2009 READERS' CONTROL CHOICE AWARDS

Control Readers Report Their Solution Provider Preferences in More than 100 Process Automation Technology Categories

This year's *Control* Readers Choice Awards represent unprecedented levels of both breadth and detail.

The most ambitious effort to date, our 17th annual effort represents the expressed brand preferences of more than 1,000 process automation professionals. Those surveyed include the print magazine's U.S.-centric readership as well as subscribers to our increasingly international digital media outlets anchored at our website, ControlGlobal.com.

And, while the results certainly still reflect a North American bias (more than 90% of respondents hail from the 50 U.S.), the increased participation of industry profes-

	Chemicals Manufacturing	Electric Power Generation	Food & Beverage Manufacturing	Metals, Minerals & Mining	Oil & Gas Extraction
Continuous Regulatory Control	Emerson Process Management	Emerson Process Management	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	Honeywell	-	-	Rockwell Automation	-
Safety/Emergency Shutdown	Invensys Process Systems	Invensys Process Systems	Rockwell Automation	Siemens	Invensys Process Systems
Sequential Logic Control	Rockwell Automation	Rockwell Automation	Rockwell Automation	Rockwell Automation	Rockwell Automation

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

sionals from outside the U.S. buoyed this year's standings of more than a few European and Asian players.

Increased participation also has allowed us to go more granular for the first time in the arena of systems capability. In years past, we compiled a single ranking of solution providers in the categories of "Process Automation Systems" and "Programmable Logic Controllers (PLC)." Most would agree (and more than one supplier has argued!) that this was a rather blunt category classification that belied the application-specific subtlety that the breadth of the process industry represents.

So, new this year, we've broken out systems capabilities into a new group of Readers Choice Awards dubbed "Best in Control." These rankings (see Table I) allowed users to register their preferences in each of five essential process control disciplines—continuous regulatory control, batch process automation, continuous sheet/web monitoring and control, safety/emergency shutdown and sequential logic control. Further, increased participation has al-

lowed us to present the top solution providers in each of these process automation disciplines in each of 10 process industry verticals (see Table II). We think you'll agree that the results capture a more meaningful, contextually sensitive image of true industry sentiment.

In addition to these new system capabilities awards, our usual rankings in a wide range of instrumentation, control and infrastructure products are presented on the pages that follow. And, for those of you keeping track of methodology changes from last year, each survey respondent was allowed to identify up to three top providers in each category. These second- and third-place votes were weighted accordingly, but precluded the percentages of the category vote results that we reported in the past.

Our collective hats are off to all the solution providers that made this year's list. To be mentioned at all, each supplier has demonstrated to a significant, loyal contingent of users that they provide the very best technology in their respective domains. And that's no small feat at all.

Continuous Regulatory Control
⭐ **Emerson Process Management**
2. Honeywell
3. Rockwell Automation
4. ABB
5. Invensys Process Systems
6. Yokogawa
7. Siemens
8. GE Fanuc

Batch Process Automation
⭐ **Emerson Process Management**
2. Rockwell Automation
3. Siemens
4. Honeywell
5. ABB
6. Invensys Process Systems
7. Yokogawa
8. GE Fanuc

Continuous Sheet/Web Monitoring & Control
⭐ **ABB**
2. Honeywell
3. Rockwell Automation
4. Emerson Process Management
5. Invensys Process Systems
6. Siemens
7. Metso Automation
8. GE Fanuc

Safety/Emergency Shutdown
⭐ **Invensys Process Systems (Triconex)**
2. Rockwell Automation (ICS Triplex)
3. Emerson Process Management
4. Siemens
5. Honeywell
6. ABB
7. HIMA
8. Yokogawa

Sequential Logic Control
⭐ **Rockwell Automation**
2. Siemens
3. Schneider Electric
4. Emerson Process Management
5. ABB
6. GE Fanuc
7. Honeywell
8. Yokogawa

