HONEYWELL ELSTER® PRECISION SOLUTIONS
Your Global Partner for Gas & Liquid Skids and Stations.
Go Beyond Metering, Optimize with Precision.
Today’s gas industry demands operational excellence. Plant operators are under pressure to achieve greater cost efficiency, improve asset integrity, increase uptime and reduce risk. They spend a lot of effort to optimize their entire value chain, respond to increased digitization of operations, and yet remain agile enough to keep pace with rising global demand and constantly changing market conditions.

With Honeywell’s Elster Precision Solutions we go beyond metering by providing you first of all a fully compliant metering or regulation solution, but on top of that the tools to run your operation efficiently. By offering continuous monitoring and evaluation of your metering system and with our extensive knowledge and experience in process control and automation, Honeywell provides multiple benefits including reduced project risk and operational complexity, lower maintenance and operating costs, increased operator effectiveness, and safer more secure operations.

Elster Precision Solutions—Meeting the Demands of Custody Transfer Applications

Honeywell has been serving industrial customers with instrumentation, control systems and advanced application solutions for more than 100 years. With extensive experience executing large automation projects, and a portfolio of products and services acquired through Elster and Honeywell Enraf—leaders in their respective regulation and measurement technologies—we are a trusted global partner for integrated skids and pre-packaged stations for the oil and gas industry.
Complete Solutions for Gas and Liquid Measurement

Elster brings a great wealth of experience in the gas market to Honeywell. Elster is known as a gas brand globally and has a proven track record in gas transmission and distribution, all the way down to residential applications. With Elster added to Honeywell’s offering that has always been strong in gas transmission applications with high pressure regulators, Honeywell now has a truly unique line of products that are offered as an integrated solution by Elster Precision Solutions.

Serving the Regulators and Institutes

A culture of continuous improvement in product development helps to enhance our reputation. We do not only deliver solutions to gas companies—we serve the top segment: the metering institutes themselves. They use our instruments as a reference to calibrate and certify other meters.

The world’s largest testing and calibration station, Euroloop, in Rotterdam chose Elster. Participation in this project in Rotterdam provides further recognition in the 21st century. Also, the calibration facility in Canada, TransCanada Calibrations Ltd., is equipped with Elster master meters. This facility is a “best-in-class” high-pressure natural gas meter calibration facility that has been servicing the gas measurement industry for more than a decade. Having the greatest capacity of any flow calibration facility (20-55,000m³/hr) and with the lowest uncertainty of high pressure flow labs in N. America (0.19%), this is another example that the Elster gas metering equipment is accepted as the reference for the Industry.

TransCanada Calibrations Facility

Turbine Gas Meter

The Elster SM-RI-X turbine gas meters are unique because of their excellent metrological performance and long-term stability. They are widely used for custody transfer of natural gas in transmission stations, distribution stations and as master reference meters in accredited laboratories.

History of Elster & Instromet

The history of Elster goes back to 1848, the year in which the pioneers of the company developed the first metering solutions for gas. In 1965, Instromet started operating in the same sector and played an important role in developing the metering technology for the exploitation of Slochteren, which at the time was thought to be one of the world’s largest gas deposits. The following years of technical innovation resulted in high quality metering and regulation systems for gas in both companies. Since 2005, the two companies merged into the Elster Group which is now part of Honeywell since end of 2015.
Customized Integrated Stations

Besides the development and production of measuring and regulation devices for the gas sector, we design and build complete stations with various components. This means we apply a far-reaching degree of system integration, based on our knowledge from various disciplines.

Gas Pressure Regulating Stations
Honeywell has successfully engineered gas pressure reduction stations for over 50 years. This includes skid-mounted, pre-packaged pressure reducing solutions for above and below ground applications. The stations range from domestic regulator skids to high-pressure gas transmission stations, and typically include filter, regulators and isolation valves. If necessary, they are also available with slam-shut and safety relief valves. With added capabilities from the Elster metering portfolio, Honeywell now has a much wider offering that includes gas pressure regulating as well as metering solutions. Pressure regulating stations are usually designed and built according to individual customer specifications. They utilize modern practices in the control of gases and incorporate features to ensure high integrity. Factory-built units are pre-tested to meet strict quality assurance standards, while also simplifying on-site installation/commissioning and reducing manpower requirements.

Gas Chromatograph EnCal 3000
The EnCal 3000 gas chromatograph is designed specifically for fiscal energy measurement of natural gas. It uses chromatography components based on the latest Micro Electro Mechanical Systems (MEMS) technology and capillary columns. With an unmatched 0.01% reproducibility, the use of the latest technology really pays off.

Pressure Regulator Former RMG
Our gas regulation products enable dependable operations for a range of applications in the gas value chain. Designed to handle higher system pressures, ensuring gas delivery and reduced noise output, our gas regulators are rigorously tested and employ state-of-the-art technology. Our rugged and accurate gas pressure regulators and control/safety valves deliver outstanding long-term performance and a low total cost of ownership.

Flow Computer FC1
The real-time flow computer series are designed for hydrocarbon gas and liquid measurement and control applications. The features support flexible configurations for fiscal and custody transfer measurements using the latest applicable AGA, ISO and API standards available. The top-range flow computers provide remote control capabilities using web-based Ethernet TCP/IP technologies including remote front panel operations.

