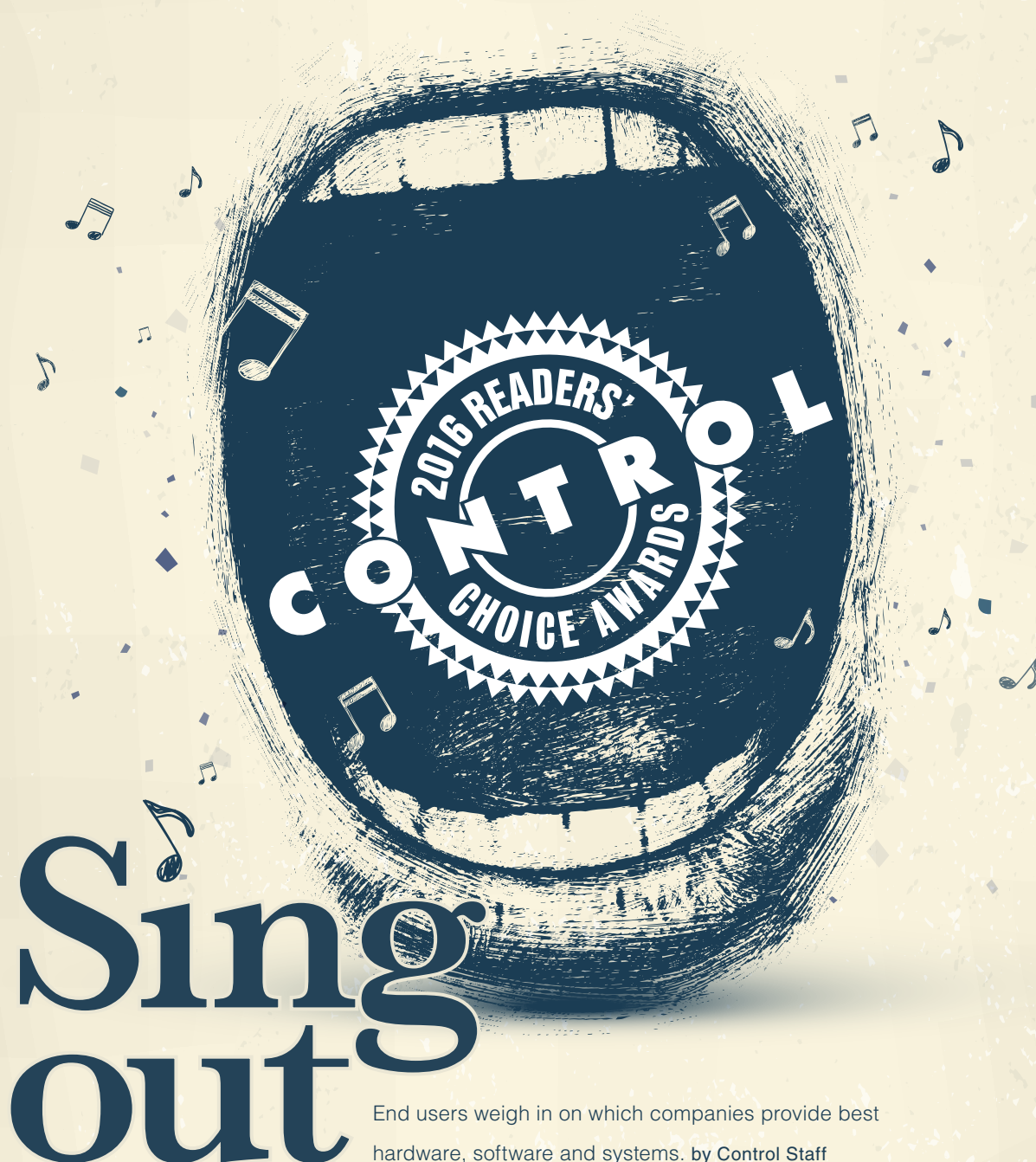


CONTROL

PROMOTING EXCELLENCE IN PROCESS AUTOMATION • CONTROLGLOBAL.COM

JANUARY 2016



Sing out

End users weigh in on which companies provide best hardware, software and systems. by Control Staff

