machine Design"	5	38%	4.	"Control Engineer"	2	15%
2.	"Chemical Engineer"	3	23%	5.	"Intech"	0	0%
3.	"Design Engineer"	3	23%	6.			

Electric Utilities

(P=70)

Domestic ISA Mail 72%
Canada 19%
Latin America 0%
ASIA 3%

Europe 0%
Australia 0%
EG&G Chandler Mail 6%
Thomas Register 0%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N=33 — 33 Yes (100%) — 0 No (0%) (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=33 — 1 (3%) 1 to 10 — 1 (3%) 11 to 25 — 1 (3%) 26 to 50 — 0 (0%) 51 to 100 — 30 (91%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=33

16	Less than 4" H_2O	48%	26	Less than 2000 p.s.i.	79%
27	4" to 200" H_2O	82%	24	Less than 20,000 p.s.i.	73%
25	10" to 1600" H_2O	76%	3	Less than 50,000 p.s.i.	9%
27	Less than 500 p.s.i.	82%	0	Other _____	0%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=33 — 2 (6%) Hire a Service — 27 (82%) Done In-House — 4 (12%) Both — 0 (0%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N=5 — 2 (40%) Yes — 2 (40%) No — 1 (20%) Uncertain

6. How often do you recalibrate your pressure instruments?

N=31

0	Weekly	0%	0	Daily	0%
2	Monthly	6%	1	As Required	3%
16	Annually	48%	13	Variably	39%
0	Semi-Annual	0%	0	Never	0%
1	Quarterly	3%	0	Other	

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 31

25	Ametek (M&G)	81%	0	DH	0%	3	Ruska	10%
22	Ashcroft (Dresser)	71%	6	Mensor	19%	2	Schwien	6%
4	EG&G Chandler	13%	4	Refinery S.	13%	3	TI	10%
11	Other _____	35%						

8. How would you rate the pressure calibrating instruments of the following companies?

N=33

Mean	N		%	Mean	N		%
1.9	27	Ametek (M&G)	82%	2	7	Mensor	21%
1.9	23	Ashcroft (Dresser)	70%	2.2	4	Refinery S.	12%
2	5	EG&G Chandler	15%	1.2	6	Ruska	18%
0	0	DH	0%	2	1	Schwien	3%
1.5	9	Other _____	27%	2	3	TI	9%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 32

mean=1.78

17	9	2	4	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
53%	28%	6%	13%	0%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 32

mean=1.68

19	8	1	4	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
59%	25%	3%	13%	0%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 33

mean=2.57

8	7	9	9	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
24%	21%	27%	27%	0%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 32

Mean		Rank	Mean		Rank
2.9	Sensitivity	3	4.2	Ease and cost of maintenance	6
3.9	Portability	5	6.5	Warranty, terms, and conditions	11
1.2	Accuracy	1	5.0	Service from manufacturer	7
6.4	Delivery	10	5.6	Wide pressure range	9
2.1	Durability	2	3.7	Ease of operation	4
5.2	Price	8	2	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 32

Mean		Rank	Mean		Rank
3.0	Personal recommendation	2	4.1	Exhibitions/Trade Shows	4
5.3	Advertising	6	4.6	Sales presentations	5
1.5	Previous experience w/ supplier's products	1	3.4	Seminars or demonstrations	3
			1	Other _____	___

Who would you prefer to buy from?

	Factory Direct	Dealership	Factory Rep.
N=0			
	___	___	___
	___	___	___

14. What is your primary, job-related responsibility?

N=___ 55% Operations/Supervisors 6% Maintenance
36% Instruments 3% Systems Design

15. What is your company's primary field of business?

N=___ Electric Utilities

16. How many people does your company employ?

N=33

mean=4.69 0 (0%) 1 to 25 2 (6%) 26 to 50 0 (0%) 51 to 100 4 (12%) 101 to 500 27 (82%) over 500

17. Please name the business publications (at least three) that you read regularly:

N=32

		N	%			N	%
1.	"Intech"	15	46%	4.	"Control Engineer"	10	31%
2.	"Power"	13	42%	5.	"I&CS"	3	8%
3.				6.			

Domestic ISA Mail 0%
Canada 81%
Latin America 0%
ASIA 0%

Europe 14%
Australia 0%
EG&G Chandler Mail 5%
Thomas Register 0%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 21 — 19 (90%) Yes — 2 (10%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=19 — 4 (21%) 1 to 10 — 4 (21%) 11 to 25 — 5 (26%) 26 to 50 — 2 (11%) 51 to 100 — 4 (21%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 19

5	Less than 4" H_2O	26%	6	Less than 2000 p.s.i.	32%
8	4" to 200" H_2O	42%	0	Less than 20,000 p.s.i.	0%
5	10" to 1600" H_2O	26%	0	Less than 50,000 p.s.i.	0%
13	Less than 500 p.s.i.	68%	1	Other _____	5%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 19 — 1 (5%) Hire a Service — 18 (95%) Done In-House — 0 (0%) Both — 0 (0%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 3 — 3 (100%) Yes — 0 (0%) No — 0 (0%) Uncertain

