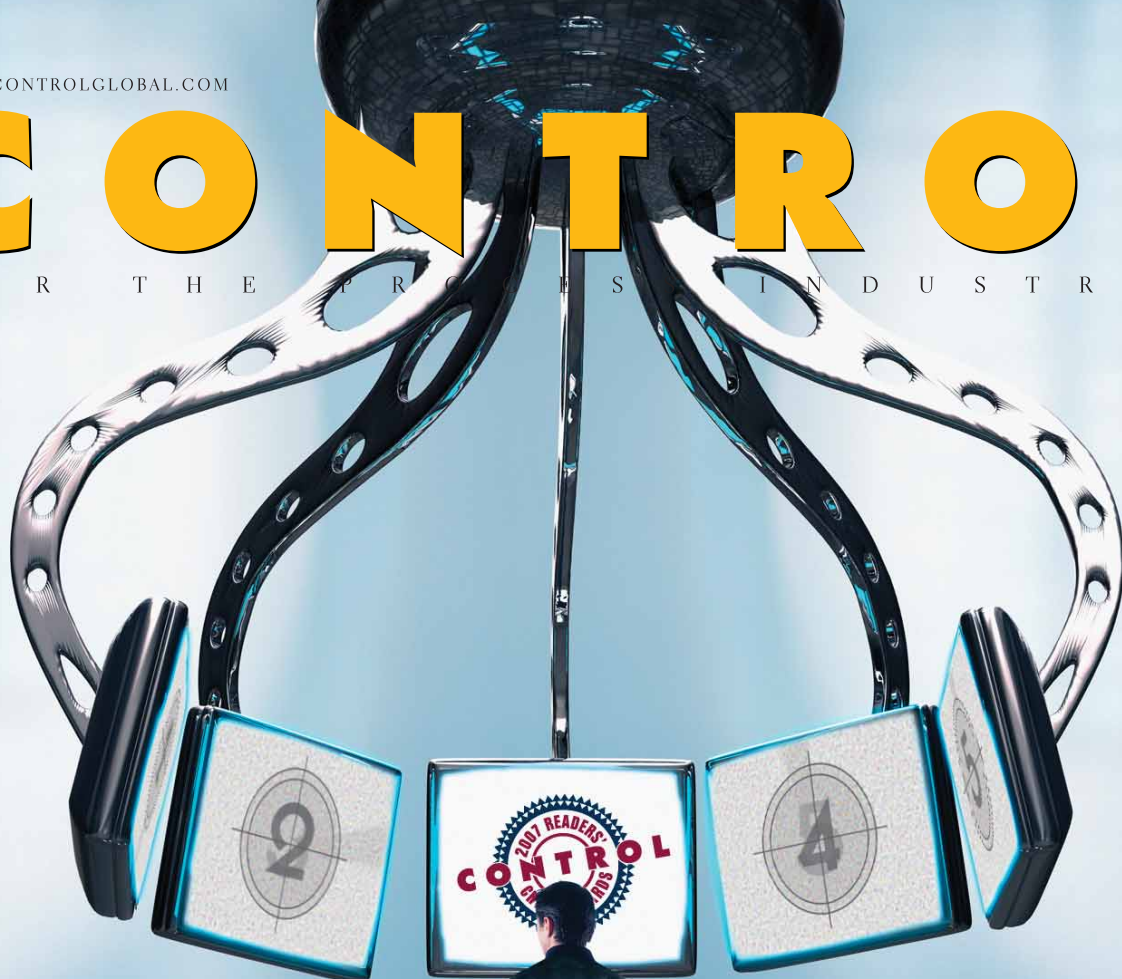


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# CONTROL

F O R T H E P R O F E S S I O N A L I N D U S T R I E S



Migration Strategies That Work

ABCs of XML, Part 3

Web Exclusive: The Thing  
About Enclosures

## Choosy readers choose – who?

Once again, the voice of  
the end users has spoken  
in the 15th Annual  
Readers' Choice Awards.

JANUARY/2007

## Readers' Choice Respondent Demographics

This year's Readers' Choice Awards were based on a web-based survey across the Control magazine readership. As of the cut-off date, the opinions of more than 700 automa-

tion professionals from all corners of the process industries had been tallied. Respondents identified their industry and job functions as follows.