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

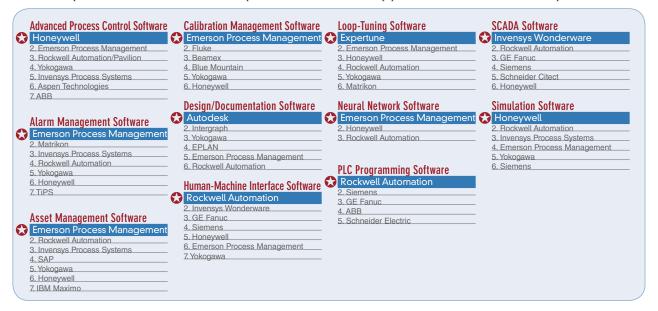| Petroleum Refining	Pharmaceuticals & Life Sciences	Plastics & Rubber Manufacturing	Pulp & Paper Manufacturing	Water & Wastewater Processing
Honeywell	Emerson Process Management	Emerson Process Management	Emerson Process Management	Rockwell Automation
Emerson Process Management	Emerson Process Management	Rockwell Automation	Rockwell Automation	Emerson Process Management
-	-	Honeywell	ABB	-
Invensys Process Systems	Rockwell Automation	Rockwell Automation	Invensys Process Systems	Rockwell Automation
Rockwell Automation	Rockwell Automation	Rockwell Automation	Rockwell Automation	Rockwell Automation

The Software Suite

Closely complementing our Readers Choice Awards across the range of essential process automation disciplines are the Readers Choice Awards for specific software competencies.

First place in several of these categories goes to the integrated platform players such as Emerson, Honeywell and Rockwell. Through a combination of in-house development and acquisition, each of these companies has developed a broad competency in the core software categories.

But in the spirit of entrepreneurship, a number of smaller software publishers have maintained an independent leader-ship role, notably Expertune in the loop-tuning software category; Matrikon, for its competency in alarm management software; and EPLAN in design/documentation software. In the arena of calibration management software, competency is ascribed to hardware companies that produce field calibrators as well, with Fluke and Beamex rating second and third only to Emerson.

Wonderware, now part of Invensys, for many years represented the ultimate packaged software upstart. It retains its leadership position in the SCADA software space.

Advanced Process Control Software
⭐ **Honeywell**
2. Emerson Process Management
3. Rockwell Automation/Pavilion
4. Yokogawa
5. Invensys Process Systems
6. Aspen Technologies
7. ABB

Alarm Management Software
⭐ **Emerson Process Management**
2. Matrikon
3. Invensys Process Systems
4. Rockwell Automation
5. Yokogawa
6. Honeywell
7. TiPS

Asset Management Software
⭐ **Emerson Process Management**
2. Rockwell Automation
3. Invensys Process Systems
4. SAP
5. Yokogawa
6. Honeywell
7. IBM Maximo

Calibration Management Software
⭐ **Emerson Process Management**
2. Fluke
3. Beamex
4. Blue Mountain
5. Yokogawa
6. Honeywell

Design/Documentation Software
⭐ **Autodesk**
2. Intergraph
3. Yokogawa
4. EPLAN
5. Emerson Process Management
6. Rockwell Automation

Human-Machine Interface Software
⭐ **Rockwell Automation**
2. Invensys Wonderware
3. GE Fanuc
4. Siemens
5. Honeywell
6. Emerson Process Management
7. Yokogawa

Loop-Tuning Software
⭐ **Expertune**
2. Emerson Process Management
3. Honeywell
4. Rockwell Automation
5. Yokogawa
6. Matrikon

Neural Network Software
⭐ **Emerson Process Management**
2. Honeywell
3. Rockwell Automation

PLC Programming Software
⭐ **Rockwell Automation**
2. Siemens
3. GE Fanuc
4. ABB
5. Schneider Electric

SCADA Software
⭐ **Invensys Wonderware**
2. Rockwell Automation
3. GE Fanuc
4. Siemens
5. Schneider Citect
6. Honeywell

Simulation Software
⭐ **Honeywell**
2. Rockwell Automation
3. Invensys Process Systems
4. Emerson Process Management
5. Yokogawa
6. Siemens

Elsewhere in the Control Room

Core competency in process control disciplines—and their software implementation—are well and good, but other control room technologies are needed to communicate process conditions with human operators effectively, and to ensure accurate data is acquired and that control is maintained. For this group of Readers Choice Awards winners, it's an acknowledged expertise in hardware design and manufacturing that typically carries the day.

Ametek's Panalarm division specializes in annunciators—all day long—and is once again recognized as the long-time leader in that display technology niche. For panel displays and operator interface terminals, Rockwell Automation gets the nod, although niche specialists Pro-face (including the former Xycom brand) and Red Lion also placed highly. And in the category of industrial computers, Advantech nosed out Rockwell and Siemens for top honors.

And Yokogawa, long respected for its excellence in instrumentation hardware, tops the charts in recorders (pun intended!) as well as loop controllers.