BEGIN



Continuous Regulatory Control

Emerson Process Management

2. Rockwell Automation
3. Honeywell Process Solutions
4. ABB
5. Siemens Industry
6. Schneider Electric
7. Yokogawa
8. GE Automation & Controls

Safety/Emergency Shutdown

Rockwell Automation

2. Schneider Electric
3. Emerson Process Management
4. Siemens Industry
5. Honeywell Process Solutions
6. ABB
7. HIMA
8. Yokogawa

Batch Process Automation

Rockwell Automation

2. Emerson Process Management
3. Siemens Industry
4. ABB
5. Honeywell Process Solutions
6. Schneider Electric
7. Yokogawa
8. GE Automation & Controls

Sequential Logic Control

Rockwell Automation

2. Siemens Industry
3. Emerson Process Management
4. Honeywell Process Solutions
5. ABB
6. Schneider Electric
7. Yokogawa
8. GE Automation & Controls

Continuous Sheet/Web Monitoring & Control

Honeywell Process Solutions

2. Rockwell Automation
3. ABB
4. Emerson Process Management
5. Siemens Industry
6. Schneider Electric
7. Yokogawa
8. GE Automation & Controls

Supervisory Control & Data Acquisition (SCADA)

Rockwell Automation

2. Schneider Electric
3. Emerson Process Management
4. Honeywell Process Solutions
5. Siemens Industry
6. ABB
7. GE Automation & Controls
8. Yokogawa

Table I.
Best in Control Readers Choice Awards
by Process Automation Discipline

Engineering, installing and maintaining automation systems for safe, efficient, quality production takes many talents. Along with a real grip on the technologies and techniques of process control, you must have a good understanding of manufacturing principles, finances, people and more.

One of the most important tools in your belt is your hard-won knowledge of what works. Through real-world experience, you've found products and brands you can rely on to give the best combination of performance, ease of use, reliability and reasonable cost.

But no single automation professional is expert in every one of the myriad categories of process control hardware, software and systems necessary to properly support today's plant. Where do you turn when it's time to identify a new source for one of the less familiar needs of your facility? Who do you want to consult—your purchasing department? Your local reps? Magazine editors? The web?

How about your fellow professionals who read *Control*? That's who we poll to determine our annual Readers' Choice Awards.

A veritable who's who

The professionals who took the time and made the effort to complete our lengthy, fill-in-the-blank surveys worked hard at it. For each of more than 80 categories, they decided whether or not they had the experience to name up to three suppliers who, in their opinion, deliver the best technology. If so, they decided who those suppliers would be, ranked them one to three, and typed in their names.

Few respondents were able to fill in all the blanks—many felt qualified to fill in less than half the categories. Clearly, naming the best supplier isn't a casual decision. Only the strongest suppliers earn the loyalty that leads to a place in our Readers' Choice Awards.

In short, the *Control* Readers' Choice Awards offer a reference list of brands that offer the best—a veritable who's who of plant equipment, software and service providers.

Cautions, thanks and congratulations

As you review this year's winners, remember that the fill-in-the-blank format of the survey means every supplier has an equal

chance—the choices are not limited to a selection of entries determined by vendors, editors or other people who are not practicing process automation professionals.

On the surveys, we ask end users to vote only in those categories where they have personal experience. A vote for a specific company should mean the respondent has found its products to be better than other companies in that category.

Every vendor in the accompanying tables has been designated as the best by a significant number of respondents. Since more respondents have experience with companies that have a larger installed base, the results are inevitably biased toward the larger companies. Furthermore, there are certainly small companies that don't make the list, no matter how excellent their technologies, just because they are relatively unknown. If you have a favorite smaller supplier, consider yourself fortunate, and don't be concerned that they aren't in our Readers' Choice Awards.