### Industry

Chemical & allied . . . . .	21%
Food & beverage . . . . .	13%
Electric, gas & sanitary services . . . . .	9%
Petroleum refining . . . . .	8%
Pulp & paper . . . . .	7%
Primary metals production . . . . .	6%
Stone, clay & glass . . . . .	3%
Engineering & integration firms . . . . .	16%

Other . . . . . 9%

### Job Function

Engineering . . . . .	59%
Plant operations . . . . .	13%
Research & development . . . . .	8%
Administration . . . . .	6%
Other . . . . .	14%

## Vendors Offering Exceptional Service

In addition to selecting the best technology providers, survey respondents were asked to evaluate the customer service performance of their favored technology providers on a scale of 1 to 5, poor to outstanding.

### 4.5

Sandelius Instruments, Thermocouple

### 4.3

Emerson Process Management, Remote Terminal Unit  
R. Stahl, Intrinsic Safety Barrier  
Siemens Energy & Automation, Programmable Logic Controller

### 4.2

Pepperl + Fuchs, Intrinsic Safety Barrier

### 4.1

Emerson Process Management, Pressure Transmitter  
Emerson Process Management, Process Gas Chromatograph  
Emerson Process Management, Stack Gas Analyzer  
Endress + Hauser, Coriolis Flowmeter  
Endress + Hauser, Magnetic Flowmeter

### 4.0

Acopian, Power Supply  
Altek/Transmation, Portable Calibrator

Beck, Electric Valve Actuator  
Emerson Process Management, Control Valve  
Emerson Process Management, Density/Concentration Analyzer  
Emerson Process Management, Safety/Emergency Shutdown System  
Endress + Hauser, Ultrasonic Level Gauge  
Fluke, Portable Calibrator  
Hach, pH/ORP/Conductivity Analyzer  
Hach, Process Spectrometer  
Hardy Instruments, Load Cell Weighing System  
Honeywell, Temperature Transmitter  
Invensys Wonderware, Data Acquisition System  
Invensys, Simulation Software  
Ohmart/VEGA, Contacting Radar Level Gauge  
Ohmart/VEGA, Ultrasonic Level Gauge  
Phoenix Contact, Power Supply  
Rockwell Automation, Data Acquisition System  
Siemens Energy & Automation, Industrial Computer  
Siemens Energy & Automation, Safety/Emergency Shutdown System  
Thermo Fisher Scientific, pH/ORP/Conductivity Analyzer  
Wago, Terminal Block

### Analyzer, Ambient Gas Detector



1. MSA . . . . .	21%
2. Emerson Process Management . . . . .	11%
General Monitor . . . . .	9%
4. Draeger . . . . .	7%
Industrial Scientific . . . . .	7%

MSA Ultima X3 Gas Monitor

### Analyzer, Density/Concentration

1. Emerson Process Management . . . . .	41%
2. Endress + Hauser . . . . .	6%
Thermo Fisher Scientific . . . . .	5%



Micro Motion Coriolis Flow and Density Meter

### Analyzer, Process Gas Chromatograph



1. Emerson Process Management . . . . . 23%
2. Siemens Energy & Automation . . . . . 13%
- Agilent . . . . . 12%
4. ABB. . . . . 10%
5. Perkin-Elmer . . . . . 5%

Emerson Rosemount Model 700 Process Gas Chromatograph

### Calibrator, Portable

1. Fluke . . . . . 56%
2. Altek/Transmation . . . . . 11%
3. Beamex . . . . . 6%
- Meriam . . . . . 5%



Fluke 744 Documenting Process Calibrator

### Analyzer, Humidity/Moisture



1. Vaisala . . . . . 16%
- GE Panametrics . . . . . 14%
3. ABB. . . . . 6%
- Ametek . . . . . 6%
- Emerson Process Management . . . . . 5%
- Kahn . . . . . 5%
- Mettler-Toledo . . . . . 5%



HUMICAP Humidity and Temperature Transmitter  
Panametrics Moisture Image moisture analyzer

### Control Valve

1. Emerson Process Management . . . . . 61%
2. Flowserve . . . . . 9%
3. ASCO . . . . . 5%



Emerson Fisher Digital Valve

### Analyzer, pH/ORP/Conductivity



1. Emerson Process Management . . . . . 38%
2. ABB. . . . . 9%
- Hach . . . . . 9%
- Yokogawa . . . . . 9%
5. Thermo Fisher Scientific . . . . . 5%

Emerson PERpH-X pH Sensor

### Data Acquisition System

1. Emerson Process Management . . . . . 19%
2. OSIsoft . . . . . 8%
- Rockwell Automation . . . . . 8%
- GE Fanuc . . . . . 7%
- National Instruments . . . . . 7%
- Aspen Tech . . . . . 6%
- Invensys/Wonderware . . . . . 6%
8. Honeywell . . . . . 5%



