Emerson Technologies
to Solve Your Problems

Short Form Catalog of Products and Services
Intelligent control systems, software, measurement and control technologies
to optimize your plant and process control
MEASURE AND ANALYZE

The widest range of measurement and analytical equipment for deeper insight into the process.

Pressure Transmitters

Multivariable Transmitters
Rosemount 3051SMV, Rosemount 4088
Incorporated into a DP flowmeter to:
• measure three process variables: differential pressure, static pressure, and temperature
• calculate instantaneous mass flow of fluid, steam, and gas, or volumetric flow of gas, to calculate the amount of measured fluid (counter function), as well as to calculate energy flow (Rosemount 3051SMV).
Output capabilities include 4 - 20 mA HART, WirelessHART, Fieldbus, Modbus.

High-Accuracy Smart Pressure Transmitters
Rosemount 3051
Transmitters, including wireless ones, with the world’s best performance and functional specifications
Rosemount 3051* The world’s best selling transmitters
Rosemount 2051* Complete portfolio of pressure transmitters satisfies your requirements for pressure, level, and flow measurements

Differential pressure transmitter and primary elements for flow measurements
Rosemount 3051S, 3051*, 2051*, 3051SMV, 4088, Metran-150* are used with primary elements:
• (APT) Annubar 485 and Annubar 585 averaging pitot tube,
• Rosemount 405, 1195, and 1595 Series orifices,
• DKS, DBS, DFK, DVS, DFS orifices according to GOST 8.586-2005

Smart Pressure Transmitters*
Metran-150

Economical and Compact Pressure and Level Transmitters*
Rosemount 2088
Lightweight, compact, in-line to measure gage and absolute pressure

Metran-75
In-line transmitter to measure gage and absolute pressure in various industries

Metran-55
Microprocessor transmitter with immersion probes for wide use in various industries

Nuclear Pressure Transmitters*
Metran-150AS
New generation of Russian smart high stability transmitters

Remote Seals*
Rosemount 1199 Seal Systems provide pressure, level, and flow measurements in severe process conditions, such as critical temperatures and aggressive environments

Rosemount 304, 305, and 306 Manifolds
Metran 0104 and 0106 Manifolds
Cable entries and adapters
Condensing, leveling, and separation vessels

Temperature Transmitters

Temperature Transmitters
Rosemount 3144P*
The best solution for the critical measurement points in control and safety instrumented systems. The most reliable field housing in the class, advanced diagnostics options, and highest accuracy of measurements.
Rosemount 644*
High accuracy and reliability of measurements in critical areas. Wide configuration capabilities for configuration of additional diagnostics options.
Rosemount 248*
Temperature transmitter with digital data transmission via HART protocol (or via WirelessHART). Compatibility with all Rosemount sensors. Wireless option available
Rosemount 648*
Wireless temperature transmitter for autonomous measurement points
Rosemount 848T
Multi-input temperature transmitter. Foundation Fieldbus architecture allows a dramatic decrease in the number of wires at the facility by combining up to 128 measurement points per one pair of wires. Wireless option available*

Temperature transmitters with unified output signal*
Metran-280
Temperature transmitters with digital data transmission via HART protocol, as well as a 4-20 mA current loop
Metran-2700
Temperature transmitters with 4-20 mA output signal. Microprocessor electronics provides higher accuracy and capability of transmitter configuration with a PC.
Metran-270
Temperature transmitters with 4-20 mA output signal. Analog electronics provides reliable measurements at moderate cost.

Temperature Sensors
Rosemount 0065* Resistance Temperature Detectors (RTD)
Rosemount 0185* Thermocouple
Metran-2000* presents an extended range of designs and RTD/thermocouple options with various thermowells, construction materials, protective housings, and sensor types.
Multipoint sensors* are designed for measuring temperature profiles in tanks and reactors
RTD kits* for heat carrier metering stations
Surface sensors* — solutions for surface measurements
Rosemount 0085 are pipe clamp RTD sensors. Unique solution for surface measurements of the temperature of pipelines, including underground ones.

Subassemblies and Parts for Temperature Transmitters*
Thermowells, mounting kits, fittings, lugs, washers

* Manufactured in Chelyabinsk, Russia
Level Transmitters
Non-contacting Radar Level Transmitters
Rosemount 5600 for level measurement of liquid, viscous, or solid media.
Rosemount 5400 for level measurement of liquid and viscous media.

Guided Wave Radars
Rosemount 5300 for level measurement of liquid, viscous, or solid media and liquid-liquid interface level
Rosemount 3300 for level measurement of liquid or viscous media and liquid-liquid interface level
Rosemount 3308 WIRELESS for accurate and reliable level and interface measurement in remote locations

Ultrasonic Non-contacting Level Transmitters
Rosemount 3100 for level measurements and volume or flow calculations of liquid media.

Electronic Remote Sensors (ERS)
Rosemount 3051SAL and Rosemount 3051SAM present new DP level technologies.

Hydrostatic Pressure Sensors and Immersion Probes
Rosemount 3051SAL, Rosemount 3051SAM, Rosemount 3051L*, Rosemount 2051L*, Metran-55, Metran-150L*.

Wireless Measurement and Communication Devices
Rosemount 3051S, 2051, 3051 for wireless pressure measurements
Rosemount 248*, 648*, 848T* for wireless temperature measurements
Rosemount 3308, 2160 for wireless level measurements and alarm
Rosemount 1420 and 1410 Wireless Gateway controls the wireless network, enables data acquisition from field devices and its integration into the higher level system using standard data exchange protocols.
Rosemount 775 Smart Wireless THUM Adapter allows integration of any wired transmitter with output signal of 4-20 mA/HART into the wireless network.
Rosemount 702 Wireless Discrete Transmitter converts discrete signals into digital form using WirelessHART protocol.

Universal Controllers
Rosemount 3490 provides comprehensive control functionality for any 4-20 mA/HART compatible level transmitters

Solids Measurement
Rosemount 5708 3D Solids Scanner ensures powder and solid measurement, regardless of material type or product characteristics, harsh storage conditions, or size of storage bunkers, tanks or containers.

Vibrating Fork Level Switches
Rosemount 2110 are suitable for general industrial applications
Rosemount 2120, Rosemount 2130 are designed for critical processes
Rosemount 2160 is wireless model with WirelessHART communication

Float Level Switches
Mobrey

Flowmeters, Counters, Density Meters
Fiscal and process flow metering of water, various liquids and gases, steam and oil products.