We express our heartfelt appreciation to the hardy respondents who took the time to share their wisdom by selecting our winners, and we congratulate each listed vendor on being recognized in our Readers' Choice Awards.

First up: The best in control

Best in Control categories are broken down into six automation disciplines and by 10 vertical industries (Tables I and II). These platform categories are dominated by the largest companies in process automation, with little change in rankings from year to year. But this year, Honeywell Process Solutions rose to first in Continuous Sheet/Web Monitoring & Control, fourth in Sequential Logic Control, and fifth in Safety/Emergency Shutdown and Batch Process Automation categories.

Rockwell Automation notched up to first in Safety/Emergency Shutdown, and Siemens Industry moved up to third in Batch Process Automation, fourth in Safety/Emergency Shutdown, and fifth in Continuous Regulatory Control, Continuous Sheet/Web Monitoring & Control, and Supervisory Control & Data Acquisition (SCADA).



	Chemicals Manufacturing	Electric Power Generation	Food & Beverage Manufacturing	Metals, Minerals & Mining	Oil & Gas Extraction
Continuous Regulatory Control	Emerson Process Management	Rockwell Automation	Rockwell Automation	Rockwell Automation	Emerson Process Management
Batch Process Automation	Emerson Process Management	Rockwell Automation	Rockwell Automation	Rockwell Automation	Emerson Process Management
Continuous Sheet/Web Monitoring & Control	-	-	-	Rockwell Automation	-
Safety/Emergency Shutdown	Schneider Electric	Schneider Electric	Rockwell Automation	Rockwell Automation	Rockwell Automation
Supervisory Control & Data Acquisition	Rockwell Automation	Schneider Electric	Rockwell Automation	Rockwell Automation	Rockwell Automation
Sequential Logic Control	Rockwell Automation	Rockwell Automation	Rockwell Automation	Rockwell Automation	Rockwell Automation

	Petroleum Refining	Pharmaceuticals & Life Sciences	Plastics & Rubber Manufacturing	Pulp & Paper Manufacturing	Water & Wastewater Processing
Continuous Regulatory Control	Emerson Process Management	Emerson Process Management	Rockwell Automation	Emerson Process Management	Rockwell Automation
Batch Process Automation	Emerson Process Management	Emerson Process Management	Rockwell Automation	Emerson Process Management	Rockwell Automation
Continuous Sheet/Web Monitoring & Control	-	-	Honeywell Process Solutions	Honeywell Process Solutions	-
Safety/Emergency Shutdown	Schneider Electric	Emerson Process Management	Rockwell Automation	Rockwell Automation	Rockwell Automation
Supervisory Control & Data Acquisition	Honeywell Process Solutions	Rockwell Automation	Rockwell Automation	Schneider Electric	Schneider Electric
Sequential Logic Control	Rockwell Automation	Emerson Process Management	Rockwell Automation	Rockwell Automation	Rockwell Automation

Table II. Best in Control Readers Choice Awards by Discipline and Industry

INFRASTRUCTURE SUPPORTS THE SYSTEM

Wired and wireless networks connect system controllers and software to field devices through signal conditioners and input/output (I/O) systems. While many process automation product categories have seen extensive consolidation through mergers and acquisitions, infrastructure remains dotted with independent, medium-sized companies that haven't been bought, including Pepperl+Fuchs in Intrinsic Safety, Moore Industries for Signal Conditioner, and Phoenix Contact in Power Supplies and Terminal Blocks.

Wire and Cable remains led by the familiar Belden and Lapp, with jostling for the rest of the chart shared among Anixter, Southwire and new this year, AlphaWire. Wireless Infrastructure has the same companies in the same order as last year, perhaps showing that they've recognized, secured and assiduously guarded this relatively new and growing market.