Annunciator
⭐ **Ametek Panalarm**
2. Rockwell Automation
3. Ronan Engineering
4. Honeywell
5. Siemens
6. MTL RTK

Industrial Computer
⭐ **Advantech**
2. Rockwell Automation
3. Siemens
4. Pro-face

Operator Interface Terminal
⭐ **Rockwell Automation**
2. Siemens
3. Honeywell
4. Yokogawa
5. Pro-face

Panel Display
⭐ **Rockwell Automation**
2. Red Lion
3. Siemens
4. Pro-face

Process Loop Controller
⭐ **Yokogawa**
2. Honeywell
3. Siemens
4. Rockwell Automation
5. Invensys Process Systems
6. Emerson Process Management

Recorder
⭐ **Yokogawa**
2. Honeywell
3. Invensys Process Systems
4. ABB

The Essential Infrastructure Players

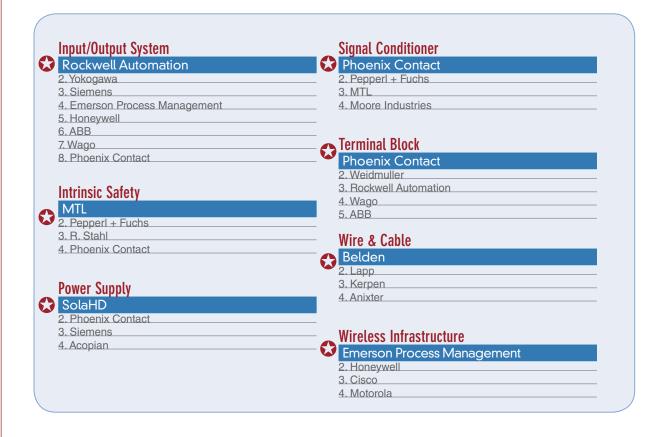While field devices and controllers perform the essential actions of the process control loop, an extensive communications infrastructure is needed to ensure that process data is reliably and seamlessly communicated throughout the modern process control system. This next group of Readers Choice Awards recognizes those essential infrastructure players—from wire to wireless and from terminal blocks to power supplies—who make sure measurement A gets to controller B and back to valve C.

Indeed, despite all the latest advances in wireless communication, the bulk of signal transmission in today's process plants still relies on good old-fashioned wire and cable to get messages from one place to another. And, for the readers of *Control*, Belden rates as the wire-and-cable maker of choice. Lapp, Kerpen and Anixter also rate highly.

That wire, of course, ultimately needs to connect with the host control system, and Phoenix Contact holds the preferred position among a predominantly European array of terminal block manufacturers that also includes Weidmuller, Wago and ABB (including the former Entrelec brand), as well as Rockwell Automation. In the burgeoning field of wireless infrastructure, two of the leading automation platforms took top honors in the form of Emerson Process Management and Honeywell. Wireless networking and communication specialists, Cisco and Motorola, also were mentioned.

The analog-to-digital conversion, conditioning, powering and intrinsic-safety protection of instrumentation loops also are essential communication functions. For the purposes of our Readers Choice Survey, these functions are characterized by the technology arenas of I/O systems, signal conditioners, power supplies and intrinsic safety. Here, too, the European infrastructure players fare quite well, with Phoenix Contact taking the top spot in signal conditioning, and MTL in intrinsic safety. Fellow European suppliers Pepperl+Fuchs and R. Stahl also fare well, together with American supplier, Moore Industries.

In the overall classification of input/output system, top honors went to the major automation platform providers, with Rockwell Automation in the lead. And last, but certainly not least, SolaHD (formerly Sola Hevi-Duty and a unit of the EGS Electrical Group) took first place in the category of power supplies. Phoenix Contact, Siemens and Acopian were also mentioned frequently.

Input/Output System
⭐ **Rockwell Automation**
2. Yokogawa
3. Siemens
4. Emerson Process Management
5. Honeywell
6. ABB
7. Wago
8. Phoenix Contact

Intrinsic Safety
⭐ **MTL**
2. Pepperl + Fuchs
3. R. Stahl
4. Phoenix Contact

Power Supply
⭐ **SolaHD**
2. Phoenix Contact
3. Siemens
4. Acopian

Signal Conditioner
⭐ **Phoenix Contact**
2. Pepperl + Fuchs
3. MTL
4. Moore Industries

Terminal Block
⭐ **Phoenix Contact**
2. Weidmuller
3. Rockwell Automation
4. Wago
5. ABB

Wire & Cable
⭐ **Belden**
2. Lapp
3. Kerpen
4. Anixter

Wireless Infrastructure
⭐ **Emerson Process Management**
2. Honeywell
3. Cisco
4. Motorola

Our Level Best

Similar to the rich landscape of providers in the flow instrumentation field, the level measurement marketplace is home to a broad variety of technologies and suppliers. Here, Emerson Process Management once again assembles a critical mass of competence, faring well in most of the mainstream technologies, and winning outright in both non-contact and guided radar technologies. With the combined forces of its Rosemount capabilities and Saab acquisition, it also claims top spot in the arena of inventory-grade tank gauges.