Coriolis Mass Flowmeters
Micro Motion portfolio for high-accuracy mass flow measurement of gases, fluids and high-viscosity media
CMF, CMF HC, CMF HCC, F, R, H, T, DH, DL, CNG050, LF Series transmitters 5700, 1700, 2700, 1500, 2500, 22000, 24000S, 3300, 3500, 3350, 3700 series transmitters
Nominal line size from 1 to 300 mm

Magnetic Flowmeters
Volumetric flow measurement of fluids, alkali, acids, pulps and suspensions:
Rosemount 8700: Complex applications, simulation verification without removal from the pipeline; nominal line size from 4 to 900 mm
Rosemount 8750: Water and waste water metering, water treatment systems; simulation verification without removal from the pipeline; nominal line size from 15 to 1200 mm
Metran-370*: Developed based on Rosemount technology; nominal line size from 15 to 200 mm

Vortex Flowmeters And Counters
Volumetric flow measurement of liquid, gas, and steam
Rosemount 8800: For complex applications, unique non-clog flow tube design; nominal line size from 15 to 300 mm
Rosemount 8600: For general purpose applications; “clean” environments metering and monitoring; nominal line size from 25 to 200 mm
Metran-331*: Multivariable gas counter with pressure and temperature transmitters built into the flow tube; nominal line size from 32 to 150 mm
Metran-332*: Multivariable vapor counter with pressure and temperature transmitters built into the flow tube; nominal line size from 32 to 150 mm

Vortex Acoustic Flowmeters
Metran-300PP*: For water and water solutions, thermal energy metering systems; removable bluff body – high maintainability; simulation verification; nominal line size from 25 to 300 mm
Metran-320*: For water and water-based solutions, thermal energy metering systems; autonomous power supply; removable bluff body – high maintainability; simulation verification; nominal line sizes from 25 to 100 mm
Metran-305PP*: For reservoir pressure maintenance systems; mineralized water resistant; pressure up to 30 MPa; removable bluff body — high maintainability; simulation verification procedure; nominal line sizes from 50 to 100 mm

DP Flowmeters
Rosemount 3051 SFA, Metran-350*, and Metran-150 RFA* with Annubar averaging pitot tube (APT)
Rosemount 3051 SFC with Rosemount 405 series orifices
Measurement systems based on wear-resistant DRK, DRD, DFR, DVS, DFS orifices and conical inlet orifices (GOST 8.585-2005, MI 2638-2001, RD50-411)

Density Meters
Gas Density Meter (GDM)
Direct and high-sensitivity measurement of gas density (to replace 7812 Gas Density Meter)
Specific Gravity Meter (SGM)
Direct and quick-response measurement of specific gravity, molecular weight, as well as relative and basic (at standard conditions) gas density (to replace 3098 Gas Specific Gravity Meter)

Compact Density Meter (CDM)
Direct high accuracy measurement of liquid density and flow (to replace 7835, 7845, 7847 Liquid Density Meter)

Fork Viscosity Meter (FVM)
Measurement of liquids viscosity and density (to replace 7827 Digital Viscosity Meter and 7828 Insertion Liquid Density Meter)

Heavy Fuel Viscosity Meter (HFVM)
Measurement of heavy fuel viscosity, fuel combustion control (to replace 7829 Viscomaster Dynamic Viscosity Meter)
**Fiscal Fluid and Gas Metering Systems and Devices**

**Flowmeters**

Ultrasound and gas flowmeters. With HART communication functionality and a multi-path chordal design, they real-time diagnostics, high accuracy, stability, redundancy, and operational cost savings for liquid and gas fiscal flow measurement. Easy to operate and maintain due to no moving parts. Daniel 3100, 3100

**Compact Provers**

Compact provers allow calibration of flowmeters in laboratory or at the site. Multivariable electronics allow calibration of both mass flowmeters and volume counters. Compact size, low weight and high coefficient of measurement range variation (1000:1) allow you to install the prover on a truck or trailer platform. Nominal line sizes from 8” to 40”. Measurements in lines with a capacity of up to 4,000 m³/hour.

**Flow Systems**

Integrated flow systems and flowmeters for gas, oil, and oil products. Assembled and factory-tested, flow systems include: input and output collectors, measurement pipelines with shut-off and control valves, flowmeters of various operating principles, pressure transmitters, differential pressure transmitters, temperature transmitters, or multifunctional flow computers, quality units, and control system, e.g., DanPac. Can be equipped with block boxes of system subassemblies.

**Provers**

Measurement sections with nominal diameters from 4” to 42” (from 10 to 107 cm) and capacity from 100 to 42,000 bbl/h (from 15.89 to 6,674 m³/h), designed for operation in the temperature range from -46°С to 88°С.

**Flowmeters**

Measurement and analytical equipment for deeper insight into the process.

**Energy Carrier Metering Systems**

Commercial accounting systems for liquids, gases, steam, and heat energy. Depending on the order, the system can include:

- standard orifice plates, Rosemount APT, Rosemount stabilizing diaphragms
- Rosemount 3051SFA, Rosemount 3095MFA flowmeters with Annubar APT, Rosemount 8800D
- Rosemount 3051*, Rosemount 3095 pressure and differential pressure transmitters
- Rosemount 0065*, Rosemount 0068 resistance temperature detectors
- Rosemount 0183*, Rosemount 0185 thermocouples
- Rosemount 244, Rosemount 248*, Rosemount 644*, Rosemount 3144P*, Rosemount 3244MV temperature transmitters
- ROC/FloBoss controllers
- Metran-950, Metran-950MK
- some of various metering options, embedded redundancy functions, and a wide variety of host DC5 (distributed control system) and SCADA (supervisory control and data acquisition) systems.

**Functional Equipment. Communications**

**Power Supplies**

Metran-600 and Metran-600M one and multichannel DC power supplies. Explosion-proof Exia version is available

- Metran-601B pulse power supply
- Metran-662, Metran-664 multichannel DC power supplies
- Metran-611 power supply and square root extractor
- Metran-630 Series intrinsic safety barriers
- Explosion-proof Exia, Exib version

**Secondary Equipment**

- Metran-901 single-channel paperless recorder
- Metran-910 videographic paperless recorder
- Metran-970, Metran-980-Ex input/output modules
- Metran-950, Metran-950MK transducers
- Metran-961 process meter and regulator

**Communications**

475 Field communicator is a universal field communicator for setup and configuration of intelligent field devices supporting HART and Foundation fieldbus protocols.

- Metran-682* HART-USB modem; explosion-proof Exia version
- Metran-682* HART-USB modem; explosion-proof Exia version
- AMS Metran Configurator — configuration and setup of smart measuring instruments based on HART protocol
- Rosemount 333 HART Tri-Loop — HART signal to analog signal converter (three additional analog signals)
MEASURE AND ANALYZE

Metron's most advanced calibration and measurement laboratories provide a wide range of equipment for deeper insight into the process. MEASURE AND ANALYZE

Industrial Laboratories*
Complete point solutions to create new and retrofit existing metrological laboratories using reference standards produced by Metran IG, as well as leading Russian and foreign companies. Ready-to-use workplaces for metrology engineers and instrumentation and control specialists in order to maintain a wide range of measuring instruments.

Metrological benches and equipment sets for verification, calibration, and repair of pressure transmitters (including high-accuracy transmitters with an accuracy from 0.025%, absolute pressure measuring instruments, multivariable transmitters of flowmeters and energy resource metering stations), secondary equipment, industrial and oxygen pressure gages, draft-and-head gages, and other measuring instruments with unified or digital output signals (via HART protocol). The proposed solutions allow automating and simultaneous performance of verification for several instruments:
- for verification, calibration, and repair of temperature transmitters and secondary equipment
- for verification, calibration, and health check of gas analysis equipment
- for verification and calibration of level transmitters with an accuracy from ±1 mm
- for verification and dry calibration of flowmeters and energy resource metering stations, including verification and calibration of conditioning orifices and bluff bodies
- for verification and calibration of electric measuring instruments and input/output channels of secondary equipment, recorders, and controllers

Training Laboratories*
Training benches, simulator benches and equipment sets for educational institutions and training centers of industrial enterprises. To study design, operating features and configuration of measuring instruments, to train transmitters calibration and verification, and troubleshooting methods for various processes.