Input/Output System

- Rockwell Automation
- Siemens Industry
- Emerson Process Management
- ABB
- Pepperl + Fuchs

Intrinsic Safety

- Pepperl+Fuchs
- Rockwell Automation
- MTL Instruments
- Siemens Industry
- R. Stahl

Power Supply

- Phoenix Contact
- SolaHD
- Rockwell Automation
- Siemens Industry
- Acopian

Signal Conditioner

- Moore Industries
- Phoenix Contact
- Acromag
- Pepperl+Fuchs
- Rockwell Automation

Terminal Block

- Phoenix Contact
- Weidmuller
- Rockwell Automation
- Wago
- AutomationDirect

Wire & Cable

- Belden
- Lapp
- Anixter
- Southwire
- AlphaWire

Wireless Infrastructure

- Emerson Process Management
- Cisco
- Honeywell Process Solutions
- Phoenix Contact
- Moxa



Advanced Process Control Software

- Emerson Process Management
- Rockwell Automation
- Honeywell Process Solutions
- AspenTech
- ABB

Alarm Management Software

- Emerson Process Management
- Honeywell Process Solutions
- Rockwell Automation
- Schneider Electric
- PAS

Asset Management Software

- Emerson Process Management
- Rockwell Automation
- Oracle
- ABB
- SAP

Calibration Management Software

- Fluke
- Emerson Process Management
- Beamex

Design/Documentation Software

- Autodesk
- EPLAN

Human-Machine Interface Software

- Rockwell Automation
- Schneider Electric
- Emerson Process Management
- Siemens Industry
- GE Automation & Controls

Loop-Tuning Software

- Emerson Process Management
- ExperTune
- Honeywell Process Solutions
- Control Station
- Rockwell Automation

Neural Network Software

- Emerson Process Management
- Rockwell Automation

OPC Connectivity

- Keeware Technologies
- Matrikon OPC
- Emerson Process Management
- Rockwell Automation
- Schneider Electric

PLC Programming Software

- Rockwell Automation
- Siemens Industry
- Schneider Electric
- Emerson Process Management
- GE Automation & Controls

SCADA Software

- Rockwell Automation
- Schneider Electric
- GE Automation & Controls
- Emerson Process Management
- Siemens Industry

Simulation Software

- Mynah Technologies
- Rockwell Automation
- Emerson Process Management
- Honeywell Process Solutions
- AspenTech

SOFTWARE PROVIDES INTELLIGENCE

Software powers the control system's brains and communications, so it's no surprise that many software category winners are the same companies we saw at the top of the equivalent platform categories on page 31. This year, Emerson Process Management took the lead back in Alarm Management Software. Emerson also took the lead, with Honeywell Process Solutions rising, in Loop Tuning Software, perhaps reflecting increased use and effectiveness of these system leaders' in-house offerings.

Among the niche players, Keeware Technologies rose to the top of OPC Connectivity, Fluke regained first place in Calibration Management Software, and AspenTech broke into the rankings in Simulation Software.

SAP is back and Oracle has risen into the Asset Management Software rankings, showing that this is increasingly seen by many as an enterprise rather than control system or plant maintenance function.

Remember, if you wonder where Wonderware went, it (and all the Invensys brands) are now part of Schneider Electric. Similarly, accolades for Pavilion Technologies were advanced to Rockwell Automation.

OUTFITTING THE INTERFACES

Software needs a place to run and a way for operators to run it. That may be in a centralized control room or various locations across the plant—either way, you often need pieces from this eclectic collection of specialized hardware.

This year, AutomationDirect returned to the Operator Interface category after a one-year absence, Advantech made a fresh foray into Panel Display, and Honeywell Process Solutions returned to the top spot in Process Loop Controller. Perhaps reflecting the shift away from paper and pens, Rockwell Automation rose into the listings for the Recorder category.

Interestingly, the Industrial Computer category collects many votes for Dell and HP, reflecting either support for non-industrial PCs or the rising tendency for computational power to be allocated to servers. If either of those are your style, they are the winning brands.

