

OBJECTS OF AFFECTION

Automation professionals name the companies they say offer the best technology in more than 80 product categories.

by Control staff



LOVE may seem too strong a word to apply to the feelings process control professionals harbor for their favorite brands—according to Plato, “Love is a serious mental disease”—but it’s more than “like.” Every day, thousands of *Control* readers interact on the job with thousands of pieces of process control equipment, software packages and the representatives of the companies that supply them. How their day goes and how they feel at the end of it depends a great deal on those interactions. From ease of specification and procurement to cost, delivery speed, quality, functionality, precision, stability, reliability and customer service, end users gain impressions about every item from every company they encounter, and over time, for better or for worse, those many impressions develop into lasting relationships. Experienced process automation professionals know which companies are best qualified to give them what they need.

For the 25th time, *Control*'s annual Readers' Choice Awards survey asked end users to name those companies. As usual, about 1,000 respondents weighed in on which suppliers provided the best technology—this year in 10 overall product categories and 84 subcategories. Each was invited to vote for up to three vendors in each category and discipline, and their first-, second- and third-place votes were weighted to yield a rank of up to five top positions in each subcategory.

The best and the rest

Determined solely by readers' fill-in-the-blank responses, the awards you'll find on these pages name the vendors that provide the best technology in categories from software and systems to instrumentation and final control elements.

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 survey, 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. While we ask respondents to write in the name of the company, some write in the names or numbers of specific products or software packages. We do our best to recognize and translate these responses into parent company names.

Every vendor named in the accompanying tables has been designated as offering the best value by a significant number of respondents. Since more respondents have experience with companies that have higher installed bases or market shares, 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.

In short, the *Control* Readers' Choice Awards offer a reference list of companies that readers like you say offer the best—a veritable Who's Who of equipment, software and service providers.

New and returning winners

The "Best in Control" category is broken down into six automation disciplines. We use industry demographic information



BEST IN CONTROL BY PROCESS AUTOMATION DISCIPLINE

Continuous Regulatory Control

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

Safety/Emergency Shutdown

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

Batch Process Automation

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

Continuous Sheet/Web Monitoring & Control

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

Sequential Logic Control

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

Supervisory Control & Data Acquisition (SCADA)

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

provided by our respondents to also tabulate that information by 10 vertical industries, summarized in the table, "Best in Control by Discipline and Industry" (below). These platform categories are dominated by the largest companies in process automation, with little change in rankings from year to year.

The following categories tend to be more dynamic, with positions shifting, new suppliers showing up, and others coming on

and off the lists. The wired and wireless network components in the "Infrastructure" category 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. This year, in the "Infrastructure"



BEST IN CONTROL BY DISCIPLINE AND INDUSTRY

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



INFRASTRUCTURE

Input/Output System

1. Rockwell Automation
2. Siemens Industry
3. Emerson Automation Solutions
4. ABB
5. Beckhoff

Intrinsic Safety

1. Pepperl+Fuchs
2. Rockwell Automation
3. MTL Instruments
4. Phoenix Contact
5. R. Stahl

Power Supply

1. Phoenix Contact
2. SolaHD
3. Rockwell Automation
4. Siemens Industry
5. TDK-Lambda

Signal Conditioner

1. Phoenix Contact
2. Moore Industries
3. Rockwell Automation
4. Pepperl+Fuchs
5. Acromag

Terminal Block

1. Phoenix Contact
2. Weidmuller
3. Rockwell Automation
4. Wago
5. AutomationDirect

Wire & Cable

1. Belden
2. Southwire
3. Anixter
4. Okonite
5. TPC

Wireless Infrastructure

1. Emerson Automation Solutions
2. Cisco
3. Honeywell Process Solutions
4. Rockwell Automation
5. Phoenix Contact

category, we welcome or welcome back Beckhoff for Input/Output System, Phoenix Contact for Intrinsic Safety and Wireless Infrastructure, TDK-Lambda for Power Supply, Acromag for Signal Conditioner, and Okonite and TPC for Wire & Cable.

As the name implies, "Interfaces" allow engineers, technicians and operators to take information from and give instructions to the

control system with hardware such as panel displays, standalone loop controllers and recorders. The definition of the ever-evolving Industrial Computer subcategory is in the eye of the beholder, and according to the voting, may include PC-based industrial computers, process automation controllers (PACs) and programmable logic controllers (PLCs).