But level measurement excellence also belongs to a number of independent specialists. Notable among them in this year's Readers Choice Awards are Magnetrol for its wins in float/displacer and magnetostrictive gauges, as well as magnetic level indicators; Ohmart Vega for the top spot in nuclear; and K-Tek for its laser level instrumentation. Endress+Hauser gets the nod for its electrical and ultrasonic level switches and Siemens for its ultrasonic level sensing capabilities.

Level Gauge, Electrical Property-Based
★ **Endress + Hauser**
2. Ametek Drexelbrook
3. Emerson Process Management
4. Magnetrol
5. Ohmart Vega

Level Gauge, Float/Displacer
★ **Magnetrol**
2. Emerson Process Management
3. GEMS Sensors & Controls
4. Honeywell Enraf

Level Gauge, Contacting Radar
★ **Emerson Process Management**
2. Endress + Hauser
3. Ohmart Vega
4. Krohne
5. Magnetrol

Level Gauge, Non-Contacting Radar
★ **Emerson Process Management**
2. Ohmart Vega
3. Endress + Hauser
4. Siemens
5. Honeywell Enraf
6. Krohne
7. Magnetrol

Level Gauge, Inventory Grade
★ **Emerson Process Management**
2. Honeywell Enraf
3. Endress + Hauser

Level Gauge, Laser
★ **K-TEK**
2. Keyence
3. Ifm efector

Level Gauge, Magnetostrictive
★ **Magnetrol**
2. K-TEK
3. MTS

Level Gauge, Nuclear
★ **Ohmart Vega**
2. Thermo Scientific
3. Berthold Technologies

Level Gauge, Ultrasonic
★ **Siemens Milltronics**
2. Endress + Hauser
3. Emerson Process Management
4. Ohmart Vega
5. Magnetrol
6. Krohne

Level Switch, Electrical Property-Based
★ **Endress + Hauser**
2. Magnetrol
3. Ametek Drexelbrook

Level Switch, Vibration
★ **Endress + Hauser**
2. Emerson Process Management
3. Magnetrol
4. Ohmart Vega
5. K-Tek

Magnetic Level Indicator
★ **Magnetrol**
2. K-TEK
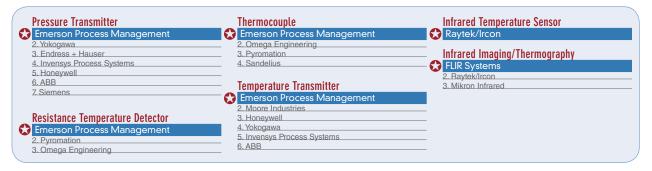3. ISE-Magtech
4. Clark Reliance Jerguson

The Heat (and Pressure) Is On

Back to the days of the original Rosemount 1151, the pressure transmitter is in many ways the foundation from which Emerson Process Management built or assembled market leadership position in a broad range of field instrument technologies. Temperature sensors and transmitters are no exception, and only the arena of infrared sensors has remained beyond their scope. Independent temperature sensor specialists Omega Engineering, Pyromation and Sandelius also made the honor roll.

In the area of infrared sensors, Raytek, which recently acquired competitor Ircon, having already been acquired by Fluke to become part of Danaher (got all that?), takes the top spot. In the category of multi-dimensional infrared imaging/thermography, FLIR Systems takes top honors.