Calibrators and Reference Pressure Modules*
Standards for verification/calibration of pressure equipment, including high-accuracy and low-limit transmitters, and for lab and onsite work

Analytical Equipment

LIQUID ANALYSIS:

Transmitters
56 Dual-Input Analyzer — 4-wire microprocessor analyzer of 2 parameters (pH/ORP, conductivity, O2, Cl2, ISE or NH4+, F-, opacity, including flow, level, and temperature) and calculated (pH-calculator, concentration-%, chemical dosage) parameters, full-color screen, support for continuous change of analytical input signals from one or two sensors
1056 Dual-Input Analyzer — 4-wire smart multivariable analyzer with independent inputs and outputs allowing simultaneous analysis of two different values
1057 Multi-parameter Analyzer — 4-wire pH/ORP and contacting conductivity analyzer for up to three measurements
1066 Liquid Analytical Transmitter — multivariable 2-wire, including Eki, smart fluid analyzer with automatic diagnostics and calibration of pH sensors supporting the internal Smart Interface
5081 Liquid Transmitter — multivariable 2-wire analyzer, including Eki, with a digital screen

pH/ORP Sensors
396, 398 for media with a high content of suspended and abrasive substances
3300, 3400, 3500 for aggressive media with high temperature and pressure
86-971 for aggressive media at hard to access mounting points and simultaneous analysis of two different values
56 Dual-Input Analyzer — 4-wire pH/ORP and contacting conductivity analyzer for up to three measurements
5081 Liquid Transmitter — multivariable 2-wire analyzer, including Eki, with a digital screen

Conductivity Sensors
222, 242, 245 for hot solutions of aggressive acids and alkalis with a high content of abrasive admixtures
140…142 for measurement in high-temperature processes up to 200°C and pressure of 8 bar
400…404 for conductivity measurements in media from ultrapure water to salt solutions
Wide range of sensors for oxygen, chlorine and compounds, ozone, sodium ions, silicic acid, phosphates and hydrazine

GAS ANALYSIS:

Chromatographs
370XA — the newest analyzer for compositional analysis and calculation of physical and chemical parameters of natural gas
500, 700 — industrial gas chromatographs
700XA — precise, continuous monitoring of components of gaseous or liquid working media, automatically detects the composition of combustible gas, natural gas, associated petroleum gas, and its products

Process Gas Analyzers
X-Stream Series is a universal analyzer detecting up to 60 different components, up to 5 components in one housing. Equipped with IR/UV photometric cells, paramagnetic, electrochemical cells to measure heat conductivity. General industrial and explosion-proof versions

MLT, CAT2000 series based on N2A2000 analyzes up to 5 components simultaneously in one or two sections for wall mounting

Combustion Analyzers
OX2800 Oxygen and Combustibles Transmitter. The analytical unit is installed directly in the pipe/furnace duct with flue gas; the electronic unit can be mounted on the analytical unit or up to 45 m away. A sample preparation system is not required
OXT 4000 — oximeter using the zirconia cell measurement method. The probe is installed similarly to O2X2800. For processes with temperatures up to 1000°C. A sampling and sample preparation system is not required

Quantum Cascade Lasers
CT — simultaneous detection of up to 9 components; ability to use quantum and diode laser simultaneously; resolution up to ppb; pressurized

Sensors for monitoring work area air
SX3 Series sensors. Millennium II transmitters are used for analysis of toxic and combustible gases. A sensor with an electrochemical, thermocatalytic or optical cell is connected to the transmitter or remotely. Transmitter versions: Millennium II — one- or two-channel gas contamination sensor with OLED screen
Millennium II Basic — one-channel gas contamination sensor without display, with LED status indication
Rosemount 935 — optical gas detector with an emitter and a receiver up to 200 m apart to monitor pre-explosive concentrations of hydrocarbon gases in the air.
Rosemount 936 — optical gas detector with an emitter and a receiver up to 80 m apart to monitor pre-explosive concentrations of hydrocarbon gases in the air.
Rosemount 975 — flame detectors to monitor the combustion of hydrocarbon and other gases. Optical monitoring of the IR, UV, and visible light spectrum of the flame.
CDU Incus — ultrasonic detector of leaks of combustible and toxic gases. Monitoring at the earliest stage of leak occurrence without contacting the hazardous gas cloud.
APM — monitor of the presence of solid particles in the air. Monitors oil mist, dust, carbon black, smoke and combustion products in the air using an IR optical sensor for operation in explosive media.
Remote Automation and SCADA Systems

Measurement instruments, controls, fiscal metering devices, optimization devices, communication and data integration for industrial systems of the oil and gas industry in areas such as gas and oil production, transportation, and distribution.

Remote Terminal Units

ControlWave for automation of large facilities. Combines the functions of remote terminal units (RTU) and programmable logic controllers (PLC) in one device, low power consumption, powerful communication capabilities; all-weather design; reporting, archive flow calculation databases; scalability; control algorithms; high performance.

ControlWave Micro* for automation of small facilities and remote terminals; medium level modular design suitable for the majority of tasks; wireless interface.

ControlWave Express for remote terminals and the simplest automation for small tasks.

ControlWave ExpressPAC is a configured automation solution.

ROC800 combines the best characteristics of remote terminal units (RTU), flow computers, and programmable logic controllers (PLC) in a single device: low power consumption, powerful communication capabilities, all-weather design; reporting, archive flow calculation databases; scalability; control algorithms; high performance.

Flow Computers

FloBoss103 for measurement of gas flow in one pipeline using the differential pressure method

FloBoss107/107E for measurement of natural and associated petroleum (certified) gas flow in 1-4 pipelines

Panel Mounted Flow Controllers

FloBoss600** operates with all types of primary flowmeters; equipped with a prover card

SCADA-Systems

Open Enterprise for acquisition and analysis of information, real-time process monitoring, and report generation

Machinery Health Management

CSI 2140 Machinery Health Analyzer
- Onboard analysis for advanced troubleshooting is available at the push of a button, providing an instantaneous machinery health assessment.
- High update rate using simultaneous 4-channel analysis.
- Powerful in-field alerts and analysis for guided, machine-side testing and troubleshooting.
- PeakVue technology for advanced bearing and gear fault detection.

CSI 2600 Portable Machinery Health Expert
- System for continuous monitoring and analysis of equipment status that is installed for a specified period.
- Continuous data registration and recording for the specified period (from several hours to weeks); PeakVue technology is also used to analyze the status of rolling bearings and gearboxes.
- Real-time transient events can be viewed and replayed for further analysis with animated machine and structure views for advanced diagnosis of the most difficult recurring machinery problems.
- Monitoring and troubleshooting for turbomachinery startup, shutdown, and operation.
- 100 hours of continuous synchronous signal recording from 24 channels.
- Timing waveform in real time and spectrum analysis.

Machinery Health Management

CSI 6300 SIS Digital Overspeed Protection System
- Speed measurement and detection of rotation direction of rotary equipment, such as turbines, compressors and pumps.
- TUV certification as per IEC 61508:2010.
- Prevents equipment operation in overspeed regime, and detects possible rotation in the wrong direction during startup.

CSI 6500MS* Machinery Health Monitor
- Continuous online monitoring for machinery diagnostics and protection.
- Complies with API 670 and API 618 standards.
- Easy integration with Emerson distributed control systems.

Asset Management

AMS SUITE software for machinery health diagnostics and analysis

AMS Suite for predictive diagnostics collects data on the status of critical elements of the enterprise, e.g., mechanical and process equipment, measuring instruments and valves, obtained using reliable diagnostics technologies. This powerful combination of software with online, wireless, and portable technologies builds a predictive diagnostic foundation for improved productivity.

Machinery Health Manager
- Designed for machinery health diagnostics and displaying diagnostics results using proactive maintenance technologies. Prevents unplanned shutdowns, protects critical assets and staff, and reduces maintenance costs. Set of tools for data integration, analysis and reporting.

