

Ups and Downs of Customer Satisfaction

Control Engineering reader survey gauges satisfaction with products in categories last examined in 2003. In some areas, changes were significant.

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Over the past two years, *Control Engineering* has conducted reader surveys to determine user satisfaction with the principal product categories covered by the publication. To make these surveys more manageable, we split the total 29 product categories into two studies (16 categories in the first survey, 13 in the second) to be conducted in consecutive years and then repeated. As a result, this year's survey revisits the same categories first addressed in the 2004 survey publication (March 2004). The 2004 survey was conducted in fall 2003, and this year's survey in fall 2005.

Over 1,300 *Control Engineering* readers—all of whom purchase products across all categories covered—participated in this year's survey. Categories with the largest response rates were PLCs (644 respondents ranked products in this category), sensors and/or transmitters (324 respondents ranked products), operator interface hardware and software (ranked by 257 respondents), and I/O products and systems (ranked by 236 respondents). Categories attracting the fewest respondents were valve positioners (44 respondents), process analysis and loop-tuning software (24 respondents), and solid-state motor starters (23 respondents).

Respondents were fairly evenly distributed across the manufacturing and non-manufacturing sectors covered by *Control Engineering*. The

biggest concentrations of manufacturing respondents work in industries defined as producers of industrial, commercial, agricultural, and other machinery or as producers of instrumentation, measurement, control systems, and related devices. In non-manufacturing industries, the largest group of respondents are employed in system integration and engineering.

Notable changes

Not surprisingly, most changes between the 2004 and 2006 survey are small—statistically insignificant. But even with such a short time span, some shifts were noticeable. Out of all the satisfaction areas covered by the survey, two areas that saw the biggest shifts were “repair” and “technical support.”

Shifts in repair satisfaction were most significant in ac motors, block valves, distributed control systems (DCSs), and PLCs. Shifts greater than 5% were considered worthy of notation. With this in mind, only one category—ac motors—saw an improvement in repair satisfaction since the 2004 survey.

Following are percentages of respondents indicating “very satisfied” or “somewhat satisfied” with their repair experiences in the 2004 and 2006 surveys:

Despite decrease in repair satisfaction in three of the four categories with shifts of any significance, the fact that most categories shifted less than 5% indicate that since conducting the first survey, repair satisfaction in survey categories covered remain largely unchanged.

In contrast to the lower repair ratings in three of the four categories listed above, users indicate they are increasingly more satisfied with vendors' technical support. PC-based control software, process analysis software, and valve positioner buyers reported greater levels of technical support satisfaction in 2006 than they did in 2004.

Following are percentages of respondents indicating “very satisfied” or “somewhat satisfied” with their technical support experiences in the 2004 and 2006 surveys:

Having only one of the six categories with significant shifts report decreased satisfaction since the last survey indicates that vendors are getting the message about the impor-

Product Categories

- AC adjustable-speed drives
- AC motors
- Block valves and actuators
- Control valves and actuators
- Distributed and/or hybrid control systems
- Operator interface hardware & HMI/SCADA
- I/O products and systems
- Motion controller and/or positioner
- PC-based control software
- Photoelectric & proximity sensors
- Programmable logic controllers
- Process analysis & loop-tuning software
- Sensors and/or transmitters
- Solid-state motor starters
- Valve positioners
- Vision system software & hardware

Customer Satisfaction Survey

tance of good technical support. Cost savings and better customer relationships are surely key to this shift.

End-user demand for this service must also be a driver for vendors' improved technical support. According to the survey, 47% of respondents, on average, required technical support for products in the categories covered by this survey. Of all the services examined in this survey, technical support ranked highest in

terms of need, followed by software upgrades/bug fixes at 22%, hardware repair at 18%, and recalibration at 3%.

Products requiring the least amount of technical support are: ac motors and block valves and actuators, with 25% and 26% of respondents, respectively, reporting a need for this service. However, tech support was requested at significantly higher rates for DCS (75%), operator interface hardware and software (60%), ac adjustable-speed drives (57%), and process analysis and loop-tuning software (56%).

On the surface, it can be assumed that systems requiring higher levels of tech support are more complex, largely software-based systems. Or, could the need for higher levels of services in these areas be generated by the presence of fewer skilled engineers populating the manufacturing environment?

(83%). Products with the lowest price satisfaction are DCS (43%), solid-state motor starters (35%), and PLCs and operator interface hardware and software (30% each).