6. How often do you recalibrate your pressure instruments?

N=18

2	Weekly	11%	0	Daily	0%
0	Monthly	0%	5	As Required	28%
9	Annually	50%	2	Variably	11%
0	Semi-Annual	0%	0	Never	0%
0	Quarterly	0%		Other	

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 18

7	Ametek (M&G)	39%	0	DH	0%	2	Ruska	11%
8	Ashcroft (Dresser)	44%	0	Mensor	0%	0	Schwien	0%
1	EG&G Chandler	6%	2	Refinery S.	11%	0	TI	0%
10	Other _____	56%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 19

Mean	N		%	Mean	N		%
1.6	8	Ametek (M&G)	42%	0	0	Mensor	0%
1.4	9	Ashcroft (Dresser)	47%	1	2	Refinery S.	11%
2	2	EG&G Chandler	11%	2	2	Ruska	11%
0	0	DH	0%	0	0	Schwien	0%
1.8	6	Other _____	32%	2	1	TI	5%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 18 mean=2.16

8	5	1	2	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
44%	28%	6%	11%	11%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=18 mean=2.38

6	6	1	3	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
33%	33%	6%	17%	11%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 18 mean=2.38

7	4	2	3	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
39%	22%	11%	17%	11%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 18

Mean		Rank	Mean		Rank
3.1	Sensitivity	3	4.6	Ease and cost of maintenance	8
2.6	Portability	2	6.7	Warranty, terms, and conditions	10
1.4	Accuracy	1	6.0	Service from manufacturer	9
7.3	Delivery	11	3.8	Wide pressure range	6
3.1	Durability	4	3.2	Ease of operation	5
4.4	Price	7	.	Other _____	

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=18

Mean		Rank	Mean		Rank
3.2	Personal recommendation	2	4.1	Exhibitions/Trade Shows	4
5.2	Advertising	6	3.8	Sales presentations	3
2.4	Previous experience w/ supplier's products	1	4.1	Seminars or demonstrations	5
			1	Other _____	

Who would you prefer to buy from?

N=0

Factory Direct	Dealership	Factory Rep.

14. What is your primary, job-related responsibility?

N=

84% Professors
5% Systems Design
5% Instruments
5% Maintenance

15. What is your company's primary field of business?

N=

Education

16. How many people does your company employ?

N=18

mean=4.16

0	1 to 25	1	26 to 50	2	51 to 100	8	101 to 500	7	over 500
0%		5%		11%		44%		39%	

17. Please name the business publications (at least three) that you read regularly:

N=13

		N	%
1.	"Intech"	11	85%
2.	"Machine Design"	1	8%
3.	"I&CS"	1	8%
4.			
5.			
6.			

Domestic ISA Mail List (S=10)

Domestic ISA Mail 100%
Canada ___
Latin America ___
ASIA ___

Europe ___
Australia ___
EG&G Chandler Mail ___
Thomas Register ___

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 239 209 Yes (87.5%) 30 No (12.5%) (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 203 13 (6.4%) 1 to 10 | 8 (4%) 11 to 25 | 2 (1%) 26 to 50 | 5 (2.5%) 51 to 100 | 175 (86%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 209

109	Less than 4" H_2O	52%	150	Less than 2000 p.s.i.	72%
148	4" to 200" H_2O	71%	102	Less than 20,000 p.s.i.	49%
122	10" to 1600" H_2O	58%	23	Less than 50,000 p.s.i.	11%
167	Less than 500 p.s.i.	80%	10	Other _____	5%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 208 30 (14.4%) Hire a Service | 151 (72.6%) Done In-House | 25 (12%) Both | 2 (1%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 47 22 (46.8%) Yes | 17 (36%) No | 8 (17%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 203

2	Weekly	1%	1	Daily	.5%
27	Monthly	13%	9	As Required	4.4%
65	Annually	32%	69	Variably	34%
10	Semi-Annual	5%	0	Never	0%
13	Quarterly	6.4%		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N=176

137	Ametek (M&G)	78%	4	DH	2%	19	Ruska	11%
115	Ashcroft (Dresser)	65%	16	Mensor	9%	1	Schwien	.5%
27	EG&G Chandler	15%	12	Refinery S.	7%	13	TI	7%
56	Other _____	32%						

8. How would you rate the pressure calibrating instruments of the following companies?

N=209

Mean	N		%	Mean	N		%
1.77	158	Ametek (M&G)	75%	1.93	28	Mensor	13%
1.84	134	Ashcroft (Dresser)	64%	2.29	17	Refinery S.	8%
2.00	45	EG&G Chandler	21%	1.45	33	Ruska	16%
1.70	10	DH	5%	2.00	11	Schwien	5%
1.40	48	Other _____	23%	2.00	22	TI	10%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=204 mean=1.82

98	68	15	22	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
48%	33%	7%	10.7%	.5%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=204 mean=1.93

90	70	15	26	3
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
44%	34%	7.3%	12.5%	1.5%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=208 mean=2.96

29	52	46	61	20
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
14%	25%	22%	29%	9.6%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 204

Mean		Rank	Mean		Rank
2.97	Sensitivity	3	4.29	Ease and cost of maintenance	5
4.39	Portability	6	6.93	Warranty, terms, and conditions	11
1.39	Accuracy	1	5.29	Service from manufacturer	8
6.89	Delivery	10	5.18	Wide pressure range	7
2.86	Durability	2	3.84	Ease of operation	4
5.68	Price	9	2.42	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 204

Mean		Rank	Mean		Rank
2.93	Personal recommendation	2	4.41	Exhibitions/Trade Shows	4
5.60	Advertising	6	4.61	Sales presentations	5
1.57	Previous experience w/ supplier's products	1	3.63	Seminars or demonstrations	3
			1.29	Other _____	___

Who would you prefer to buy from?