Pressure Transmitter
★ **Emerson Process Management**
2. Yokogawa
3. Endress + Hauser
4. Invensys Process Systems
5. Honeywell
6. ABB
7. Siemens

Resistance Temperature Detector
★ **Emerson Process Management**
2. Pyromation
3. Omega Engineering

Thermocouple
★ **Emerson Process Management**
2. Omega Engineering
3. Pyromation
4. Sandelius

Temperature Transmitter
★ **Emerson Process Management**
2. Moore Industries
3. Honeywell
4. Yokogawa
5. Invensys Process Systems
6. ABB

Infrared Temperature Sensor
★ **Raytek/Ircon**

Infrared Imaging/Thermography
★ **FLIR Systems**
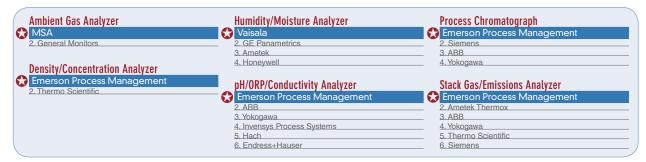2. Raytek/Ircon
3. Mikron Infrared

A Process Analysis Primer

Typically a step in complexity beyond the measurement of primary physical variables, temperature, pressure, flow or level, is the realm of process analysis. These devices, once confined primarily to the laboratory, have increasingly moved into the field, gone on line, and are helping to improve control and boost quality throughout the process industries.

Here, as in other field instrument categories, Emerson Process Management has established a leadership position in key analytical instrumentation technologies, including process chromatography, concentration/density measurement, pH/ORP/conductivity analysis and stack gas/emissions analysis.

The other leading automation platform providers also are well represented in process analysis, including ABB, Siemens, Yokogawa and Invensys Process Systems. Other specialized analytical players ranking well in this year's Readers Choice Awards include Ametek's Thermox division, Thermo Scientific, Endress+Hauser and Hach.

In the yet-more specialized category of humidity and moisture analysis, Vaisala carries the day among our readers. Finally, another important technology category closely aligned with process analysis is for those devices used to detect toxic or combustible gas in ambient air. Here, MSA won top honors.

Ambient Gas Analyzer
MSA
2. General Monitors

Density/Concentration Analyzer
Emerson Process Management
2. Thermo Scientific

Humidity/Moisture Analyzer
Vaisala
2. GE Panametrics
3. Ametek
4. Honeywell

pH/ORP/Conductivity Analyzer
Emerson Process Management
2. ABB
3. Yokogawa
4. Invensys Process Systems
5. Hach
6. Endress+Hauser

Process Chromatograph
Emerson Process Management
2. Siemens
3. ABB
4. Yokogawa

Stack Gas/Emissions Analyzer
Emerson Process Management
2. Ametek Thermox
3. ABB
4. Yokogawa
5. Thermo Scientific
6. Siemens

Going with the Flow

Accurately measuring process flows is difficult. Perhaps that's why so many flow measurement firms have sprung up over the years, each exploiting new physical phenomena to tame this problematic process measurement. Many novel flow measurement technologies have been co-opted or acquired by the major instrumentation companies, although a few niche players remain independent.

Emerson Process Management remains the dominant flow measurement player in our awards, complementing its win in pressure transmitters with top awards in magnetic, vortex and Coriolis technology. These competencies are represented by its Rosemount, Daniel and Micro Motion brands. Brooks Instrument, which had been part of the Emerson family, won in variable area and positive displacement flowmeters.

Process measurement specialists Endress+Hauser and Krohne also fared well in several flow measurement technologies, as did other automation platform providers, including Yokogawa, ABB and Invensys Process Systems (on the strength of its Foxboro brand). GE Sensing claims the top spot in ultrasonic flow measurement on the strength of its Panametrics acquisition, while Siemens benefits from the ultrasonic and open-channel flow measurement technologies it purchased from Controlotron and Milltronics.

Niche specialist FCI (Fluid Components International) garners the top spot for its Thermal Flowmeters and Flow Switches, which operate on thermal diffusion principles.

Coriolis Flowmeter
Emerson Process Management
2. Endress + Hauser
3. Krohne
4. ABB
5. Invensys Process Systems
6. Brooks Instrument
7. Yokogawa

Magnetic Flowmeter
Emerson Process Management
2. Endress + Hauser
3. Krohne
4. Yokogawa
5. Invensys Process Systems
6. ABB
7. Siemens

Open Channel Flowmeter
Siemens Milltronics
2. Emerson Process Management
3. Endress + Hauser
4. Ametek Drexelbrook
5. Teledyne ISCO

Positive Displacement Flowmeter
Brooks Instrument
2. A. O. Smith
3. Badger Meter
4. Actaris/Neptune

Thermal Mass Flowmeter
FCI
2. Brooks Instrument
3. Sierra Instruments
4. Endress + Hauser
5. Sage Metering
6. Kurz Instruments

Turbine Flowmeter
Emerson Process Management
2. Hoffer Flow Controls
3. Invensys Process Systems
4. Cameron Nuflo
5. Brooks Instrument
6. Onicon