Machinery Health Diagnostics allows planning of proactive maintenance for the entire enterprise.

Machinery Health Management

CSI 9420 Wireless Vibration Transmitter
- Quick, easy, and cost-effective compatibility with any equipment.
- Transfers vibration data to a secure self-organizing network via WirelessHART™ protocol, use of the information by both operating and maintenance personnel.
- Measurement of vibration, temperature, and bearing wear using PeakVue technology.
- Suitable for hard-to-reach locations and for locations where wired networking is cost-prohibitive.
- Measurement of vibration on any equipment of the enterprise. Rated intrinsically safe for use in virtually all production areas.

Intelligent Device Manager for measuring instruments and valves control
- Allows predictive diagnostics of measuring instruments, simplifies configuration, automates metrological measurements, and documents all completed actions.
- Increases maintenance efficiency and allows the use of diagnostic capabilities of modern measuring instruments.

Performance Monitor for machinery parameters monitoring
- Designed for analyzing and obtaining peak performance of critical mechanical and process equipment in real time. Analysis of machinery performance makes it possible to increase process efficiency, track operating performance against targets, schedule maintenance activities, and determine the root cause of equipment inefficiencies.

Asset Graphics
- Displays process parameters, machinery protection parameters, and information on availability and efficiency of equipment operation on the operator screen. Allows the maintenance operator to monitor machinery status from control room.

* Manufactured in Chelyabinsk, Russia
DeltaV™* Distributed Control System

DeltaV distributed control system designed according to the Human Centered Design (HCD) offers new options to prevent unnecessary production activities, simplifies the use of the most advanced technologies, and implements specialized knowledge to improve your production.

“Input/Output on Demand”
The “I/O on Demand” concept offers unprecedented options to ensure flexible connection of field I/O signals, to simplify integration, and to increase operating availability. Regardless of the I/O signal type (traditional type, FOUNDATION fieldbus, Profibus DP, DeviceNet, AS-i bus, or even redundant wireless), adding a new signal and starting to use the information take a lot less time and engineering, design, and field efforts.

Electronic Marshalling
Allows for changes into the design at later stages without affecting the system architecture. DeltaV Electronic Marshalling allows you to lay field cable wiring at any location, regardless of the signal type or control strategies. Each terminal block is assigned to a single-channel characterization module (CHARM) that allows the connection of wired lines of any type of signals at any location.

Traditional Input/Output
Flexible modular architecture designed for installation in the field near the equipment. Modularity, protection keys, and plug-and-play capabilities make the DeltaV traditional I/O a smart choice for process control system. Manufactured in two versions: the widely used M series and new S series based on the same technologies, but designed with consideration of the HCD concept to increase usability and reliability. The new design makes installation easier and improves robustness.

Digital Communication
The DeltaV system is focused on using all the advantages of the Foundation fieldbus. Bus power conditioners are integrated into the H1 card. The DeltaV system also supports Profibus DP and DeviceNet buses for integration with control units of motors and actuators; the AS-i bus can be used to integrate simple discrete devices (control buttons, etc.). The system provides for embedded support of the bus configuration without requiring third-party configuration tools. Ethernet I/O devices are easily connected via the virtual I/O module. The DeltaV system also allows you to take advantage of the smart field device diagnostics based on the HART protocol.

SmartWireless Technologies
Emerson Smart Wireless solutions provide a comprehensive, adaptive, and flexible approach to wireless technologies. The self-organizing wireless network based on the WirelessHART (IEEE 802.15.4) standard ensures security and high reliability of communication in industrial environments and allows for integrating systems like video surveillance and mobile employee tracking, as well as data transmission from remote field devices to the system. Wireless access points provide WiFi coverage and can be implemented in hazardous areas.

Embedded Intelligent SIS
With its proven, IEC 61511-compliant, independent but integrated architecture, the DeltaV SIS system increases visibility for better reliability. And with the addition of electronic marshalling and characterization modules (CHARMs), Emerson dramatically reduces SIS complexity.

Inherent Functionality regardless of Size
Process equipment and facilities differ in both size and level of complexity. In order to ensure maximum return on investment, the system should be easily scalable without creating additional difficulties. As part of the PlantWeb™ architecture developed by Emerson, the DeltaV system is designed to ensure maximum scalability. Regardless of the size of your installation, the DeltaV system will look and function in the same way. This helps reduce administration and training costs, as well as optimize startup investments and subsequent expansion costs.

• For specific applications, the DeltaV architecture scales in size from 25 to one million I/O channels.
• Functional scalability provides the functions required for specific tasks through the use of the same engineering assets and a common database for different applications.

Embedded Smart Control
The exceptional qualities of the embedded intelligent control are due to predictive capabilities of smart field devices in combination with advanced control technologies. Whether it’s about a predictive alarm system, adaptive configuration of control loops, or control based on a predictive model, you can use the power of the embedded intelligent control of the integrated system that is easy to use and maintenance-friendly.

Integration
Eliminate low-value engineering for quicker startup. When the pressure on to get up and running on schedule, it becomes more and more important to have a single set of engineering tools to configure, calibrate and start up different types of equipment. This ensures that you can resolve your problems quickly using the single interface without having to perform similar actions separately for many elements.

Virtualization
Allows consolidation of computer resources, reduces hardware footprint, increases availability, and reduces the cost of system deployment and maintenance. DeltaV Virtual Studios simplifies design and maintenance of the DeltaV virtual system for the purposes of development, testing, training, and production. Simulation of DeltaV control hardware provides a simple, cost-effective way to implement and test the control system configuration and assign input/output in the host computer without real controller hardware.

The ability to create a virtual machine of the DeltaV Simulator system makes it easy to simulate the DeltaV system on your notebook or laptop without installing special software.

Using the DeltaV Explorer module, you can easily develop the control system architecture, including all fieldbuses, without compiling tables of data binding between databases and without using third-party configuration tools. The DeltaV Explorer allows you to configure your I/O and field devices in a common interface. When control logic is configured using Control Studio, it doesn’t matter which I/O signals are involved: Foundation fieldbus, serial interface, DeviceNet or conventional I/O signals. You can simply connect to any I/O channel without any special devices for different I/O types.

When the DeltaV configuration tools were being designed, the main criterion was usability. The DeltaV system is designed to exclude routine operations, allow quick configuration, testing, and startup of any process line.

Development for Specific Tasks
Designed for ease of use in your most demanding applications. The DeltaV system features advantages such as low cost and open standards for technologies based on the use of commercial off-the-shelf components or products (COTS), and complements them with the functionality of applications such that the equipment can work just like other parts of the automation system (i.e., the ability to operate according to the “plug-and-play” principle, support during the entire operation life without upgrades, embedded security functions).
**Ovation** Automation Solutions for Power Industry

Technologies implemented by Emerson help enterprises to generate more than 1000 GW around the world. Automation solutions are based on advanced technology, extensive experience in executing projects, and involve long-term support of implemented systems during their entire life cycle.

**Ovation**

The Ovation hardware and software suite (HSS) has been developed for the power industry. This solution allows integration of the architecture of open process control systems, and at the same time ensures complete operations safety. As the only industrial system developed in full compliance with ANSI open system standards, Ovation uses commercially available hardware, operating systems and network technologies.

**Ovation Compact HSS**

A low-budget solution for automation, dispatching and video monitoring of boiler houses, housing and public utilities, as well as water supply and water treatment. This system includes the following main components:

- **Controller**
- **Input/output modules**
- **Engineer and operator workstation**

**Network**

In order to control critical processes, the Ovation HSS uses the fastest commercially available communication networks for maximum performance. A fully redundant fault-tolerant protocol is used in full compliance with industry standards. Since the network uses commercially available hardware, conventional gateways and interfaces are unnecessary, and direct connection is provided to the local or global enterprise computer network. The Ovation system’s high-speed network enables data transfer in real time without losses, errors or delays, even in emergency modes.