N= 0

Factory Direct	Dealership	Factory Rep.
___	___	___
___	___	___

14. What is your primary, job-related responsibility?

N=236

36% Instruments	27% Operations/Supervisors	
11% Engineers	9% Systems Design	

15. What is your company's primary field of business?

N= ___

22% Chemicals	12% Manufacturing	6% Gas
12% Petroleum	10% Electric Utilities	5% Instrumentation
	7% Miscellaneous	5% Consulting

16. How many people does your company employ?

N= 236

mean=4.02

27	1 to 25	18	26 to 50	9	51 to 100	51	101 to 500	131	over 500
11%		7.5%		3.7%		21.5%		55%	

17. Please name the business publications (at least three) that you read regularly:

N= 206

		N	%
1.	Intech	113	55%
2.	Control Engr.	89	43%
3.	I&CS	46	22%
4.	Chem. Engr.	34	16%
5.	Oil & Gas Journal	22	10%
6.	Plant Engineering	18	8%
7.	Hydrocarbon Proc.	15	7%

CANADA (S=20)

Domestic ISA Mail ___
Canada 100%
Latin America ___
ASIA ___

Europe ___
Australia ___
EG&G Chandler Mail ___
Thomas Register ___

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 225 187 (83%) Yes 38 (17%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 187 23 (12%) 1 to 10 14 (7%) 11 to 25 10 (5%) 26 to 50 11 (6%) 51 to 100 129 (69%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=184

74	Less than 4" H_2O	40%	102	Less than 2000 p.s.i.	55%
112	4" to 200" H_2O	61%	58	Less than 20,000 p.s.i.	31%
86	10" to 1600" H_2O	47%	10	Less than 50,000 p.s.i.	5%
131	Less than 500 p.s.i.	71%	6	Other _____	3%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=186 25 (13%) Hire a Service 144 (77%) Done In-House 17 (9%) Both ___ Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 33 16 (48%) Yes 12 (36%) No 5 (15%) Uncertain

6. How often do you recalibrate your pressure instruments?

N=184

4	Weekly	2%	0	Daily	0
14	Monthly	7%	19	As Required	10%
64	Annually	35%	70	Variably	38%
7	Semi-Annual	4%	0	Never	0
1	Quarterly	.5%		Other	0

7. How many of the following brands of pressure calibrating instruments does your company own?

N=151

87	Ametek (M&G)	58%	1	DH	.6%	5	Ruska	3%
102	Ashcroft (Dresser)	68%	9	Mensor	6%	1	Schwien	.6%
26	EG&G Chandler	17%	10	Refinery S.	7%	7	TI	5%
83	Other _____	55%						

8. How would you rate the pressure calibrating instruments of the following companies?

N=187

Mean	N		%	Mean	N		%
1.70	88	Ametek (M&G)	47%	2.10	10	Mensor	5%
1.86	101	Ashcroft (Dresser)	54%	2.00	9	Refinery S.	5%
1.75	29	EG&G Chandler	15%	1.55	9	Ruska	5%
2.66	3	DH	1.5%	0	0	Schwien	0
1.83	61	Other _____	33%	1.77	9	TI	5%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=186 mean=1.99

76	67	15	24	4
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
41%	36%	8%	13%	2%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=187 mean=2.11

83	46	20	30	8
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
44%	25%	11%	16%	4%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=186 mean=2.81

40	43	35	48	20
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
21%	23%	19%	26%	11%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 180

Mean		Rank	Mean		Rank
3	Sensitivity	2	4.8	Ease and cost of maintenance	7
4.3	Portability	5	6.8	Warranty, terms, and conditions	10
1.5	Accuracy	1	5.8	Service from manufacturer	9
7.1	Delivery	11	4.8	Wide pressure range	6
3.1	Durability	3	4	Ease of operation	4
5.2	Price	8	1.6	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 176

Mean		Rank	Mean		Rank
3.2	Personal recommendation	2	4.5	Exhibitions/Trade Shows	5
5.1	Advertising	6	4.4	Sales presentations	4
1.7	Previous experience w/ supplier's products	1	3.7	Seminars or demonstrations	3
			2.2	Other _____	___

Who would you prefer to buy from?