Emerson DeltaV Zone 1 & 2 Remote IO

### Analyzer, Process Spectrometer



1. Hach . . . . . 14%
2. Agilent . . . . . 10%
- Perkin-Elmer . . . . . 10%
4. ABB. . . . . 7%
- Thermo Fisher Scientific . . . . . 6%

Hach Series 5000 Silica Analyzer

### Enclosures

1. Hoffman Engineering . . . . . 74%
2. Rittal . . . . . 11%



Hoffman Enclosures

### Analyzer, Stack Gas



1. Emerson Process Management . . . . . 38%
2. Ametek Thermox . . . . . 13%
3. Teledyne . . . . . 6%
- Thermo Fisher Scientific . . . . . 5%

Emerson Split Architecture Oxymitter In Situ Flue Gas Oxygen Transmitter

### Flowmeter, Coriolis

1. Emerson Process Management . . . . . 81%
2. Endress + Hauser . . . . . 6%



Micro Motion Coriolis Flow and Density Meters

### Annunciator



1. Ametek Panalarm . . . . . 33%
2. Ronan Engineering . . . . . 16%
3. Rockwell Automation . . . . . 10%
4. Federal Signal . . . . . 5%

Ametek Series 90A Annunciator

### Flowmeter, Magnetic

1. Emerson Process Management . . . . . 44%
2. Invensys Foxboro . . . . . 12%
- Yokogawa . . . . . 12%
- Endress + Hauser . . . . . 10%
5. ABB. . . . . 8%



Emerson Rosemount 8700 Series

### Flowmeter, Open Channel



1. Emerson Process Management . . . . . 24%  
Siemens Energy & Automation . . . . . 22%
  3. Endress + Hauser . . . . . 20%
  4. Teledyne-ISCO . . . . . 10%
  5. Ohmart/VEGA . . . . . 5%
- Mobrey Open Channel Flowmeter  
Siemens OCM III

### Flowmeter, Positive Displacement



1. Emerson Process Management . . . . . 49%
- Brooks BM Series Oval, Model BM10

### Flowmeter, Thermal Mass



1. FCI . . . . . 33%
  2. Emerson Process Management . . . . . 26%
  3. Endress + Hauser . . . . . 7%  
ifm efector . . . . . 5%  
Kurz . . . . . 5%  
Sage . . . . . 5%
- FCI ST50 and ST75 Series Mass Flow Meters

### Flowmeter, Turbine



1. Emerson Process Management . . . . . 32%
  2. Hoffer Flow Control . . . . . 13%
  3. Invensys Foxboro . . . . . 6%
- Daniel Turbine Flowmeters

### Flowmeter, Variable Area



1. Emerson Process Management . . . . . 59%
  2. Wallace & Tiernan . . . . . 9%
  3. Dwyer Instruments . . . . . 6%  
Endress + Hauser . . . . . 6%
- Brooks Ar-MiteTM Model 3750C

### Flowmeter, Vortex



1. Emerson Process Management . . . . . 55%
  2. Yokogawa . . . . . 17%  
Invensys Foxboro . . . . . 15%
  4. Endress + Hauser . . . . . 5%
- Emerson Rosemount Reducer Vortex

### Flow Switch



1. FCI . . . . . 20%
  2. ifm efector . . . . . 13%
  3. Magnetrol . . . . . 8%  
Dwyer Instruments . . . . . 7%  
Endress + Hauser . . . . . 7%  
Kobold Instruments . . . . . 7%  
7. Omega Engineering . . . . . 5%
- NuTec FS2000 Flow Switch

### Industrial Computer



1. Dell . . . . . 39%
  2. HP/Compaq . . . . . 7%  
Rockwell Automation . . . . . 7%  
Xycom . . . . . 6%  
Emerson Process Management . . . . . 5%  
Honeywell . . . . . 5%
- Dell PowerEdge 1855

### Input/Output System



1. Rockwell Automation . . . . . 46%
  2. Emerson Process Management . . . . . 14%
- Rockwell Armor WeldBlock I/O

### Instrument Fittings



1. Swagelok . . . . . 63%
  2. Parker . . . . . 28%
- Swagelok Modular Platform Components System

### Intrinsic Safety Barrier



1. MTL . . . . . 26%
  2. Pepperl + Fuchs . . . . . 21%
  3. R. Stahl . . . . . 13%
  4. Phoenix Contact . . . . . 6%
- MTL MTL8000 Process I/O