This year's fresh faces in "Interfaces" are Red Lion and Siemens for Annunciator, and GE Automation & Controls and Schneider Electric for Operator Interface Terminal.

INTERFACES

Annunciator

1. Ametek
2. Rockwell Automation
3. Ronan Engineering
4. Red Lion Controls
5. Siemens Industry

Industrial Computer

1. Rockwell Automation
2. Advantech
3. Siemens Industry

Operator Interface Terminal

1. Rockwell Automation
2. Siemens Industry
3. GE Automation & Controls
4. Schneider Electric
5. Red Lion Controls

Panel Display

1. Rockwell Automation
2. Siemens Industry
3. Red Lion Controls
4. Advantech
5. Schneider Electric

Process Loop Controller

1. Honeywell Process Solutions
2. Emerson Automation Solutions
3. Rockwell Automation
4. Yokogawa
5. Siemens Industry

Recorder

1. Yokogawa
2. Honeywell Process Solutions
3. ABB
4. Schneider Electric
5. Rockwell Automation

Software runs the gamut

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. But software also includes specialized subcategories, such as Calibration, Design & Documentation, and Simulation, where specialized players have an edge over the big guns. The definition of assets has now expanded enough beyond the control system to cement enterprise giant SAP into the Asset Management subcategory. With the rise of the Industrial Internet of Things (IIoT), integration takes on even greater importance, and the competition in OPC Connectivity is heating up.

This year, the "Software" category sees ABB among the winners for Alarm Management, Rockwell Automation and Schneider Electric for Asset Management, Rockwell Automation for Calibration Management, Bentley and Rockwell Automation for Design/Documentation, Software Toolbox for OPC Connectivity, Honeywell for SCADA, and Schneider Electric for Simulation.

SOFTWARE TO OPC CONNECTIVITY

Advanced Process Control Software

1. Emerson Automation Solutions
2. Rockwell Automation
3. Honeywell Process Solutions
4. AspenTech
5. ABB

Alarm Management Software

1. Emerson Automation Solutions
2. Honeywell Process Solutions
3. Rockwell Automation
4. Schneider Electric
5. ABB

Asset Management Software

1. Emerson Automation Solutions
2. Rockwell Automation
3. SAP
4. Yokogawa
5. Honeywell

Calibration Management Software

1. Fluke
2. Emerson Automation Solutions
3. Beamex
4. Rockwell Automation

Design/Documentation Software

1. Autodesk
2. Rockwell Automation
3. Bentley
4. EPLAN

Human-Machine Interface Software

1. Rockwell Automation
2. Schneider Electric
3. GE Automation & Controls
4. Emerson Automation Solutions
5. Siemens Industry

Loop-Tuning Software

1. Emerson Automation Solutions
2. ExperTune
3. Control Station
4. Rockwell Automation
5. Honeywell Process Solutions

Neural Network Software

1. Emerson Automation Solutions
2. Rockwell Automation

OPC Connectivity

1. Kepware Technologies
2. Matrikon OPC
3. Rockwell Automation
4. (tie) Emerson Automation Solutions
4. (tie) Software Toolbox

PLC Programming Software

1. Rockwell Automation
2. Siemens Industry
3. Schneider Electric
4. GE Automation & Controls
5. Emerson Automation Solutions

SCADA Software

1. Rockwell Automation
2. Schneider Electric
3. GE Automation & Controls
4. Emerson Automation Solutions
5. Honeywell

Simulation Software

1. Mynah Technologies
2. Rockwell Automation
3. Honeywell Process Solutions
4. Emerson Automation Solutions
5. Schneider Electric

Level, pressure, temperature and flow

Just when you think we have all the technologies we need and the opportunity for innovation must be tapped out, we see more respondents able to name favorites in newer categories such as Laser Level Gauge: where last year had only enough votes to declare two positions, this year we have four.

In "Level Instrumentation," we now see Schneider Electric for Float/Displacer; ifm efector and Keyence for Laser; VEGA

Americas for Ultrasonic; Ametek Drexelbrook for Level Switch, Electrical Property-Based, Level Switch, Ultrasonic and Level Switch, Vibration; and Jogler and Endress+Hauser for Magnetic Level Indicator.