	Factory Direct	Dealership	Factory Rep.
N=0			
	___	___	___
	___	___	___

14. What is your primary, job-related responsibility?

N=___

Instruments	26%	Operations/Supervisors	23%
Maintenance	13%	Systems Design	9%
Engineer	12%	Education	8%

15. What is your company's primary field of business?

N=___

Miscellaneous	24%	Oil	8.5%
Manufacturing	14%	Education	7.6%
Chemical	10%	Gas	6%

16. How many people does your company employ?

N= 222

mean=3.98 29 (13%) 1 to 25 | 17 (8%) 26 to 50 | 14 (6%) 51 to 100 | 66 (30%) 101 to 500 | 95 (43%) over 500

17. Please name the business publications (at least three) that you read regularly:

N= 160

1.	Intech 58%	4.	Control Engr. 8%
2.	Process Equip. 16%	5.	Plant Engineering 7.5%
3.	Chem. Engineering 11%	6.	Machine Designs 6%
7.	Control & Instru. 10%	8.	I&CS 5%
		9.	Oil & Gas Journal 5%

LATIN AMERICA (S=32,33,34,35,36)

Domestic ISA Mail ___
Canada ___
Latin America 100%
ASIA ___

Mexico 6
Venezuela 6
Argentina 11
Chile 1
30

Europe ___
Australia ___
EG&G Chandler Mail ___
Thomas Register ___

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= ? 27 (90%) Yes 3 (10%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= ? ___ 1 to 10 (26%) ___ 11 to 25 (7%) ___ 26 to 50 (0%) ___ 51 to 100 (7%) ___ over 100 (59%)

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= ?

___	Less than 4" H_2O	30%	___	Less than 2000 p.s.i.	44%
___	4" to 200" H_2O	63%	___	Less than 20,000 p.s.i.	26%
___	10" to 1600" H_2O	44%	___	Less than 50,000 p.s.i.	4%
___	Less than 500 p.s.i.	67%	___	Other _____	0

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=27 ___ Hire a Service (11%) ___ Done In-House (85%) ___ Both (4%) ___ Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 4 4 (100%) Yes ___ No ___ Uncertain

6. How often do you recalibrate your pressure instruments?

N= ?

___	Weekly	0	___	Daily	___
___	Monthly	30%	___	As Required	___
___	Annually	33%	___	Variably	33%
___	Semi-Annual	___	___	Never	___
___	Quarterly	___		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 26

9	Ametek (M&G)	35%	0	DH	0		Ruska	0
11	Ashcroft (Dresser)	42%	0	Mensor	0		Schwien	0
2	EG&G Chandler	8%	2	Refinery S.	8%	4	TI	15%
14	Other _____	54%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 27

Mean	N		%	Mean	N		%
1.57	14	Ametek (M&G)	52%	0	0	Mensor	0
1.5	14	Ashcroft (Dresser)	52%	2	2	Refinery S.	8%
2	3	EG&G Chandler	12%	0	0	Ruska	0
0	0	DH	0	2	1	Schwien	4%
1.54	10	Other _____	38%	1.33	3	TI	12%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 27 mean=1.62

18	4	3	2	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
67%	15%	11%	7%	0%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 27 mean=1.44

20	4	1	2	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
74%	15%	4%	8%	0

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 27 mean=3.

4	7	6	5	5
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
15%	26%	22%	19%	19%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= ?

Mean		Rank	Mean		Rank
2.19	Sensitivity	2	4.2	Ease and cost of maintenance	4
4.74	Portability	6	7.09	Warranty, terms, and conditions	10
1.14	Accuracy	1	5.7	Service from manufacturer	9
7.29	Delivery	11	4.95	Wide pressure range	7
3.56	Durability	3	4.68	Ease of operation	5
5.15	Price	8	___	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= ?

Mean		Rank	Mean		Rank
3.44	Personal recommendation	3	3.95	Exhibitions/Trade Shows	5
4.78	Advertising	6	3.91	Sales presentations	4
1.37	Previous experience w/ supplier's products	1	2.67	Seminars or demonstrations	2
			0	Other _____	___

Who would you prefer to buy from?

	Factory Direct	Dealership	Factory Rep.
N=0	___	___	___
	___	___	___

14. What is your primary, job-related responsibility?

N= ?

Maintenance 26%
Operations/Supervisors 22%
Systems Designs 15%

15. What is your company's primary field of business?

N= ?

Miscellaneous 26%
Manufacturing 15%
Oil 18%
Chemical 11%

16. How many people does your company employ?

N= 30

mean=4.23

2	1 to 25	2	26 to 50	3	51 to 100	3	101 to 500	20	over 500
7%		7%		11%		11%		63%	

17. Please name the business publications (at least three) that you read regularly:

N= ?