### Level Gauge, Electrical Property-Based



1. Ametek Drexelbrook . . . . . 16%
  2. Magnetrol . . . . . 11%  
K-Tek . . . . . 9%
  4. Endress + Hauser . . . . . 5%  
Siemens Energy & Automation . . . . . 5%
- Ametek Universal RF Admittance True Level

### Level Gauge, Float/Displacer



1. Magnetrol . . . . . 33%
2. Emerson Process Management . . . . . 21%
3. Gems Sensors . . . . . 10%
- K-Tek . . . . . 8%
5. Dwyer Instruments . . . . . 6%

EZ Module level displacer

### Level Gauge, Ultrasonic



1. Siemens Energy & Automation . . . . . 41%
2. Endress + Hauser . . . . . 17%
3. Emerson Process Management . . . . . 11%
- Magnetrol . . . . . 9%
- Ohmart/VEGA . . . . . 9%
6. Banner Engineering . . . . . 5%

Siemens Sitrans Probe

### Level Gauge, Contacting Radar



1. Emerson Process Management . . . . . 32%
2. Endress + Hauser . . . . . 17%
- Ohmart/VEGA . . . . . 15%
4. Magnetrol . . . . . 12%
5. Siemens Energy & Automation . . . . . 8%
6. Krohne . . . . . 5%

Emerson Rosemount 3300 Series

### Level Indicator, Visual



1. K-Tek . . . . . 23%
2. Penberthy . . . . . 18%
3. Jerguson . . . . . 14%

K-Tek KM26 Magnetic Level Gauge

### Level Gauge, Non-Contact Radar



1. Emerson Process Management . . . . . 42%
2. Ohmart/VEGA . . . . . 20%
3. Siemens Energy & Automation . . . . . 17%
4. Endress + Hauser . . . . . 12%
5. Magnetrol . . . . . 5%

Emerson Rosemount 5400 Series

### Level Switch



1. Magnetrol . . . . . 21%
- Endress + Hauser . . . . . 19%
3. Ametek Drexelbrook . . . . . 13%
4. Emerson Process Management . . . . . 6%

Magnetrol Model 961 level switch  
Endress+Hauser Liquiphant M

### Level Gauge, Inventory Grade



1. Emerson Process Management . . . . . 39%
2. Enraf . . . . . 10%
- Magnetrol . . . . . 9%
- Siemens Energy & Automation . . . . . 9%

Emerson Saab TankRadar Rex

### Operator Interface Terminal



1. Rockwell Automation . . . . . 42%
2. Emerson Process Management . . . . . 12%
3. Honeywell . . . . . 9%
- Dell . . . . . 7%

Rockwell PanelView Plus Operator Terminal

### Level Gauge, Laser



1. K-Tek . . . . . 31%

K-Tek LM200 Laser Level Transmitter

### Panel Display



1. Rockwell Automation . . . . . 48%
2. Emerson Process Management . . . . . 5%

Rockwell InView Family

### Level Gauge, Nuclear



1. Ohmart/VEGA . . . . . 47%
2. Thermo Fisher Scientific . . . . . 31%
3. Ronan Engineering . . . . . 6%
- Berthold . . . . . 5%

Ohmart/VEGA Fiber Flex-B

### Power Supply



1. Sola/Hevi-Duty . . . . . 41%
2. Acopian . . . . . 13%
- Phoenix Contact . . . . . 11%
4. Rockwell Automation . . . . . 7%

Sola/Hevi-Duty SDN Performance DIN Rail Series

### Pressure Transmitter



1. Emerson Process Management . . . . . 66%
2. Honeywell . . . . . 5%

Emerson Rosemount 3051S Pressure Transmitter

### Remote Terminal Unit

1. Rockwell Automation . . . . . 26%
2. Emerson Process Management . . . . . 5%



Rockwell CompactLogix 1768-L43

### Process Control/Automation System



1. Emerson Process Management . . . . . 33%
2. Rockwell Automation . . . . . 22%
3. Honeywell . . . . . 11%
4. Siemens Energy & Automation . . . . . 7%
- Invensys . . . . . 5%