Annunciator

- Ametek
- Rockwell Automation
- Ronan Engineering
- ABB
- Emerson Process Management

Industrial Computer

- Rockwell Automation
- Advantech
- Siemens Industry

Operator Interface Terminal

- Rockwell Automation
- Siemens Industry
- Pro-face America
- Red Lion Controls
- AutomationDirect

Panel Display

- Rockwell Automation
- Siemens Industry
- Red Lion Controls
- Advantech
- Schneider Electric

Process Loop Controller

- Honeywell Process Solutions
- Emerson Process Management
- Rockwell Automation
- Siemens Industry
- Yokogawa

Recorder

- Yokogawa
- Honeywell Process Solutions
- Schneider Electric
- Rockwell Automation
- ABB



FLOW KEEPS ROLLING

For years now, advances in flow detection and measurement have centered more on accuracy, reliability and communications than the measurement technologies themselves. Achieving those objectives takes solid engineering, quality control and an intimate knowledge of the characteristics of each flow technology, where it can best be applied, and how to interface it with systems, operators and technicians. In a way, it helps that the large system companies have bought up many niche manufacturers because it means they can truly recommend the best technology for the job.

But once you know what you want, there are still some specialized companies that may win your loyalty. And if you're surprised that a favorite one of those smaller companies is not in our rankings, you may find that it's owned by one of the majors—we roll those votes up into a single total for the parent company.

Coriolis Flowmeter

Emerson Process Management

- Endress+Hauser
- Siemens Industry
- Krohne
- Yokogawa

Magnetic Flowmeter

Emerson Process Management

- Endress+Hauser
- Yokogawa
- ABB
- Siemens Industry

Open Channel Flowmeter

Emerson Process Management

- Endress+Hauser
- Siemens Industry
- ABB
- VEGA Americas

Positive Displacement Flowmeter

Brooks Instrument

- Emerson Process Management
- FMC Technologies
- Badger Meter
- Endress+Hauser

Thermal Mass Flowmeter

FCI

- Endress+Hauser
- Brooks Instrument
- Emerson Process Management
- ABB

Turbine Flowmeter

Emerson Process Management

- FMC Technologies
- Badger
- Endress+Hauser
- Sponsler

Ultrasonic Flowmeter (Closed Pipe)

Emerson Process Management

- Endress+Hauser
- Siemens Industry
- GE
- Krohne

Variable Area Flowmeter

Brooks Instrument

- ABB
- Yokogawa
- Emerson Process Management
- Endress+Hauser
- Krohne

Vortex Flowmeter

Emerson Process Management

- Endress+Hauser
- Yokogawa
- Schneider Electric
- ABB

Flow Switch

FCI

- Emerson Process Management
- Endress+Hauser
- Magnetrol
- Dwyer

Level Gauge, Capacitance/Admittance/Conductance

Endress+Hauser

- Ametek Drexelbrook
- Emerson Process Management
- VEGA Americas
- Magnetrol

Level Gauge, Float/Displacer

Emerson Process Management

- Magnetrol
- Danaher
- GE Energy
- Endress + Hauser

Level Gauge, Guided Wave

Emerson Process Management

- Endress+Hauser
- VEGA Americas
- Magnetrol
- Siemens Industry

Level Gauge, Non-Contacting Radar

Emerson Process Management

- Endress+Hauser
- VEGA Americas
- Siemens Industry
- Magnetrol

Level Gauge, Inventory Grade

Emerson Process Management

- Endress+Hauser
- Honeywell Enraf
- Varec

Level Gauge, Laser

ABB

- Emerson Process Management

Level Gauge, Magnetostrictive

Orion Instruments

- Emerson Process Management
- ABB
- Ametek Drexelbrook
- MTS

Level Gauge, Radiometric (Nuclear)

VEGA Americas

- Endress+Hauser
- Thermo Scientific
- Emerson Process Management
- Berthold Technologies