**Controller**

The controller of the Ovation HSS developed according to industrial standards for open systems is a powerful device designed to control processes in power engineering and industry. The controller works under a multi-tasking real-time operating system that supports running 32-bit applications. The use of Pentium processors and PCI/ISA interfaces in the controller gives them high flexibility combined with low cost. The current version of the controller can process up to 32,000 measured signals per second. The Ovation HSS controller performs automatic control, discrete and functional and group control algorithms, performs data collection functions, and implements interfaces with the data network and Ovation input/output subsystem.

I/O Modules

The Ovation input/output system developed using the most up-to-date electronics is characterized by low power consumption and heat release. The system has a modular structure and can be rack mounted according to standards, which ensures high density of assembly, quick installation, and low requirements for occupied space. The system includes discrete, analog, and digital input/output modules, input of temperature and pulse signals, as well as specialized modules of the automatic regulator. The Ovation input/output subsystem ensures high performance and reliability for both local and remote input/output.

Integration of the APCS with Corporate Information Systems

Communication equipment that includes Web Access View Enabler (WAVE), ODBC server, NetDB server and OPC server allows the APCS to be combined with enterprise computer networks. The technology used provides access to real-time process information and Ovation graphical videograms via local or global enterprise computer networks, as well as from remote locations via phone connection or the Internet. The OPC server uses the most up-to-date standard for technical data exchange: OLE for Process Control (OPC). The OPC standard allows users to easily access dynamic real-time process information by integrating applications developed by Emerson and third-party vendors with the Ovation control system.

**Workstations**

Workstations of the Ovation system maximize performance in versions for Windows NT and Sun Solaris UNIX. Each of these platforms can serve as the basis for implementing both operator and engineering workstations with access to all process and corporate information.

**Operator Workstations**

Ovation operator workstations provide high-resolution graphical display and remote control of processes. With this station, the user can access varying values of measured and calculated parameters, archive data, general system messages, standard functional videograms, event logging data, and the failure mode alarm system.

**Engineer Workstations**

Ovation engineer workstations integrate all standard engineering and operator functions, as well as system engineering tools. Engineer workstations provide configuration tools that allow users to create, load, and edit videograms, and control algorithms and the system database. Regardless of the platform used (Windows or Solaris), engineer workstations provide a complete and powerful toolkit for configuration and maintenance of the Ovation control system.

**Archive Logging Stations**

Archive logging stations allow acquisition and output of information about processes, failures, event sequences, as well as logs of operator actions, thus providing operating, engineering, and maintenance personnel of the power plant with valuable information. The archive logging station of the Ovation hardware and software suite is also capable of collecting process data from systems of third-party vendors and other databases using OPC, SQL and ODBS tools and other technologies.

**Frequency and Power Regulators for Turbogenerators**

Digital electro hydraulic control systems for turbo units. The available modifications of the mechanical part and use of a reliable control system ensure maximum efficiency and performance of the turbine. The turbine frequency can be controlled to an accuracy of one revolution per minute, and its power to an accuracy of tenths of megawatts.

**Specialized Calculation Packages**

Proven solutions that increase the operational efficiency of power plants through the use of specialized calculation packages, primarily a package for real-time calculation of technical and economic indicators (TEI). TEI calculation modules can be adapted for any configuration of the power plant equipment. A TEI monitoring system running at the operator workstation provides operating personnel with information that allows them to monitor the overall performance of the power plant equipment. Calculation results can be used to adjust equipment maintenance and upgrading schedules. Other calculation packages include optimization of the load distribution between power units, coordinated control of the power unit load, assessment of the performance of personnel, calculation of thermal stresses on the equipment, planning repairs, etc.

**SmartProcess Optimization Software**

Power producers must be able to operate under peak loads, meet the requirements of supervisory agencies and environmental standards, and at the same time, maintain competitive prices and planned profit margins. The SmartProcess optimization SW package helps optimize processes at power plants and create a competitive edge. Using both neural network technology and linear models, SmartProcess takes into account specific operational restrictions of the power plant and responds to different economic factors in order to improve processes. SmartProcess can also help to establish a balance between conflicting operational targets such as reducing NO2 emissions and increasing boiler operating efficiency. Each module automatically performs optimization and sends new tasks and change rates directly to regulators implemented in the APCS, even during a load change. SmartProcess can also work in ‘operator advisor’ mode, advising the operator which actions should be taken in order to reach the specified efficiency values.
Fisher Control Valves

Used in pipelines to control process parameters, such as flow, pressure, temperature and liquid level; they open or close completely or partially in response to the control signal.

Sliding Stem Control Valves*

Straightway, angle and three-way valves with sliding stem are available in a wide range of versions, from DN15 to DN6000 (from 1/2” to 24”) and more for steam, hydrocarbon, aggressive and other media, for operation under high pressure, and manufactured according to special requirements.

Straightway high pressure valves (PN100/CL600 and higher) are reliable straightway and angle valves designed for use in power, petrochemical, chemical, and other industries: Fisher 461 SweepFlo, CAVA, HP, EH, D2 FloPro, D3, D4, D, and DA.

Universal general-purpose straightway valves (up to PN100/CL600) for general conditions of operation and for operations in aggressive environments. Can be used for different applications; model and design depend on the process temperature, pressure, process liquids, and other parameters: Fisher easy-e ED, EZ, EZ-C, ES, ET, EW, EWT-C, EU, YD, YS, GX, RSS.

Baumann straightway valves — a popular family of low-cost sliding stem valves: Baumann 24000, 24000C, 24000CVF, 24000S5VF, 24000F, 24000S5, 24000SB, 24003.

Valves for small and micro flows: the use of special trims maintains the control range for low capacity values (CV). Special trims can be used in different valve models: in easy-e/HP/EH series: Micro-Form (CVmin ≥ 0.07), Micro-Flow (CVmin ≥ 0.015), Micro-Flute (CVmin ≥ 0.0385); in Baumann series: LowFlow (CVmin ≥ 0.00013); in GX series: Micro-Flow (CVmin ≥ 0.0017).

Solutions for noise suppression and cavitation control: in these cases trims with specially designed cages are used. Whisper anti-noise cages reduce the noise level up to 24000CVF, 24000S5VF, 24000F, 24000S5, 24000SB, 24003.

Rotary Valves (Ball and Disk Valves)*

If the main requirements are capacity and wide control range, rotary valves are the best solution.

High-performance butterfly valve is used with an eccentric disk. These valves are used in different areas, including as block valves. They can be used to control and cut off the flow in both high temperature media and in cryogenic applications. These valves have nominal sizes from DN50 to DN1800 (from 2” to 72”) and pressure class up to PN420 (CL2500 according to ASME) depending on the model: Fisher Control-Disk, 8510, 8510B, 8532, 8560, 8580, 8590; POSI-SEAL A11, A13D, A31A, A31D, A41, A81.

Rotary valves with an eccentrically rotating ball segment — plunger in the shape of a ball segment and combining the efficiency of a rotary valve with the reliability of a straightway valve: Fisher CV500, V500.

Pipeline full-flow ball valves — perform flow control and operating tasks under severe conditions in main gas pipelines, gas distribution systems and liquid transmission pipelines: Fisher V250, V260.