1.	Intech 58%	4.	Oil & Gas Journal 17%
2.	Control Engr. 37%	5.	Plant Engineering 17%
3.	Chemical Engr. 29%	6.	I&CS 13%

ASIA (S=40,52,53,54)

Domestic ISA Mail 0%
Canada 0%
Latin America 0%
ASIA 100%

India	16
Indonesia	5
Taiwan/China	6
Hong Kong	1
N=	28

Europe 0%
Australia 0%
EG&G Chandler Mail 0%
Thomas Register 0%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 28 — 26 (93%) Yes — 2 (7%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 26 — 3 (11%) 1 to 10 — 0 (0%) 11 to 25 — 2 (7%) 26 to 50 — 0 (0%) 51 to 100 — 21 (80%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 26

13	Less than 4" H_2O	50%	15	Less than 2000 p.s.i.	58%
17	4" to 200" H_2O	65%	13	Less than 20,000 p.s.i.	50%
15	10" to 1600" H_2O	58%	0	Less than 50,000 p.s.i.	0%
19	Less than 500 p.s.i.	73%	5	Other _____	19%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 26 — 2 (7.6%) Hire a Service — 23 (88%) Done In-House — 1 (3.8%) Both — ___ Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 3 — 3 (100%) Yes — ___ No — ___ Uncertain

6. How often do you recalibrate your pressure instruments?

N= 24

___	Weekly	___	___	Daily	___
6	Monthly	25%	___	As Required	___
9	Annually	37%	8	Variably	33%
1	Semi-Annual	4%	___	Never	___
___	Quarterly	___		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 24

12	Ametek (M&G)	50%	0	DH	___	1	Ruska	4%
14	Ashcroft (Dresser)	58%	0	Mensor	___	1	Schwien	4%
1	EG&G Chandler	4%	0	Refinery S.	___	2	TI	8%
15	Other _____	63%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 26

Mean	N		%	Mean	N		%
1.93	15	Ametek (M&G)	58%	0	0	Mensor	0
1.88	18	Ashcroft (Dresser)	69%	0	0	Refinery S.	0
2.5	2	EG&G Chandler	7.6%	1	1	Ruska	4%
0	0	DH	0	2	2	Schwien	7.6%
1.69	13	Other _____	50%	2	2	TI	7.6%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 26

17	8	0	1	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
65%	30%	___	3.8%	___

Mean 1.4

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 26

22	3	0	1	0
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
84%	11%	___	3.8%	___

Mean 1.2

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 27

1	9	7	7	3
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
3.7%	33%	26%	26%	11%

Mean 3.07

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N=25

Mean		Rank	Mean		Rank
2.96	Sensitivity	2	5.46	Ease and cost of maintenance	6
5.37	Portability	5	7	Warranty, terms, and conditions	10
1.44	Accuracy	1	5.53	Service from manufacturer	7
7.36	Delivery	11	6	Wide pressure range	8
3.6	Durability	3	4.4	Ease of operation	___
6.3	Price	9	2.25	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 25

Mean		Rank	Mean		Rank
3.19	Personal recommendation	3	4.29	Exhibitions/Trade Shows	5
4.92	Advertising	6	4.07	Sales presentations	4
1.88	Previous experience w/ supplier's products	1	2.92	Seminars or demonstrations	2
			3.25	Other _____	___

Who would you prefer to buy from?

Factory Direct	Dealership	Factory Rep.
___	___	___
___	___	___

14. What is your primary, job-related responsibility?

N=___

Instruments	25%	Operating Supervisors	14%
Maintenance	25%	Systems Design	10%

15. What is your company's primary field of business?

N=___

Chemical	25%	Oil	14%
Manufacturing	14%	Miscellaneous	14%

16. How many people does your company employ?

N= 28

2 (7%) 1 to 25 | 2 (7%) 26 to 50 | 2 (7%) 51 to 100 | 0 (0%) 101 to 500 | 22 (78%) over 500

17. Please name the business publications (at least three) that you read regularly:

N= 22

			N				N
1.	Intech	50%	11	4.	Chemical Eng.	25%	6
2.	Control Eng.	39%	8	5.	I&CS	14%	5
3.	Hydrocarbon Proc.	32%	7	6.	Power	14%	5

(S=61, 62, 71, 72, 73, 74, 75, 76)

Domestic ISA Mail 0%
Canada 0%
Latin America 0%
ASIA 0%

Europe
England = 6
Ireland =10
Denmark = 5
W. Germany = 3
France = 4
Finland = 4
Belgium = 2
Other Europe = 3
N =37

Europe 100%
Australia 0%
EG&G Chandler Mail 0%
Thomas Register 0%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N=___ 27 (73%) Yes 10 (27%) No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N=26 3 (12%) 1 to 10 3 (12%) 11 to 25 4 (15%) 26 to 50 1 (4%) 51 to 100 15 (58%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=___

10	Less than 4" H_2O	38%	13	Less than 2000 p.s.i.	50%
16	4" to 200" H_2O	62%	13	Less than 20,000 p.s.i.	50%
12	10" to 1600" H_2O	46%	2	Less than 50,000 p.s.i.	8%
16	Less than 500 p.s.i.	62%	3	Other _____	12%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N=27 5 (19%) Hire a Service 21 (78%) Done In-House 1 (4%) Both ___ Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N=5 ___ Yes 3 (60%) No 2 (40%) Uncertain

6. How often do you recalibrate your pressure instruments?

N=___

1	Weekly	4%	___	Daily	
3	Monthly	13%	___	As Required	13%
9	Annually	39%	___	Variably	26%
___	Semi-Annual	___	1	Never	4%
___	Quarterly	___		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 22

5	Ametek (M&G)	23%	4	DH	18%	0	Ruska	0
4	Ashcroft (Dresser)	18%	1	Mensor	5%	0	Schwien	0
1	EG&G Chandler	5%	1	Refinery S.	5%	0	TI	0
16	Other _____	73%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 27