Level Gauge, Ultrasonic

Emerson Process Management

- Endress+Hauser
- Siemens Industry
- Magnetrol
- ABB

Level Switch, Electrical Property-based

Endress+Hauser

- Emerson Process Management
- Magnetrol
- VEGA Americas
- ABB

Level Switch, Mechanical

Magnetrol

- Emerson Process Management
- Endress+Hauser
- ABB
- SOR

Level Switch, Ultrasonic

Emerson Process Management

- Endress+Hauser
- Magnetrol
- Siemens Industry
- VEGA Americas

Level Switch, Vibration

Endress+Hauser

- Emerson Process Management
- VEGA Americas
- Magnetrol
- Siemens Industry

Magnetic Level Indicator

Orion Instruments

- Emerson Process Management
- ABB
- Clark Reliance
- Ametek Drexelbrook



SEEK YOUR OWN LEVEL

It seems so simple to automate the elementary task of looking at a sight glass or dipping in a stick, but level remains an area where instrumentation based on the simplest principles (like the fact that some things float) competes with nuclear radiation and microwave radar to provide the least expensive, most reliable and exactly appropriate way to deal with fluids from flammable hydrocarbons to sticky foams, clumping solids and elusive interfaces.

Again, the big suppliers have acquired a broad selection of technologies and their system-sized influence has made certain brands and technologies sometimes seem like no-brainer decisions. But smaller companies offer some less known alternatives that might work better in certain situations—the savvy field instrument engineer seldom has a more challenging selection than a new level application.

Here we offer some of the best sources for a full range of level technologies. The top few companies in each category have been leading for several years, and there are no losers on these charts.



Pressure Transmitter

Emerson Process Management

2. Endress+Hauser
3. Yokogawa
4. Honeywell Process Solutions
5. Siemens Industry

Pressure Switch

Emerson Process Management

2. Ashcroft
3. Endress+Hauser

Resistance Temperature Detector

Emerson Process Management

2. Endress+Hauser
3. Omega Engineering
4. Pyromation
5. Thermometrics

Thermocouple

Emerson Process Management

2. Pyromation
3. Omega Engineering
4. Endress+Hauser
5. Watlow

Temperature Transmitter

Emerson Process Management

2. Endress+Hauser
3. Yokogawa
4. Omega Engineering
5. Honeywell Process Solutions

Infrared Temperature Sensor

Fluke

2. Omega Engineering
3. Palmer Wahl Instrumentation
4. Williamson

Infrared Imaging/Thermography

Fluke

2. FLIR Systems

Temperature Switch

Emerson Process Management

2. Omega Engineering
3. Ashcroft
4. Endress+Hauser
4. United Electric Controls

TEMPERATURE AND PRESSURE COOK ALONG

Pressure and temperature switches and transmitters play major roles in field instrumentation. This year, Endress+Hauser joined Emerson Process Management and Ashcroft in the Pressure Switch category added last year. Thermometrics broke into the Resistance Temperature Detector (RTD) category, and Watlow Industries made the grade for Thermocouple.

Along with its usual strong showing in Thermocouple, Omega Engineering climbed in RTD, and broke into the listings for Temperature Transmitter and Temperature Switch, where Endress+Hauser also made a showing. The Infrared Temperature Sensor rankings welcome Palmer Wahl and Williamson.



A LOOK INSIDE ANALYZERS

Process analysis has become a highly evolved art. As the ability to make sensitive composition measurements has largely moved from the laboratory to the plant floor, few and highly specialized manufacturers are able to combine precision with the ruggedness and stability required for industrial-strength reliability. The companies with the right engineering and fabrication chops change little from year to year.

Self-diagnostics and seamless communications are increasingly important, and affiliation with a major platform and system supplier can only help.

Of note for 2016, Emerson Process Management regained first place and Thermo Fisher Scientific broke into the Ambient Gas Detector rankings. Michell Instruments is new this year in the Humidity/Moisture Analyzer rankings, and Hach has shown up on the list for pH/ORP/Conductivity Analyzer.