Emerson DeltaV Digital Automation System

### Resistance Temperature Detector

1. Emerson Process Management . . . . . 31%
2. Pyromation . . . . . 16%
3. Omega Engineering . . . . . 12%



Emerson Rosemount RTDs

### Process Loop Controller



1. Honeywell . . . . . 27%
2. Siemens Energy & Automation . . . . . 14%
3. Emerson Process Management . . . . . 10%
- Invensys . . . . . 10%
- Yokogawa . . . . . 8%
6. Rockwell Automation . . . . . 6%
- ABB . . . . . 5%

Honeywell UDC3500 Universal Digital Controller

### Safety/Emergency Shutdown System

1. Invensys Triconex . . . . . 25%
2. Rockwell Automation . . . . . 20%
3. Emerson Process Management . . . . . 9%
- Honeywell . . . . . 8%
- Siemens Energy & Automation . . . . . 6%



Triconex Trident

### Programmable Logic Controller



1. Rockwell Automation . . . . . 72%
2. Schneider Electric . . . . . 10%
3. Siemens Energy & Automation . . . . . 5%

Rockwell PLC-5 controller

### Signal Conditioner

1. Moore Industries International . . . . . 26%
2. Invensys Eurotherm/Action . . . . . 18%
3. Acromag . . . . . 11%
4. Phoenix Contact . . . . . 7%
- Absolute Process Instruments . . . . . 6%
- Omega Engineering . . . . . 6%



Moore Industries SPA2 Universal Signal Interface

### Purge System

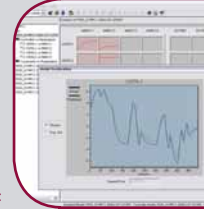


1. Pepperl + Fuchs/Becco . . . . . 58%
2. Purge Solutions . . . . . 8%

Pepperl+Fuchs Series 4000

### Software, Advanced Process Control

1. Emerson Process Management . . . . . 22%
2. Rockwell Automation . . . . . 18%
3. Invensys . . . . . 13%
4. Aspen Tech . . . . . 9%
- Honeywell . . . . . 9%



Emerson DeltaV Insight

### Recorder



1. Yokogawa . . . . . 32%
2. Honeywell . . . . . 20%
3. Invensys Eurotherm . . . . . 10%
- ABB . . . . . 8%
5. Siemens Energy & Automation . . . . . 5%

Yokogawa DAQStation DX Series Paperless Videographic Recorder

### Software, Alarm Management

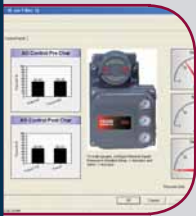
1. Emerson Process Management . . . . . 21%
2. Invensys . . . . . 18%
3. Honeywell . . . . . 10%
- Rockwell Automation . . . . . 10%
5. Matrikon . . . . . 6%



Emerson DeltaV Analyze



### Software, Asset Management



1. Emerson Process Management . . . . . 32%
2. Rockwell Automation . . . . . 12%
- Invensys . . . . . 10%
- SAP . . . . . 10%
5. Honeywell . . . . . 8%

Emerson AMS Suite: Intelligent Device Manager

### Software, Neural Network



1. Emerson Process Management . . . . . 37%
2. Pavilion . . . . . 13%
3. Invensys . . . . . 10%

Emerson DeltaV Neural

### Software, Batch Control



1. Emerson Process Management . . . . . 29%
2. Rockwell Automation . . . . . 19%
- Invensys . . . . . 17%
4. Honeywell . . . . . 10%

Emerson DeltaV Batch

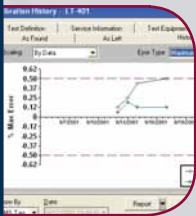
### Software, Process Control



1. Emerson Process Management . . . . . 29%
2. Rockwell Automation . . . . . 21%
3. Invensys . . . . . 12%
4. Honeywell . . . . . 6%
- Siemens Energy & Automation . . . . . 6%

Emerson DeltaV Operate

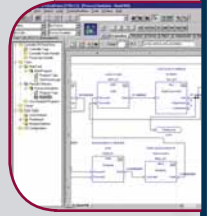
### Software, Calibration Management



1. Emerson Process Management . . . . . 28%
2. Fluke . . . . . 9%
- Rockwell Automation . . . . . 9%
- Honeywell . . . . . 7%
5. AST/Comerstone . . . . . 5%