Mean	N		%	Mean	N		%
1.6	5	Ametek (M&G)	19%	1.67	3	Mensor	11%
1.75	4	Ashcroft (Dresser)	15%	0	0	Refinery S.	0%
0	0	EG&G Chandler	0%	1.67	3	Ruska	11%
1.6	5	DH	19%	0	0	Schwien	0%
1.78	14	Other _____	52%	2	1	TI	4%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 28

15	8	2	2	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
Mean 1.78	54%	29%	7%	7%	4%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 28

16	7	0	3	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
Mean 1.85	57%	25%	0%	11%	7%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 28

10	8	2	7	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
Mean 2.32	36%	29%	7%	25%	4%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N=29

Mean		Rank	Mean		Rank
2.89	Sensitivity	2	5.92	Ease and cost of maintenance	7
5.14	Portability	6	7.32	Warranty, terms, and conditions	10
1.27	Accuracy	1	6.18	Service from manufacturer	8
8.11	Delivery	11	4.67	Wide pressure range	5
3.5	Durability	3	3.82	Ease of operation	4
6.5	Price	9	3.3	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N=29

Mean		Rank	Mean		Rank
3.06	Personal recommendation	2	4.11	Exhibitions/Trade Shows	4
5.03	Advertising	5	5.07	Sales presentations	6
1.34	Previous experience w/ supplier's products	1	3.68	Seminars or demonstrations	3
			3.5	Other _____	___

Who would you prefer to buy from?

Factory Direct	Dealership	Factory Rep.
___	___	___
___	___	___

14. What is your primary, job-related responsibility?

N=___

Operations/Supervisors	22%	Engineers	15%
Instruments	19%	Maintenance	11%
Systems Design	15%	Teachers	11%

15. What is your company's primary field of business?

N=___

Consulting	16%	Oil	11%
Miscellaneous	16%	Manufacturing	8%
Chemical	14%	Education	8%

16. How many people does your company employ?

N=___

3	1 to 25	3	26 to 50	4	51 to 100	9	101 to 500	19	over 500
8%		8%		11%		24%		51%	

17. Please name the business publications (at least three) that you read regularly:

N=28

1. Intech	73%	4. Hydrocarbon Proc.	20%
2. Chemical Eng.	33%	5. Control & Instrumentation	10%
3. Control Eng.	30%	6.	

AUSTRALIA

(S=80)

Domestic ISA Mail 0%
Canada 0%
Latin America 0%
ASIA 0%

Europe 0%
Australia 100%
EG&G Chandler Mail 0%
Thomas Register 0%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 7 — 7 (100%) Yes — No (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 7 — 1 (14%) 1 to 10 — 11 to 25 — 26 to 50 — 51 to 100 — 6 (86%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N=

5	Less than 4" H_2O	71%	7	Less than 2000 p.s.i.	100%
7	4" to 200" H_2O	100%	5	Less than 20,000 p.s.i.	71%
5	10" to 1600" H_2O	71%	0	Less than 50,000 p.s.i.	
6	Less than 500 p.s.i.	86%	1	Other _____	14%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 7 — 1 (14%) Hire a Service — 6 (86%) Done In-House — Both — Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 1 — 1 (100%) Yes — No — Uncertain

6. How often do you recalibrate your pressure instruments?

N= 7

	Weekly			Daily	
1	Monthly	14%		As Required	
1	Annually	14%	4	Variably	57%
1	Semi-Annual	14%		Never	
	Quarterly			Other	

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N=6

2	Ametek (M&G)	33%	___	DH	0%	___	Ruska	0%
___	Ashcroft (Dresser)	0%	___	Mensor	0%	___	Schwien	0%
___	EG&G Chandler	0%	1	Refinery S.	17%	___	TI	0%
5	Other _____	83%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 6

Mean	N		%	Mean	N		%
2.66	3	Ametek (M&G)	50%	3	1	Mensor	17%
2.5	2	Ashcroft (Dresser)	33%	2.5	2	Refinery S.	33%
3	1	EG&G Chandler	17%	3	1	Ruska	17%
3	1	DH	17%	3	1	Schwien	17%
1.5	4	Other _____	67%	3	1	TI	17%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N=___

Mean	2 Definitely Yes	4 Probably Yes	Uncertain	1 Probably Not	Definitely Not
2	28%	57%	___	14%	___

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N=___

Mean	3 Definitely Yes	1 Probably Yes	2 Uncertain	1 Probably Not	Definitely Not
2.14	42%	14%	28%	14%	___

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N=___

Mean	1 Definitely Yes	1 Probably Yes	2 Uncertain	2 Probably Not	1 Definitely Not
3.14	14%	14%	28%	28%	14%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 6

		Rank			Rank
3.83	Sensitivity	3	6	Ease and cost of maintenance	7
4	Portability	4	8.4	Warranty, terms, and conditions	10
1.83	Accuracy	1	5.16	Service from manufacturer	6
8.75	Delivery	11	7.2	Wide pressure range	9
2.4	Durability	2	4.5	Ease of operation	5
6.2	Price	8	1	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 6

		Rank			Rank
1.8	Personal recommendation	2	4.8	Exhibitions/Trade Shows	4
4.8	Advertising	4	5.2	Sales presentations	5
1.4	Previous experience w/ supplier's products	1	4.2	Seminars or demonstrations	3
			1	Other _____	___

Who would you prefer to buy from?