Unsurprisingly, value-for-the-dollar rankings closely mirrored price rankings. The only differences are that PLCs did not rank as low in value for the dollar as they did in price, and valve positioners and control valves and actuators tied for second place in value for the dollar with a 90% positive response.

In the all-important category of product performance, top performers are: ac motors and control valves and actuators (97%); block valves and actuators, photoelectric and proximity sensors, PLCs and sensors and/or transmitters came in second with 95% positive response, followed closely by I/O products and systems at 94%. The bottom performers are: vision system software and hardware with 16% satisfaction; followed by solid-state motor starters at 12%; and DCS, operator interface hardware and software, and process analysis and loop-tuning software at 11%.

With so many devices installed throughout manufacturing—an industry not inclined to regularly upgrade plant-floor systems every few years—a vendor's commitment to legacy product support can be critically important. Top performers in this category are: photoelectric proximity sensors (95%); sensors and/or transmitters and control valves and actuators (91% each); and ac motors (90%). Products with the lowest legacy support satisfaction are DCS (23%), motion controller and/or positioners (22%), and PC-based control software (19%).

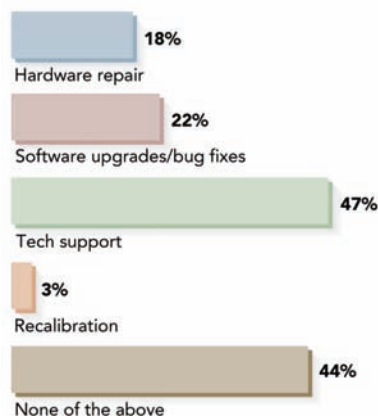
Considering that tech support is used so often—and has apparently become a center of expertise for many vendors—it's reasonable to expect that these same vendors would put a great deal of effort into product documentation quality and resources available on their Web site to serve as a resource of first resort before calling tech support. Fortunately, this does seem to be the case

Positive tech support experiences

AC adjustable-speed drives	82%
AC motors	90%
Block valves and actuators	95%
Control valves and actuators	90%
Distributed and/or hybrid control systems	79%
I/O products and systems	87%
Motion controller and/or positioner	69%
Operator interface hardware & HMI/SCADA	84%
PC-based control software	91%
Photoelectric & proximity sensors	92%
Process analysis & Loop tuning software	100%
Programmable logic controllers	85%
Sensors and/or transmitters	89%
Solid-state motor starters	83%
Valve positioners	100%
Vision system software & hardware	76%

Percentages shown indicate category's response rate for respondents claiming to be "very satisfied" and "somewhat satisfied."

Services required



Key areas

Though the survey examines specific satisfaction across 40 different areas, four areas stand out as key drivers across the board: price/value for the dollar, product performance, legacy product support, and quality of documentation/accuracy of Web site material.

Respondents ranked ac motors and block valves and actuators as the products with the best price satisfaction (86% each), followed by photoelectric and proximity sensors (84%), and sensors and/or transmitters

playing out in the market.

In terms of “quality of documentation,” only one product category—solid-state motor starters—received a double-digit percentage (12%) of respondents claiming to be dissatisfied. Categories doing the best job of satisfying users in this category are: control valves and actuators, photoelectric and proximity sensors, and process analysis and looptuning software (all receiving a 94% satisfied response rate); valve positioners (92%); and sensors and/or transmitters (91%).

The only product category receiving a double-digit dissatisfied response (20%) is solid-state motor starters for the “completeness and accuracy of Web site material” category. The top performers in delivering satisfaction in this area are: block valves and actuators (100%), photoelectric and proximity sensors (92%), and valve positioners (91%).

Overall satisfaction

Per survey results, PLCs ranked highest overall with a weighted score of 33,565, followed by ac adjustable drives at 18,704, and sensors and/or

transmitters at 14,849. Valve positioners received the lowest overall satisfaction response at 1,967. Vision system hardware and software and motion controller and/or positioners fared slightly better at 3,749 and 5,835, respectively.

Based on examination of key areas, it would be easy to believe that software systems would suffer the lowest overall satisfaction ratings. But results do not bear that out: only one of the product categories among the bottom three is held by a software product. And in this case—vision software—the product was grouped with its hardware counterpart, making it difficult to determine whether the vision software or hardware was the primary source of dissatisfaction.

The two pure software products—process analysis and loop-tuning software and PC-based control software—did well with respondents when asked: “Based on your experience with the manufacturer’s product, how likely are you to purchase from them again in the next 12 months?” Process analysis received a 94% positive response and PC-based software received a 93% positive response.