Ambient Gas Detector

Emerson Process Management

2. MSA
3. ABB
4. Dräger
5. Thermo Fisher Scientific

Density/Concentration Analyzer

Emerson Process Management

2. Endress+Hauser
3. Yokogawa
4. Thermo Fisher Scientific
5. Honeywell Process Solutions

Humidity/Moisture Analyzer

Vaisala

2. Emerson Process Management
3. GE Measurement & Control
4. Michell Instruments
5. Honeywell Process Solutions

pH/ORP/Conductivity Analyzer

Emerson Process Management

2. Endress+Hauser
3. ABB
4. Yokogawa
5. Hach

Process Spectrometer

ABB

2. Thermo Fisher Scientific
3. Yokogawa
4. Emerson Process Management
5. Siemens Industry

Process Chromatograph

Emerson Process Management

2. ABB
3. Siemens Industry
4. Yokogawa

Stack Gas/Emissions Analyzer

Emerson Process Management

2. ABB
3. Ametek
4. Yokogawa
5. Siemens Industry



ELSEWHERE IN THE FIELD

Here's our collection of essential field equipment, instrumentation and devices that don't fit into another major group. Most of the categories are led by solid performers that remain in their places this year. Rockwell Automation shouldered its way back to first in Data Acquisition System, and Hammond Manufacturing is back in the rankings for Enclosure.

Omega continues to impress more users with its offerings as evidenced by a place in the rankings for Portable Calibrator, while Fluke's recent foray into Vibration Instrumentation has already propelled the company to third place in that category.

Heavy jostling in the Weighing System/Load Cell category has Hardy Process Solutions rising to second place, with new showings by Sartorius and Fairbanks Scales.



Data Acquisition System

- Rockwell Automation
- Schneider Electric
- National Instruments
- Emerson Process Management
- OSI Software

Enclosure

- Pentair Technical Products
- Rittal
- Hubbel Wiegmann
- Saginaw Control & Engineering
- Hammond Manufacturing

Purge System

- Pepperl+Fuchs
- Pentair Technical Products

Portable Calibrator

- Fluke
- Emerson Process Management
- Beamex
- Yokogawa
- Omega Engineering

Remote Terminal Unit

- Emerson Process Management
- Siemens Industry
- Rockwell Automation
- Honeywell Process Solutions
- Schneider Electric

Instrument Fittings

- Swagelok
- Parker Hannifin

Vibration Instrumentation

- GE Energy
- Emerson Process Management
- Fluke
- ifm
- SKF

Weighing System/Load Cell

- Mettler Toledo
- Hardy Process Solutions
- Rice Lake Weighing Systems
- Sartorius
- Fairbanks Scales

Control Valve

- Emerson Process Management
- Flowserve
- Samson Controls
- GE Energy
- Metso

Electric Valve Actuator

- Emerson Process Management
- Rotork Controls
- Flowserve
- Auma Actuators
- Metso

Pneumatic Valve Actuator

- Emerson Process Management
- Metso
- Flowserve
- Rotork
- Keystone

On/Off Valve

- Emerson Electric*
 - Metso
 - Flowserve
 - Apollo
- * Includes Emerson Industrial Automation (ASCO) and Emerson Process Management brands

Electric Motor Drive

- Rockwell Automation
- ABB
- Siemens Industry
- Schneider Electric
- Yaskawa

Electric Motor

- Baldor Electric
- Siemens Industry
- GE Power Conversion
- WEG
- ABB

FINAL ELEMENTS MAKE THEIR MOVES

Once the sensor signals have been transduced, the networks have transmitted, and the processors have run the software, the resulting outputs arrive at a surprisingly small variety of final elements charged with implementing the changes that keep our processes under control.

This year we have only a few changes from 2015: Emerson Process Management adds Electric Valve Actuator to its wins with support from its EIM and Rosemount brands. Apollo shows up this year in the listings for On/Off Valve, and GE Power Conversion and WEG are on the board for Electric Motor.

Thanks again to all the process control professionals who completed the surveys and chose the winners of the 2016 Control Readers' Choice Awards.



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