Factory Direct	Dealership	Factory Rep.
___	___	___
___	___	___

14. What is your primary, job-related responsibility?

N=___

Systems Design	2	Engineer	1
Marketing/Sales	2	Instruments	1
		Miscellaneous	1

15. What is your company's primary field of business?

N=___

Manufacturing	3	Instrumentation Systems	1
Oil	2	Miscellaneous	1

16. How many people does your company employ?

N= 7

1 1 to 25 ___ 26 to 50 1 51 to 100 ___ 101 to 500 5 over 500

14% 14% 71%

17. Please name the business publications (at least three) that you read regularly:

N= 5

1. Intech 4
2. Control Engineering 2
3. Oil & Gas Journal 1
4. Chemical Engineer 1
5. Control & Instrumentation 1
6. _____

Domestic EG&G Chandler Mail List (S=90)

Domestic ISA Mail 0%
Canada 0%
Latin America 0%
ASIA 0%

Europe 0%
Australia 0%
EG&G Chandler Mail 100%
Thomas Register 0%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 54 48 Yes (89%) 6 No (11%) (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 47 10 (21%) 1 to 10 7 (15%) 11 to 25 3 (6%) 26 to 50 2 (4%) 51 to 100 25 (53%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 48

12	Less than 4" H_2O	25%	28	Less than 2000 p.s.i.	58%
27	4" to 200" H_2O	56%	16	Less than 20,000 p.s.i.	33%
10	10" to 1600" H_2O	21	2	Less than 50,000 p.s.i.	4%
26	Less than 500 p.s.i.	54%	2	Other _____	4%

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 48 6 (12.5%) Hire a Service 40 (83%) Done In-House 2 (4%) Both 0 (0%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 8 4 (50%) Yes 4 (50%) No 0 (0%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 44

1	Weekly	2%	0	Daily	0%
12	Monthly	27%	1	As Required	2.2%
9	Annually	20%	14	Variably	32%
3	Semi-Annual	6.8%	2	Never	4%
2	Quarterly	4.5%		Other	

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 42

25	Ametek (M&G)	60%	1	DH	2%	4	Ruska	10%
23	Ashcroft (Dresser)	55%	1	Mensor	2%	0	Schwien	0%
17	EG&G Chandler	40%	6	Refinery S.	14%	3	TI	7%
12	Other _____	29%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 48

Mean	N		%	Mean	N		%
1.62	27	Ametek (M&G)	56%	2	4	Mensor	8%
1.92	26	Ashcroft (Dresser)	54%	2	9	Refinery S.	18%
1.75	24	EG&G Chandler	50%	1.3	6	Ruska	12%
1.3	3	DH	6%	2	1	Schwien	2%
1.7	10	Other _____	21%	2	3	TI	6%

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 48

29	9	5	3	2
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
60%	19%	10%	6%	4%

mean=1.75

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 47

21	12	6	7	1
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
45%	25%	13%	15%	2%

mean=2.04

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 46

5	12	7	14	8
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
11%	26%	15%	30%	17%

mean=3.17

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 47

Mean		Rank	Mean		Rank
2.93	Sensitivity	3	3.9	Ease and cost of maintenance	5
4.3	Portability	6	5.5	Warranty, terms, and conditions	10
1.3	Accuracy	1	4.9	Service from manufacturer	7
6	Delivery	11	5.1	Wide pressure range	9
2.7	Durability	2	3	Ease of operation	4
5	Price	8	3	Other _____	

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 44

Mean		Rank	Mean		Rank
2.8	Personal recommendation	2	4.7	Exhibitions/Trade Shows	5
5.7	Advertising	6	4.1	Sales presentations	4
1.5	Previous experience w/ supplier's products	1	3.6	Seminars or demonstrations	3
			1.0	Other _____	

Who would you prefer to buy from?

	Factory Direct	Dealership	Factory Rep.
N=0			

14. What is your primary, job-related responsibility?

N= 49

32% Operations/Supervisors
24% Instruments
16% Engineers
10% Systems Design
8% Executives

15. What is your company's primary field of business?

N= 54

29% Gas
17% Manufacturing
15% Miscellaneous
11% Oil

16. How many people does your company employ?

N= 54

mean=3.46

9 (17%) 1 to 25
4 (7%) 26 to 50
9 (17%) 51 to 100
17 (31%) 101 to 500
15 (28%) over 500

17. Please name the business publications (at least three) that you read regularly:

N= 44

		N	%			N	%
1.	"Oil & Gas Journal"	11	25%	4.	"Intech"	6	14%
2.	"Pipeline & Gas Journal"	11	25%	5.	"Pipeline Industry"	6	14%
3.	"Control Engineering"	7	16%	6.	"Chemical Engineering"	4	9%

Domestic Thomas Register (S=91)

Domestic ISA Mail 0%
Canada 0%
Latin America 0%
ASIA 0%

Europe 0%
Australia 0%
EG&G Chandler Mail 0%
Thomas Register 100%

QUESTIONNAIRE

1. Does your company use any pressure gauges and/or pressure testing instruments?

N= 217 116 Yes (99%) 101 No (1%) (If "No," skip to Question #15.)