"Temperature & Pressure" new and returning companies are GE Energy and Schneider Electric for Pressure Transmitter, SOR and Rockwell Automation for Pressure Switch, JMS Southeast for Resistance Temperature Detector (RTD) and for Ther-



LEVEL INSTRUMENTATION

Level Gauge, Capacitance Admittance/Conductance

1. Endress+Hauser
2. Emerson Automation Solutions
3. Ametek Drexelbrook
4. VEGA Americas
5. Magnetrol

Level Gauge, Float/Displacer

1. Emerson Automation Solutions
2. Magnetrol
3. Danaher
4. Endress+Hauser
5. Schneider Electric

Level Gauge, Guided Wave

1. Emerson Automation Solutions
2. Endress+Hauser
3. VEGA Americas
4. Magnetrol
5. Siemens Industry

Level Gauge, Non-Contacting Radar

1. Emerson Automation Solutions
2. Endress+Hauser
3. VEGA Americas
4. Siemens Industry
5. Magnetrol

Level Gauge, Inventory Grade

1. Emerson Automation Solutions
2. Endress+Hauser
3. Honeywell Enraf
4. Varec

Level Gauge, Laser

1. ABB
2. Emerson Automation Solutions
3. ifm efector
4. Keyence

Level Gauge, Magnetostrictive

1. Emerson Automation Solutions
2. Orion Instruments
3. ABB
4. Ametek Drexelbrook
5. MTS

Level Gauge, Radiometric (Nuclear)

1. VEGA Americas
2. Endress+Hauser
3. Thermo Scientific
4. Emerson Automation Solutions
5. Berthold Technologies

Level Gauge, Ultrasonic

1. Endress+Hauser
2. Emerson Automation Solutions
3. Siemens Industry
4. VEGA Americas
5. ABB

Level Switch, Electrical Property-based

1. Endress+Hauser
2. Emerson Automation Solutions
3. VEGA Americas
4. Magnetrol
5. ABB
5. Ametek Drexelbrook

Level Switch, Mechanical

1. Emerson Automation Solutions
2. Endress+Hauser
3. Magnetrol
4. ABB
5. SOR

Level Switch, Ultrasonic

1. Emerson Automation Solutions
2. Endress+Hauser
3. Magnetrol
4. Siemens Industry
5. Ametek Drexelbrook

Level Switch, Vibration

1. Endress+Hauser
2. Emerson Automation Solutions
3. VEGA Americas
4. Magnetrol
5. Ametek Drexelbrook

Magnetic Level Indicator

1. Emerson Automation Solutions
2. Orion Instruments
3. ABB
4. Jogler
5. Endress+Hauser



TEMPERATURE & PRESSURE

Pressure Transmitter

1. Emerson Automation Solutions
2. Yokogawa
3. GE Energy
4. Endress+Hauser
5. Schneider Electric

Pressure Switch

1. Endress+Hauser
2. Emerson Automation Solutions
3. Ashcroft
4. SOR
5. Rockwell Automation

Resistance Temperature Detector

1. Emerson Automation Solutions
2. Endress+Hauser
3. Omega Engineering
4. Pyromation
5. JMS Southeast

Thermocouple

1. Emerson Automation Solutions
2. Omega Engineering
3. Endress+Hauser
4. Pyromation
5. JMS Southeast

Temperature Transmitter

1. Emerson Automation Solutions
2. Endress+Hauser
3. Yokogawa
4. Honeywell Process Solutions
5. (tie) Omega Engineering
5. (tie) Schneider Electric

Infrared Temperature Sensor

1. Fluke
2. ifm efector
3. Omega Engineering

Infrared Imaging/Thermography

1. Fluke
2. FLIR Systems

Temperature Switch

1. Emerson Automation Solutions
2. Omega Engineering
3. Endress+Hauser
4. Ashcroft
5. (tie) Dwyer
5. (tie) Honeywell



FINAL CONTROL ELEMENTS

Control Valve

1. Emerson Automation Solutions
2. GE Energy
3. Flowserve
4. Samson Controls
5. Metso

Electric Valve Actuator

1. Emerson Automation Solutions
2. Rotork Controls
3. Flowserve
4. Auma Actuators
5. Metso

Pneumatic Valve Actuator

1. Emerson Automation Solutions
2. Flowserve
3. Metso
4. Rotork
5. Samson

On/Off Valve

1. Emerson Electric*
2. Metso
3. Flowserve
4. Bray
5. Apollo

* Includes Emerson Industrial Automation (ASCO) and Emerson Automation Solutions brands