Even the DCS product category—which is largely software-based—received an 87% positive response. The top most-likely-to-purchase-again winners are: ac motors (98%); I/O products and systems, photoelectric and proximity sensors, and valve positioners at 97% each; and control valves and actuators (96%).

Only one product category—process analysis and loop-tuning software—received a 100% satisfied response to the question: “Considering everything, not just the most recent interaction, how satisfied are you with the manufacturer’s product?” Valve positioners came in a close second with a 98% positive response, followed by ac motors, block valves and actuators, photoelectric and proximity sensors, and sensors and/or transmitters at 97%.

All in all, users seem to be quite satisfied with the products covered in this survey. When examining all responses to the “considering everything” question, the lowest positive response was received by DCS and motion controller and/or positioner product categories, which both came in at a very respectable 88%. **ce**

Respondents Rate Vendor Satisfaction

Vendor rankings on these pages—across categories included in this year’s survey—are based on overall satisfaction with a product and/or manufacturer rated by respondents. Product/manufacturer overall satisfaction is derived from response to survey questions dealing with: ease of installation and setup, quality of documentation and factory calibration, product availability and performance, price and value for the dollar, product upgrades and legacy system support, vendor Web site resources usefulness, and understanding of cus-

tommer needs. Also considered in this section’s rating is likeliness to purchase from that vendor again, and willingness to support continued purchases from that vendor in opposition to corporate wishes to purchase from a different manufacturer.

To adjust for vendors with lower response levels and high ratings from outranking vendors with similarly high ratings but even higher response levels, total responses for each vendor were multiplied by the vendor’s weighted score. The result enables us to rank the top vendors—in terms of customer satisfaction—for

each category.

Only those companies with weighted averages higher than or equal to the category’s weighted average are included in these listings.

The numbers in parentheses following the category names are the weighted average score for the category as a whole. Vendors’ weighted scores appear directly after their name. The bracketed number—used to determine ranking order—is the result of the calculation multiplying the total responses for a particular vendor by the vendor’s weighted score.

Customer Satisfaction Survey

*AC Adjustable Speed Drives (77.45)

Yaskawa 82.27 [2,879]
Eaton/Cutler-Hammer 80.22 [722]
Toshiba 79.90 [1,358]
Rockwell Automation 78.92 [10,890]
ABB 78.90 [3629]
AC Tech 78.50 [1,099]

AC Motors (82.22)

Marathon Electric 89.20 [1,338]
Dayton 86.30 [1,726]
Leeson Electric 84.99 [680]
Toshiba 83.23 [583]
US Motors 82.75 [993]
Siemens 82.58 [495]
Baldor Electric 82.23 [5,016]

Distributed and/or Hybrid Control Systems Hardware & Software (71.78)

Yokogawa 85.14 [341]
Schneider Electric 76.35 [229]
Emerson Process Management 74.93 [3,072]
Rockwell Automation 73.67 [1,252]
ABB 72.38 [1,665]

I/O Products & Systems (79.65)

Acromag 87.84 [351]
Opto22 86.05 [1,033]
Phoenix Contact 83.95 [1,595]
Schneider Electric 83.59 [1,003]
Rockwell Automation 82.48 [4,866]

Motion Controller and/or Positioner Hardware and Software (74.82)

Yokogawa 82.00 [410]
Siemens 81.46 [570]
Bosch Rexroth (Indramat) 80.47 [1,127]
Baldor Electric 77.27 [386]
Rockwell Automation 76.96 [2,155]
Omron Electronics 75.83 [682]

Operator Interface Hardware and HMI/SCADA Software (75.32)

Citect 89.23 [535]
Mitsubishi Electric 88.41 [619]
National Instruments 87.77 [439]
AutomationDirect 85.87 [687]
Dell 83.61 [1,171]
Advantech 79.62 [239]
Invensys Wonderware 77.98 [3,197]

Programmable Logic Controllers Hardware & Software (79.86)

AutomationDirect 86.16 [3,877]
Rockwell Automation 81.90 [29,729]
Omron Electronics 80.49 [2,254]

Solid-state Motor Starters (75.98)

Rockwell Automation 83.73 [419]
Eaton/Cutler-Hammer 77.04 [385]

*In the last survey, Yaskawa was also #1 and Rockwell was #2.

Yellow highlighting and * comment were added by Yaskawa. The full 7-page article is under April 2007 at www.controleng.com/archive.
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