Emerson AMS Suite: Calibration Assistant

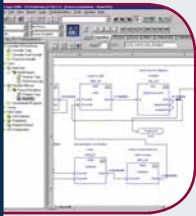
### Software, PLC Programming



1. Rockwell Automation . . . . . 73%
2. Schneider Electric . . . . . 8%

Rockwell Software RSLogix 5000 Enterprise Series Software

### Software, Design/Documentation



1. Rockwell Automation . . . . . 22%
2. AutoDesk . . . . . 14%
3. Emerson Process Management . . . . . 10%
4. ECT . . . . . 6%

Rockwell Software RSLogix 5000 Enterprise Series software

### Software, SCADA



1. Rockwell Automation . . . . . 24%
- Invensys Wonderware . . . . . 22%
3. GE Fanuc . . . . . 18%
4. Emerson Process Management . . . . . 10%
5. Citect . . . . . 6%

Rockwell FactoryTalk View Enterprise Series  
Invensys Wonderware SCADA Software

### Software, HMI



1. Invensys Wonderware . . . . . 29%
2. Rockwell Automation . . . . . 24%
3. Emerson Process Management . . . . . 12%
4. GE Fanuc . . . . . 6%
- Honeywell . . . . . 6%

Invensys Wonderware InTouch HMI Software

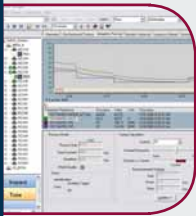
### Software, Simulation



1. Emerson Process Management . . . . . 19%
- Rockwell Automation . . . . . 17%
3. Mynah . . . . . 10%
- Invensys . . . . . 8%

Emerson DeltaV Simulate Pro  
Rockwell Software Arena Simulation Software

### Software, Loop Tuning



1. Emerson Process Management . . . . . 31%
2. Rockwell Automation . . . . . 14%
3. Expertune . . . . . 10%
- Invensys . . . . . 10%
5. Honeywell . . . . . 6%
- Siemens Energy & Automation . . . . . 6%

Emerson DeltaV Sight Adaptive Tuning

### Temperature Sensor, Infrared



1. Fluke/Raytek . . . . . 23%
2. Mikron . . . . . 13%
3. Iacon . . . . . 10%

Raytek Marathon MM sensor

### Temperature Transmitter



1. Emerson Process Management . . . . . 63%
2. Honeywell . . . . . 6%
- Omega Engineering . . . . . 5%

Emerson Rosemount 3144P

### Terminal Block



1. Rockwell Automation . . . . . 39%
2. Phoenix Contact . . . . . 25%
3. Weidmuller . . . . . 12%
4. Wago . . . . . 8%

Rockwell IEC Terminal Block

### Thermal Imaging/Thermography



1. FLIR Systems . . . . . 36%
2. Fluke/Raytek . . . . . 23%

FLIR ThermoVision A40M Infrared Camera

### Thermocouple



1. Omega Engineering . . . . . 26%
2. Emerson Process Management . . . . . 15%
3. Pyromation . . . . . 9%
4. Sandelius . . . . . 6%

Omega Probes

### Valve Actuator, Electric



1. Emerson Process Management . . . . . 18%
2. Limitorque . . . . . 11%
- Rotork . . . . . 11%
4. Flowserve . . . . . 9%
- ASCO . . . . . 7%
- Beck . . . . . 7%

Emerson Fisher Type 657 Actuator

### Valve Actuator, Pneumatic



1. Emerson Process Management . . . . . 60%
2. Flowserve . . . . . 6%

Emerson Bettis TorqPlus Model 500

### Variable Speed Drive



1. Rockwell Automation . . . . . 60%
2. ABB . . . . . 12%
3. Baldor Electric . . . . . 5%

Rockwell PowerFlex Family of AC Drives

### Vibration Sensor



1. GE Energy . . . . . 45%

GE Energy Vibration Monitoring System

### Weighing System, Load Cell



1. Mettler-Toledo . . . . . 30%
2. Hardy Instruments . . . . . 18%
3. Rice-Lake Weighing Systems . . . . . 10%
4. Vishay BLH . . . . . 8%

Mettler-Toledo IND780 Terminal

### Weighing Systems, Inline



1. K-Tron . . . . . 20%
2. Rice Lake Weighing Systems . . . . . 15%
3. Hardy Instruments . . . . . 6%
- Acriston . . . . . 5%
- Siemens Energy & Automation . . . . . 5%

K-Tron Smart Force Transducer (SFT) Load Cells

### Wire & Cable



1. Belden . . . . . 70%

Belden Datatuff Ethernet Line

### Editor's note:

Because differences in the results of less than  $\pm 3\%$  are statistically insignificant, they are being treated as ties in the numerical rankings.