Electric Motor Drive

1. Rockwell Automation
2. ABB
3. Siemens Industry
4. Schneider Electric
5. Baldor Electric

Electric Motor

1. Baldor Electric
2. Siemens Industry
3. WEG
4. GE Power Conversion
5. ABB

mocouple, Schneider Electric for Temperature Transmitter, ifm efector for Infrared Temperature Sensor, and Dwyer and Honeywell for Temperature Switch.

“Flow Instrumentation” welcomes Schneider Electric for Magnetic Flowmeter, Ametek and Schneider Electric for Open Channel, Kurz Instruments for Thermal Mass, Badger for Vortex, and Great Plains Industries, Hoffer Flow Controls and Omega Engineering for Turbine Flowmeter.

Final, analysis and elsewhere

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 in “Final Control Elements,” we now have Samson for Pneumatic Valve Actuator, Bray for On/Off valve, and Baldor Electric for Motor Drive.

Perhaps a little out of order both in real life and on these pages, 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



FLOW INSTRUMENTATION

Coriolis Flowmeter

1. Emerson Automation Solutions
2. Endress+Hauser
3. Yokogawa
4. Krohne
5. Siemens Industry

Magnetic Flowmeter

1. Emerson Automation Solutions
2. Endress+Hauser
3. Yokogawa
4. ABB
5. Schneider Electric

Open Channel Flowmeter

1. Endress+Hauser
2. Siemens Industry
3. Emerson Automation Solutions
4. Ametek
5. Schneider Electric

Positive Displacement Flowmeter

1. Brooks Instrument
2. Emerson Automation Solutions
3. Badger Meter
4. FMC Technologies
5. Endress+Hauser

Thermal Mass Flowmeter

1. FCI
2. Endress+Hauser
3. Emerson Automation Solutions
4. Brooks Instrument
5. Kurz Instruments

Turbine Flowmeter

1. Emerson Automation Solutions
2. Badger Meter
3. Great Plains Industries
4. Hoffer Flow Controls
5. Omega Engineering

Ultrasonic Flowmeter (Closed Pipe)

1. Emerson Automation Solutions
2. Endress+Hauser
3. Siemens Industry
4. Krohne
5. GE

Variable Area Flowmeter

1. Brooks Instrument
2. Krohne
3. ABB
4. Emerson Automation Solutions
5. Yokogawa

Vortex Flowmeter

1. Emerson Automation Solutions
2. Endress+Hauser
3. Yokogawa
4. Schneider Electric
5. Badger Meter

Flow Switch

1. FCI
2. Endress+Hauser
3. Emerson Automation Solutions
4. Magnetrol
5. Dwyer

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, but sensor and signal processing breakthroughs always allow for the possibility of innovation and the new technologies that spring up to take advantage of it.

Fresh and refreshed faces among this year's "Analyzers" rankings are Siemens for Ambient Gas Detector, VEGA Americas for Density/Concentration, Schneider Electric for pH/ORP/Conductivity, Endress+Hauser for Process Spectrometer, and Thermo Fisher Scientific for Stack Gas/Emissions Analyzer.

Finally, "Elsewhere in the Field" provides a place for our collection of essential field equipment, instrumentation and devices that don't fit into another major category. Most of the categories are led by solid performers that remain in their places this year.

New and returning companies in our "Elsewhere in the Field" category are Crouse-Hinds for Enclosure, Transmation

for Portable Calibrator, Robertshaw for Vibration Instrumentation, and BLH Nobel and Siemens for the always contested Weighing System/Load Cell subcategory.

Congratulations and thanks

For the 25th time, we at *Control* have done our best to get experienced automation professionals, people who have the necessary perspective and wisdom to judge, without prejudice or penalty, who makes the best stuff for process control. The professionals who took the time and made the effort to complete our lengthy, fill-in-the-blank surveys worked hard at it. We express our heartfelt appreciation to the hardy respondents who took the time to share their valuable wisdom by selecting our winners.