Rotary valves with ball segment — valves with a ball segment with patented V-shaped cut on the segment. This V-shaped cut gives the valve improved control characteristics at the beginning of the stroke, providing a larger tuning range and wide control range. The ball segment does not restrict the flow through the valve, which ensures high capacity of the valve:

Fisher Vee-Ball V150, Vee-Ball V150E, Vee-Ball V150S, Vee-Ball V200, Vee-Ball V300.

Valves for Clean Applications*

These valves are designed for pharmaceutical and biotechnological production facilities, where strict compliance with modern standards is required. An inner polished housing made of stainless steel and trim components ensure an exceptionally clean work environment:

Baumann 83000, 84000, 85000, 87000, 89000.

Pneumatic Positioners

Pneumatic Positioners receive a pneumatic control signal and convert it into the corresponding pneumatic output signal for the actuator of the control valve Fisher 3570, 3582, 3610J, 3610JP, 3660, 3710

Electro-pneumatic

Pneumatic positioners with an additional electro-pneumatic converter. The converter receives an analog DC input signal from the control system and converts it into a proportional pneumatic signal, which is then transmitted to the pneumatic positioner. Nearly every Fisher® pneumatic positioner supports the addition of an embedded electro-pneumatic converter to allow upgrading of the existing control technology of Fisher 3582J, 3620J, 3620JP, 3661, 3720

Smart Digital Positioners

See the section Digital Valve Controllers.

Digital Valve Controllers

Modern positioners using microprocessors have become the dominant technology, replacing conventional and electro-pneumatic positioners. FIELDVUE™ digital controllers for Fisher® valves contain functionalities significantly exceeding conventional analog or pneumatic positioners. The advantages of using the FIELDVUE digital valve controller are as follows:

- alarm transmission to the control system (DCS) to notify the operator about valve problems to be resolved
- automatic configuration and calibration
- diagnostics of the valve health.

Different diagnostics levels make it possible to obtain information about the valve’s condition, both during maintenance and valve operation. A distinctive feature of FIELDVUE controllers is a non-contact rodless feedback coupling with the valve. The Hall effect is used to track the stem or shaft position. Use of this technology helps prevent mechanical wear, corrosion, or loosening of the valve feedback rods, and also increases reliability and control precision. Fisher FIELDVUE DVC2000 (HART), DVC6200 (Fieldbus), DVC6200 (HART), DVC6200P (Profibus), DVC62005S (for SIS system valves)

Pneumatic Valve Controllers

Temperature, Pressure and Level Controllers

Pneumatic controllers for building an autonomous automatic control unit using the valve as an actuating device. When these controllers are used, the specified parameter (temperature, pressure, or level) will be maintained automatically according to the presetting without any external control signal.

Fisher 4194, 4195, 4660, C1 pressure controllers
Fisher 4196 temperature controllers
Fisher 2500, L2, L2S level controllers
High availability actuators that help to control and isolate the process with high reliability

Valve Accessories

Position Monitors
For transmitting information on the valve position
Fisher 4200, Fisher 4320 Emerson Smart Wireless solution.
For receiving position feedback in order to reduce wiring costs.
Fisher 4320 On-Off wireless position monitor with the option to control the valve in “open/close” mode.

Volume Boosters
Pneumatic devices used to amplify pneumatic control signals and to improve the speed and accuracy control of actuators of large valves. Fisher 2625, VBL, SS-263

Control valves
Used to control double-action piston actuators in order to maintain the valve in a safe position when the air supply pressure drops below the specified value. In order to ensure reliable actuation, volume tanks are used to store the appropriate volume of air (depending on the actuator size). Fisher 377

Electro-Pneumatic Transducers
Used to convert an electric control signal into the proportional pneumatic signal. Can be used for control both separately and with a pneumatic positioner. Fisher 646, 846, 12P-100

Actuators

Emerson actuators are not only power devices for controlling valves, but also an intelligent interlink between the process line/process and the upper level control system. They fit smoothly into an automation system including both field control instrumentation and the most up-to-date process and asset management systems (DeltaV, AMS, and similar systems). They allow access to valves operating parameters, performance of predictive diagnostics, and optimal planning of major and routine repairs.

FOR CONTROL VALVES

Pneumatic Actuators
Provide the required force to move the stem or shaft in case of increased operation requirements. Generally air-driven, but can also use natural gas for control.

Rack-and-Pinion Rotary Actuators
Available in a double-action version or with spring return. The spring return mechanism brings the valve to a safe position through the action of the spring. Fisher 1035/EI-O-Matic, FieldQ

Actuators

Manual Actuators
Used when manual control of valves is required. These actuators are capable of precise manual control and can be used for almost all standard valves. A stroke indicator on the actuator bow provides a visual display of the position. Fisher 1008, 1077, 1078, 1079, 1080, M, Control and lock lever

Bettis Electric / EIM Electric Actuators
MCP/M2C/TEC2 RUS Series
Used when compressed air is unavailable or its supply to the valve is cost-prohibitive (long distance from the compressor, a pneumatic network is not specified by the design). The simple and reliable design of the electric actuator, up-to-date electronics with advanced diagnostics, and a low-inertia motor provide up to 1,600 starts per hour and precise control of the control loop. See also the ‘Electric Actuators’ section above.

FOR PIPELINE VALVES

Emerson manufactures actuators of all known types with a wide range of generated forces and torques. They control pipeline valves of different DN working in control or cutoff mode and can be integrated into different upper level control systems.

Rack-and-Pinion Rotary Actuators
Bettis RPE, EI-O-Matic F, FieldQ Series
EI-O-Matic became one of the first industrial rack actuators several decades ago. They are compact, reliable and efficient for automating ball valves and disk shutters with DN up to 300 mm and torque up to 6500 Nm at temperatures down to -60°C in refining industry, as well as on main pipelines. They can be pneumatic, hydraulic, or compressed gas-driven. Optimal layout scheme is used when all supported loads are transmitted to the massive power module. The actuator design uses a wide range of successful technical solutions to achieve long service life, operating safety, reliability and maintainability, while remaining the most compact and lightweight compared to any other actuators with a crank mechanism. A wide range of specialized coatings is applied to ensure corrosion resistance of both the outside surface and internals. The modular design allows assembly of the actuator from standard units available in stock.
Actuators

**Electric Actuators**

_**Bettis Electric | EIM MOP/M2OP/TEC2 RUS Series**_

EIM actuators have been operating for more than 60 years all over the world and have proven their reliability and durability. They are suitable for extreme operating conditions, including arctic temperatures and aggressive environments. They are used to control cutoff and control valves: straightway valves, ball valves, disk shutters, shutters with DN up to 777 and at temperatures down to -60°C and below. Structural rigidity, a high safety coefficient and rugged design, along with modularity, are combined with one of the most up-to-date electronic fillers. A large, bright Russified display, advanced protection and self-diagnostics system. The actuator tolerates long immersion to a depth of up to 15 m, presence of aggressive environments, high temperatures, freezing, and temporary exposure to flame. It has a long life cycle and requires almost no maintenance during its entire life. Powder coating of the inner and outer surfaces or epoxy compound make a durable and elastic coating ensuring corrosion resistance and mechanical durability. The modular design allows assembly of the actuator from standard units available in stock.