Ultrasonic Flowmeter
GE Sensing
2. Emerson Process Management
3. Krohne
4. Siemens

Variable Area Flowmeter
Brooks Instrument
2. ABB
3. Krohne

Vortex Flowmeter
Emerson Process Management
2. Yokogawa
3. Invensys Process Systems
4. Endress + Hauser
5. ABB
6. Sierra Instruments

Flow Switch
FCI
2. Magnetrol
3. Endress + Hauser
4. Emerson Process Management
5. ifm efector
6. Dwyer Instruments
7. SOR

The Final Element

The crucial last link in any automated process control loop is of course the final control element. Measurements can be taken and control decisions made—but all unravels if those decisions are not translated effectively and reliably into final action. Primary among the process industries' means of affecting process control are the position of a valve or the direction and speed of an electric motor.

For the control valve itself, top spot in this year's Readers Choice Awards goes to Emerson Process Management, primarily on the strength of its Fisher Controls brand. Runners up Dresser Masoneilan, Flowserve, Samson Controls and Metso Automation were often mentioned as well. In the category of pneumatic actuators, Emerson also carries the day, but cedes electric actuators to Rotork Controls.

In the category of variable-speed motor drives, Rockwell Automation was ranked most highly in this year's Readers Choice Awards polling, with global players ABB, Siemens and Schneider rounding out the top spots.

Control Valve
⭐ **Emerson Process Management**
2. Dresser Masoneilan
3. Flowserve
4. Samson Controls
5. Metso Automation

Electric Valve Actuator
⭐ **Rotork Controls**
2. Emerson Process Management
3. Limitorque
4. Beck
5. ABB

Pneumatic Valve Actuator
⭐ **Emerson Process Management**
2. Flowserve
3. Dresser Masoneilan

On/Off Valve
⭐ **Emerson Process Management**
2. Metso Automation
3. Flowserve
4. Tyco Flow Control

Variable-Speed Motor Drive
⭐ **Rockwell Automation**
2. ABB
3. Siemens
4. Schneider Electric
5. Danfoss
6. Control Techniques
7. Yaskawa

Elsewhere in the Field

Last, but certainly not least, this final group of Readers Choice Awards includes a supporting cast of essential field instrumentation technologies that play a critical role in process automation, but don't belong to another logical group discussed thus far.

First off, the words "data acquisition" may mean many things to many different people, but in this year's poll the DAQ system awards goes to National Instruments—maker of both data acquisition hardware and the popular LabView graphical programming environment. Invensys Wonderware, maker of the industry-leading InTouch software is runner-up, followed by a litany of other major automation platform providers.

A bit further afield, the enclosure award goes to perennial favorite Hoffman Engineering, while the preferred enclosure purge system award to Pepperl+Fuchs by virtue of its Bebco acquisition. And the preferred choice of what to put inside those boxes? The nod for remote terminal unit goes to Rockwell Automation.

Leak-proof fittings are, of course, critical to any process instrumentation installation, and honors for the category of Instrument Fittings goes to Swagelok, followed by Parker Hannifin.

And finally, our Readers Choice Awards for two important process measurements: vibration and weight. The nod for vibration instrumentation goes to GE Energy on strength of its Bently Nevada acquisition. Excellence in the category of weighing system/load cell goes first to Mettler Toledo.

Data Acquisition System
⭐ **National Instruments**
2. Invensys Wonderware
3. Rockwell Automation
4. GE Fanuc
5. Emerson Process Management
6. Yokogawa
7. ABB
8. Honeywell

Enclosure
⭐ **Hoffman Engineering**
2. Rittal
3. Hammond Manufacturing
4. Weidmuller
5. Saginaw Control & Engineering

Purge System
⭐ **Pepperl+Fuchs Bebco**
2. Expo Technologies
3. Gonnheimer

Portable Calibrator
⭐ **Fluke**
2. GE Druck
3. Beamex
4. Emerson Process Management

Remote Terminal Unit
⭐ **Rockwell Automation**
2. Emerson Process Management
3. Yokogawa
4. Invensys Process Systems

Instrument Fittings
⭐ **Swagelok**
2. Parker-Hannifin
3. Hoke

Vibration Instrumentation
⭐ **GE Energy**
2. Emerson Process Management
3. Metrix Instrument

Weighing System/Load Cell
⭐ **Mettler Toledo**
2. Vishay BLH
3. Hardy Instruments
4. Kistler-Morse
5. Rice Lake Weighing Systems