And of course, it's no small feat to engineer, produce, market and support the products that become the apples of our readers' eyes. We congratulate each and every listed vendor on being recognized in our Readers' Choice Awards. ∞



ANALYZERS

Ambient Gas Detector

1. Emerson Automation Solutions
2. MSA
3. Thermo Fisher Scientific
4. Dräger
5. (tie) ABB
5. (tie) Siemens

Density/Concentration Analyzer

1. Emerson Automation Solutions
2. Endress+Hauser
3. Yokogawa
4. Thermo Fisher Scientific
5. VEGA Americas

Humidity/Moisture Analyzer

1. Vaisala
2. Emerson Automation Solutions
3. GE Measurement & Control
4. Honeywell Process Solutions
5. Michell Instruments

pH/ORP/Conductivity Analyzer

1. Emerson Automation Solutions
2. Endress+Hauser
3. Yokogawa
4. (tie) ABB
4. (tie) Schneider Electric
5. Hach

Process Spectrometer

1. ABB
2. Siemens Industry
3. Yokogawa
4. Endress+Hauser
5. Emerson Automation Solutions

Process Chromatograph

1. Emerson Automation Solutions
2. Siemens Industry
3. Yokogawa
4. ABB

Stack Gas/Emissions Analyzer

1. Emerson Automation Solutions
2. ABB
3. Siemens
4. Yokogawa
5. Thermo Fischer Scientific



ELSEWHERE IN THE FIELD

Data Acquisition System

1. Rockwell Automation
2. National Instruments
3. Emerson Automation Solutions
4. Schneider Electric
5. OSI Software

Enclosure

1. Pentair Technical Products
2. Rittal
3. Saginaw Control & Engineering
4. Hammond Manufacturing
5. Crouse-Hinds

Purge System

1. Pepperl+Fuchs
2. Pentair Technical Products

Portable Calibrator

1. Fluke
2. Emerson Automation Solutions
3. Beamex
4. Yokogawa
5. Transmation

Remote Terminal Unit

1. Rockwell Automation
2. Emerson Automation Solutions
3. Siemens
4. Honeywell Process Solutions
5. Schneider Electric

Instrument Fittings

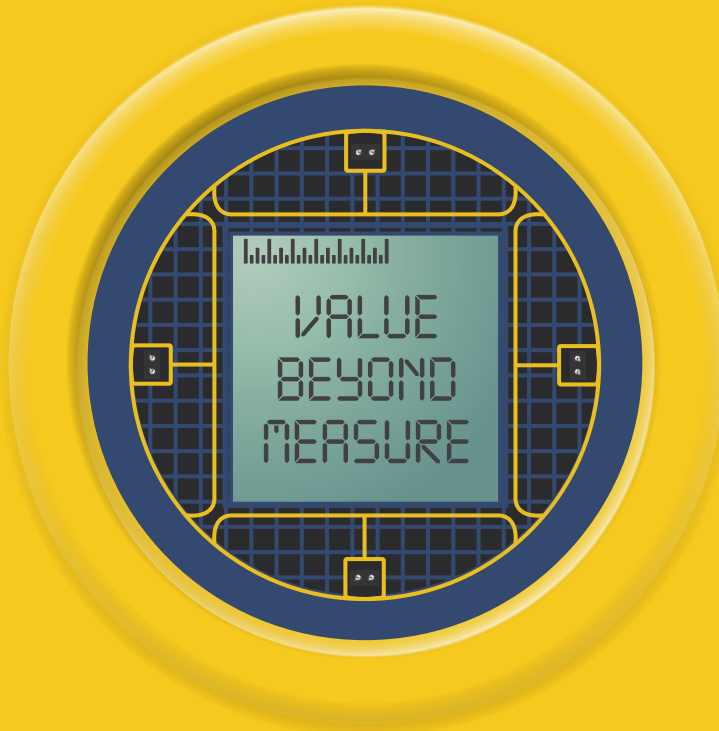
1. Swagelok
2. Parker Hannifin

Vibration Instrumentation

1. GE Energy
2. Emerson Automation Solutions
3. ifm efector
4. Fluke
5. Robertshaw

Weighing System/Load Cell

1. Mettler Toledo
2. Hardy Process Solutions
3. Rice Lake Weighing Systems
4. BLH Nobel
5. Siemens



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