2. How many pressure gauges and pressure testing instruments does your company use?

N= 101 32 (29%) 1 to 10 22 (20%) 11 to 25 15 (14%) 26 to 50 11 (10%) 51 to 100 29 (26%) over 100

3. What are the pressure ranges of your instruments? (Check as many as apply.)

N= 0

___	Less than 4" H_2O	___	Less than 2000 p.s.i. ___
___	4" to 200" H_2O	___	Less than 20,000 p.s.i. ___
___	10" to 1600" H_2O	___	Less than 50,000 p.s.i. ___
___	Less than 500 p.s.i.	___	Other _____ ___

4. Do you hire a recalibrating service, or do your own company employees recalibrate your pressure equipment?

N= 111 37 (33%) Hire a Service 52 (47%) Done In-House 12 (11%) Both 10 (9%) Neither

(If "Done In-House," skip to Question #6.)

5. If you hire a service, do you feel that your company should purchase a pressure recalibrating instrument?

N= 19 2 (10%) Yes 12 (63%) No 5 (26%) Uncertain

6. How often do you recalibrate your pressure instruments?

N= 70

2	Weekly	3%	5	Daily	7%
5	Monthly	7%	1	As Required	1%
16	Annually	23%	11	Variably	16%
16	Semi-Annual	23%	9	Never	13%
5	Quarterly	7%		Other	___

_____

7. How many of the following brands of pressure calibrating instruments does your company own?

N= 64

10	Ametek (M&G)	16%	0	DH	0%	0	Ruska	0%
10	Ashcroft (Dresser)	16%	0	Mensor	0%	0	Schwien	0%
1	EG&G Chandler	1.5%	0	Refinery S.	0%	0	TI	0%
12	Other _____	19%						

8. How would you rate the pressure calibrating instruments of the following companies?

N= 0

Mean	N		%	Mean	N		%
___	___	Ametek (M&G)	___	___	___	Mensor	___
___	___	Ashcroft (Dresser)	___	___	___	Refinery S.	___
___	___	EG&G Chandler	___	___	___	Ruska	___
___	___	DH	___	___	___	Schwien	___
___	___	Other _____	___	___	___	TI	___

9. Do you think that accurate gauges and test equipment could increase your operating efficiency?

N= 113 mean=2.31

60	13	3	18	19
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
53%	11%	2%	16%	17%

10. Do you think that accurate gauges and test equipment could increase your operating safety?

N= 112 mean=2.7

47	16	3	15	31
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
42%	14%	2%	13%	28%

11. Should the calibrating instrument be capable of transmitting data directly to a computer?

N= 73 mean=3.2

20	7	5	16	25
Definitely Yes	Probably Yes	Uncertain	Probably Not	Definitely Not
27%	9%	7%	22%	34%

12. Please rate from 1 to 10 (with one being very important) the following product attributes for a calibrating instrument:

N= 0

		Rank			Rank
___	Sensitivity	___	___	Ease and cost of maintenance	___
___	Portability	___	___	Warranty, terms, and conditions	___
___	Accuracy	___	___	Service from manufacturer	___
___	Delivery	___	___	Wide pressure range	___
___	Durability	___	___	Ease of operation	___
___	Price	___	___	Other _____	___

13. Please rate from 1 to 10 (with one being very influential) on how much the following influences might affect your purchase decision:

N= 0

		Rank			Rank
___	Personal recommendation	___	___	Exhibitions/Trade Shows	___
___	Advertising	___	___	Sales presentations	___
___	Previous experience w/ supplier's products	___	___	Seminars or demonstrations	___
			___	Other _____	___

Who would you prefer to buy from?

N=98	Factory Direct	Dealership	Factory Rep.
	38	14	46
	39%	14%	47%

14. What is your primary, job-related responsibility?

N=___ _____

15. What is your company's primary field of business?

N=___

Manufacturing	41%	Oil	10%
Process Equipment & Instruments	18%	Pressure Transducers	10%
		Pipes	8%

16. How many people does your company employ?

N= 112

mean=3.13

20	1 to 25	19	26 to 50	20	51 to 100	32	101 to 500	21	over 500
18%		17%		18%		28%		19%	

17. Please name the business publications (at least three) that you read regularly:

N= 74

	N	%		N	%
1. "Machine Design"	18	24%	4. "Design News"	7	9%
2. "Oil & Gas Journal"	13	17%	5. "Hydrocarbon Processing"	7	9%
3. "Plant Engineering"	9	12%	6. "Control Engineer"	6	8%
"Chemical Engineer"	9	12%	"Iron Age"	6	8%
			"Intech"	3	4%

Vita
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Candidate for the Degree of
Master of Business Administration

Report: Exploring New Markets for Pressure Recalibrating Instruments

Major Field: Business Administration

Bibliography

Personal Data: Born in Dallas, Texas, August 16, 1961
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