_**Bettis Electro-Hydraulic Actuators**_

_EH/EHO Series_

Intended for failure-tolerant control of shutter and control valves with DN of up to 1,400 mm. A compact device with low power consumption consisting of a combination of an electric hydraulic pump, a hydraulic system, and crank actuator. Can be equipped with a gas/hydraulic accumulator to ensure that the required number of switches will be performed in case of a power outage. Used to control the valves of gas pipeline compressor stations, valves of tank batteries, and everywhere the shutter must be brought to the safe position, regardless of whether power is available. The design is unified in terms of main assemblies with electric and crank Emerson actuators and has inherited the mechanical durability and operational reliability proven by decades. The control system is equipped with state-of-the-art electronics with deep self-diagnostics and the ability to connect to industrial and wireless networks.

**Shafer Gas Hydraulic Rotary Vane Actuators**

_RV Series_

Widely used to control gas pipeline shutoff valves; DN up to 1,400 mm. The actuator uses the energy of compressed natural gas or switching; that’s why it is much more compact than actuators of other types. Due to the double-blade design, the output torque remains constant during the entire valve switching cycle, and the efficiency factor is considerably higher than for crank actuators. Applied loads and masses are balanced about the axis of the actuator and valve. The design is terse and contains only one moving component (rotor). As a result, it ensures soft and seamless actuation and is not prone to sticking after long downtime. The service life is over 50 years. Actuators are also well-suited for platforms and other facilities with limited space. They are optimal for use at facilities with high vibration levels, e.g., slurry pipelines, since they have almost no cantilevered masses.

**Actuators for Safety Instrumented Systems**

_SIS systems reduce the risks for the personnel and equipment and minimize the effects of equipment errors or failures in hazardous processes and critical applications._

A Safety Instrumented System (SIS) usually contains transmitters for monitoring process parameters, a controller to compare the process conditions with specified limitations, and a valve actuator that stops or switches off the process if threshold values are reached. The Emerson SIL-PAC™ solution combines actuators and digital multi-functional controllers for Fisher FIELDVUE™ valves with advanced diagnostics. Actuators are certified according to the IEC standard and are suitable for application areas SIL 1, where periodic partial valve stroke tests are performed, or SIL 2, where such tests are not required.

**Bettis MPFS Series**

_Multiport Flow Selectors_ A compact device improving the production control process and optimizing well operation. It is used to automate switching of streams of group metering units. Can be equipped with different types of actuators (manual, electric). Allows selection and direction of production streams from an individual well to one metering unit. Closed-loop hydraulic test facility or sampling device. It has several connected lines, which maintains the flow of mixed fluids from the outlet to the common collector, and at the same time isolates a specific well to measure the production rate. Works together with multi-phase flowmeters from Emerson or other manufacturers. The service life is several decades.

**Pressure Guard, Well Guard Self-Contained Hydraulic Emergency Shutdown System**

_Designed for secure cutoff of a pipeline segment or production wellhead in remote locations where automatic emergency shutdown is required, but the external power supply is unavailable or unreliable. Different emergency shutdown functions: by pressure level or rate of pressure change; by an external ‘Emergency’ signal; on exceeding the critical temperature. Can be used for any other tasks of an autonomous energy-independent valve actuator._

**Installation Kits Assembly and Setup**

_Brackets, transition flanges, intermediate sleeves, etc., required to install actuators of all delivered types onto the valve assembly of different manufacturers. In addition, professional services for assembly and joint setup of the actuator and the valve._

**Manual Overrides, Reducers**

_Manual reducers, manual overrides, and reducers for kitting different actuators of mechanized lock and control valves in the entire range of standard sizes of piping valves._

**Actuator Control Systems**

_Emerson ships dozens of thousands of different types of actuators with different control algorithms to its customers every year. Depending on the set task, the valves can have different safe positions, perform high-speed opening or closing, stop at a certain position, or carry out a partial stroke test. Thanks to our expertise, library of ready solutions, and wide range of components, we are ready to implement virtually any actuator control scheme according to the requirements of the customer and data sheet._

**Complete Valve Assemblies**

_Including a reduced number of cases where a full assembly solution is required, the company is ready to make the optimal selection of valves according to the requirements and data sheets, and to complete it with an actuator with the required control system.**

**SIS Systems**

_SIS systems reduce the risks for the personnel and equipment and minimize the effects of equipment errors or failures in hazardous processes and critical applications._

_A Safety Instrumented System (SIS) usually contains transmitters for monitoring process parameters, a controller to compare the process conditions with specified limitations, and a valve actuator that stops or switches off the process if threshold values are reached._

**Emerson or other manufacturers. The service life is several decades._
High availability actuators that help to control and isolate the process with high reliability

**Fisher Regulators and Relief Valves**

**Pressure Control Solutions for Various Industries**

**Air Control**
- Compact, time-proven robust construction; integrated filter
- Pressure reduction — MR95*, 1301F/1301G, 627*, 67*
- Upstream type — 63EG

**Gas Blanketing/Vapour Recovery**
- Fully balanced system, high performance, high sensitivity, high leak-tightness, maintenance without stopping the line, wide choice of materials
- Gas Blanketing — ACE95S, 1190, Y690A, Y693
- Vapour Recovery — Y695A, 1290

**Liquids Control**
- High quality construction, best choice, wide range of control, possibility to use for high viscosity media, including turbine and compressor lubricating systems
- Pressure reduction — 627*, SRS, MR95*, LR105
- Upstream type — 63EG-98HM, MR98*, LR108

**Process Gas Control**
- Fully balanced system, high performance, high sensitivity, full leak-tightness, low setpoint value, maintenance without stopping the line, wide choice of materials
- Pressure reduction — 1098EGR, MR95*, Y690A
- Upstream type — Y695A, MR98*
- Vacuum — Y690V8

**Fuel Gas Control**
- High speed, high performance, flexibility, control precision, serviceability, safe operation
- Pressure reduction — 310A, 1098EGR, EZR*, EZH*, 133, 627*, MR95*/MR98*

**Virgo Isolation Valves**

A wide choice of isolating valves for the oil and gas industry, including ball valves of different designs, in particular, with a metal saddle and welded housings, as well as triple-offset rotary valves made of different standard and special materials.

**Ball valves**
- With floating ball
- With a ball in a trunnion bearing
- With metal seat
- With top inlet
- All-welded
- Cryogenic

**Triple-offset disk valves**
- Full leak-tightness due to the triple-offset design
- Flanged and interflanged design
- Large diameters: to 1200 and larger

**Fisher-Enardo Vessel Equipment**

Time-proven solutions to monitor safety and environmental condition that are used by the world’s leading production and refining companies of the oil and gas industry.

**Flame and Detonation Arrestors**
- Robust construction provides protection and safety in a wide range of incident pressures and temperatures
- Larger flame channels result in lower pressure drop and allow for easier cleaning
- The fluoropolymer coating of the metal part provides superb corrosion resistance and chemoresistance
- A removable element allows easy disassembly for cleaning and replacement

**Vent and Vacuum Relief Valves**
- Dual-guided pallet and seat configuration enhances sealing, resulting in the lowest leakage rate available
- Advanced composite material option for valve internals provides superior resistance to sticky substances and the effects of cold climates
- A replaceable saddle reduces maintenance costs and extends the valve’s service life

**Emergency Relief Valves**
- Engineered to meet API Standard 2000, NFPA 30 and OSHA (29 CFR 1910.106) for emergency venting due to fire exposure
- Pressure-relief only and pressure-relief with vacuum models available
- Gravity-feed relief ensures high capacity and prevents ingress of foreign substances into the tank
- A replaceable saddle reduces maintenance costs and extends the valve’s service life

**Tank Hatches**
- New advanced technology models provide a substantial reduction in leakage
- Full range of configurations including dead-weight, spring-loaded and lock-down models
- Provide access to the tank for inspection and calibration

* Manufactured in Chelyabinsk, Russia
Our experience and global network of service capabilities will help you to develop, implement, and support your strategy during the entire life time of your equipment.

The following services are provided under service support agreements:

**Support**
- Technical support
- Emergency care
- Diagnostics and search
- Repair and upgrades
- Spare parts and Quick Ship
- Trainings

**Performance**
- Startup support
- Setting up control loops
- Fiscal metering
- Auditing
- Continuous technical supervision
- Total Care

**Reliability**
- Preventive maintenance
- Remote support and monitoring
- Support during planned shutdowns
- Retrofits / Upgrades
- Consulting and solving applied problems

Expert phone support by Emerson service specialists. You get a prompt response to perform troubleshooting, make correct technical decisions, and reduce or eliminate unplanned downtime.

On-site emergency care. Immediate and efficient response of a service expert for fast fault recovery.

We perform diagnostics and failure tracing using specialized SW and mobile diagnostic sets.

Whether it’s equipment repair or upgrades, we maintain your facility according to the highest standards of safety and reliability.

Support programs for your facility with respect to availability of important spare parts and quick modular replacement of critical equipment.

Short- and long-term training programs for your personnel. Improving skills and qualification for maintenance, troubleshooting and diagnostics.

Training at the regional training center or directly at your site.

On-site support for faster, safer, and more efficient startup. ‘Turnkey’ service package and support at each stage of startup.

Our wide range of setup services reduces uncertainty and ensures compliance with the highest industrial standards, long-term stability, and measurement accuracy.

Scheduled visits of our service specialists ensure consistent reliability, quality and high performance level of your equipment. Professional recommendations and detailed service reports help to decrease the probability of unforeseen expenses related to unplanned shutdowns.

Our expertise and cutting-edge technologies help us implement the best programs for preventive maintenance, periodic and regular monitoring of critical production assets that gives advance warning of possible failures and reduces the probability of downtime.

We help to determine the maintenance tasks during a planned shutdown as accurately as possible using proven processes to reduce risks and increase reliability.

Stay at the peak of progress: upgrade your equipment, enhance performance, and maximize return on investments.

Consulting, instruction with consideration of production specifics, applied problems to be solved, and special features of integration of new technologies.

Decrease of instability of process control by determination of ‘problem’ loops in order to maximize the revenue.

Assistance in maintaining reliable metering and measurement accuracy, maintaining compliance with fiscal metering standards.

An operability check and full inspection help to achieve confidence in the reliability of the facility and identify obsolete equipment, and optimize spare part inventories and the installed equipment base.

Emerson service expert is always present at your site as your principal contact point for resolving recurring problems, troubleshooting, configuration, instruction, and exchanging and implementing best practices. Everything to keep your equipment at peak performance.

Focus on your own key competences and let Emerson guarantee performance and efficiency of your equipment. Measure performance using the agreed system of quantitative performance indicators. We’ll take care of team staffing, maintenance procedures and tools, and guarantee results according to KPIs.

Over many years, Emerson has systematically built the infrastructure for full-scale service support at sites where Emerson equipment is operated. The company’s in-house service department has over 70 highly skilled specialists located in 15 service centers in Russia and CIS countries. Each of these specialists takes a specialized training course directly at the plants and in the company’s certified technical training centers, which ensures consistently high quality of maintenance and repair work. High standards of service quality are also maintained by regular customer surveys and systematic elaboration of measures to improve service based on results of these surveys.

The company’s service centers provide a wide range of services aimed at increasing the trouble-free service life and reducing downtime, from basic to comprehensive maintenance programs adapted to the requirements of specific enterprises. The company’s service department has repair shops and a spare parts warehouse at the production facility in Chelyabinsk and at large service centers.

The service department also has a training center, where 8 certified instructors provide training in maintenance and operation of Emerson equipment for more than 400 technical specialists of enterprises from Russia and CIS.

In addition to the company’s own service department, a regional network of service partners is under active development. Service partners go through selection, evaluation, training, and subsequent authorization based on their qualification, experience in the corresponding area, end user references, and compliance with Emerson quality standards.

End user references, and compliance with Emerson quality standards on their qualification, experience in the corresponding area, evaluation, training, and subsequent authorization based on the development. Service partners go through selection, evaluation, training, and subsequent authorization based on their qualification, experience in the corresponding area, end user references, and compliance with Emerson quality standards.
Measuring Instrument Service*

Measuring Instruments Verification

The Service Department provides service for verification of all Metran measuring instruments and products of Emerson Process Management. To estimate service cost and period of verification, please send your request to metran.service@emerson.com

Field service (installation supervision, commissioning, audit)

A package of services to ensure correct installation and operation of the equipment.

At present, the range and variety of operation principles of process automation equipment are enormous. It is becoming more and more difficult for the user to understand this variety, and even more difficult to have thorough knowledge of the peculiarities of using all equipment types. This often results in a less than optimum or incorrect equipment order for a specific task, or to incorrect installation and setup of devices, which leads to high measurement error, lack of reliable readings, and even equipment failure. Field service covers the following equipment:

- Micro Motion Coriolis Meters;
- DP Flowmeters with Annubar APT (Metran-350, Rosemount 3051FA/3051MPA) and compact orifice (Rosemount 3051FC/3051MFC);
- Rosemount 8700 Magnetic Flowmeters;
- Rosemount 8800D Vortex Flowmeters;
- ROC/FloBoss Controllers
- Metran-331, Metran-332 Flowmeters/counters;
- Rosemount Level Transmitters.

The Service Package includes:

- Check of compliance of the delivered equipment with the design documentation requirements;
- Equipment completeness check;
- Inspection of the equipment deployment site in order to check compliance with requirements of the design documentation and operation manuals;
- Advice of specialists of the organization or division performing the installation. Supervision for compliance with the requirements of technical documentation during installation and commissioning;
- Connection of electrical wiring and configuration of equipment for the specified operation conditions;
- Switching on equipment and verifying its operability in real operation conditions (subject to certain conditions);
- Training specialists involved in operation and maintenance of the equipment.

To order services, send a service request to CIS-Service@emerson.com and describe models of devices, work site and conditions, requirements for specialist authorizations, the need for accommodation, and other information concerning performance of this work. Service Department specialists will calculate the duration and cost of services for subsequent conclusion of a contract.

Repair (Warranty and Post-Warranty)

Warranty service is provided according to the results of failure analysis. In order to determine the cause of failure, the device must be sent to the service center. Repair and warranty service are performed by the Main Service Center (MSC) in Chelyabinsk or certified regional service centers (RSC).

Regional Service Centers (RSC)

For fast, high-quality service of devices, an extensive network of certified regional service centers (RSC) based at third-party companies has been organized for users located far from the Main Service Center (MSC) in Chelyabinsk. Each RSC is allowed to maintain a certain type of products, which is confirmed by a standard certificate with a list of maintained products, type of work performed and the validity period of the certificate. RSC specialists periodically take training in repairing serviced products, which gives confidence in the quality of the work.

Sending/Receiving Devices

Contacts of the Service Department for Measuring Instruments

Contact Hotline at 8-800-200-16-55 or +7 (351) 799-55-80 for advice on the following questions:

- completeness and condition of the received devices;
- completeness and execution of documentation;
- operability of devices;
- warranty and post-warranty repair of devices;
- installation and setup of devices;
- operation of devices;
- renewal of lost data sheets;
- organizing supervision and commissioning;
- training specialists in maintaining Metran devices.

* in Chelyabinsk, Russia

Our experience and global network of service capabilities will help you to develop, implement, and support your strategy during the entire life time of your equipment