SmartLine Transmitters
Honeywell’s SmartLine Transmitters are the industry’s first modular and most reliable transmitters, delivering value across the plant lifecycle. The SmartLine pressure ST800 and SmartLine temperature STT850 are an excellent fit for fiscal gas applications. Low measurement uncertainty paired with high stability and quick response times, MID Approval make it a perfect combination with the proven Elster encore FC1 flow computer.
Total Energy Measurement Systems

Elster Precision Solutions encompasses volume measuring instruments such as rotary displacement, turbine and ultrasonic meters, as well as devices for calculating the quantity of gas via the measured values of pressure and temperature or density (flow computers) and gas analysis systems. In combination, these devices provide all data needed for the billing of natural gas or industrial gases. Honeywell’s equipment is available individually or as a complete measuring system for gas metering stations. This includes all measuring, evaluation and data-logging units in ready-wired electrical cabinets providing remote data transfer. The measuring instrument line is supplemented by different software packages for data acquisition and evaluation.

$$V_n = \frac{P_n \cdot T_n \cdot Z_n \cdot V_b}{P_b \cdot T_b \cdot Z_b}$$

$$E = V_n \cdot H_{s,n}$$

- $V_n$ - Flow rate at normal conditions
- $V_b$ - Flow rate at flowing conditions
- $P_n$ - Normal pressure, typically 1.0135 bara
- $T_n$ - Normal temperature, typically 20°C
- $Z_n$ - Compressibility factor of gas at normal conditions
- $Z_b$ - Compressibility factor of gas at flowing conditions
- $H_{s,n}$ - Superior Calorific value
- $E$ - Energy flow rate
Control Systems and Diagnostics

The world of metering is changing all the time. Technological developments over the last decades in the field of metering has moved the focus from mechanical metering principles to electronic metering principles. One of the main benefits of this development is the possibility for metering diagnosis that these electronic principles offer. In today’s world of metering the ability to judge the meter performance is at least as important as the actual performance itself. By combining all available metering data we perform continuous monitoring and diagnostics on the metering system.

With our Condition Based Monitoring system Meascon™ (Measurement under control) we fully integrate Elster products providing full synergy and taking it into the next level. Meascon is an innovative development which allows easy healthcare monitoring of a complete metering system and in particular, ultrasonic gas flow meters from Elster. With Meascon technologies we address the question: how can reliability, long-term measurement accuracy and minimum uncertainty be achieved while keeping the maintenance costs as low as possible? Smart monitoring schemes allow you to implement condition-based maintenance strategies to reduce your OPEX.

Continuous Performance Monitoring and Health Surveillance with Asset Sentinel

Where Meascon is focused on the metering performance, Uniformance Asset Sentinel offers a Meter and Measurement Reporting Solution providing the system of record for meter provings, prover certifications, test equipment certifications, transmitter verification and calibrations. The solution provides visibility, tracking, and compliance reporting on your critical meters, provers, transmitters and test equipment. Asset Sentinel delivers a wide range of benefits and significant savings for the business:

- Preventing unplanned shutdown due to meter proving issues and meter failures
- Tracking audit records to demonstrate compliance
- Reduce time to meet audit requirements
- Reduce penalties and charges for failed audits.

In addition to Meter and Measurement Reporting, Asset Sentinel is also able to address all aspects of equipment health monitoring and asset management. It provides an integrated environment where users can view and assess different types and classes of assets across the enterprise. It’s a powerful tool to calculate and monitor equipment efficiency and reliability, and ensure a low cost-of-ownership throughout the asset lifecycle.
Optimize with MeterSuite

Every day, and during every transaction, oil and gas producers need to know the exact amount of product going into a pipeline, truck, barge or ship. However, many oil & gas processors, refiners and petrochemical plants use disparate systems for such measurements.

The original equipment for existing metering systems may also be facing obsolescence. The control and supervisory management functions of a metering solution are key to capturing the maximum value of custody transfer. MeterSuite is Honeywell’s standalone or integrated metering solution, which measures and calculates volume flow rate, mass flow rate, energy rate, flow density, and flow total with the highest accuracy. Integrated with Honeywell’s Experion® Process Knowledge System (PKS), MeterSuite offers the benefits of a centralized metering solution, including monitoring, management and reporting processes to supply accurate data for the entire operation. MeterSuite integrates the metering function with the control system architecture—improving cost-effectiveness from installation and configuration, to support over the long-term. All capabilities of the Experion platform are easily integrated to manage the metering function:

• Flexible reporting
• Web-based access
• Integration with wireless transmitters
• Integration with fieldbus transmitters
• Single point of configuration
• Advanced trending
• Seamless connection to Honeywell systems.

MeterSuite offers many benefits for the typical oil & gas operation. Since there are fewer systems to maintain, less training is required. With more functions inside the control system, there are no external components or custom interfaces. This eliminates a separate database, configuration and graphics building effort. In addition, MeterSuite’s standard human-machine interface (HMI) encourages users to observe its operation more closely. Web access to metering information is available across the enterprise or between businesses for authorized users.

Liquid Metering Systems

Honeywell is a proven leader in custody transfer metering for liquids in terminals and tank farms. Our metering systems can be integrated with a tank farm management system or terminal automation system, thus providing greater value for customers. Furthermore, our engineering and design team delivers highly accurate solutions worldwide in compliance with the latest industry standards. Honeywell’s precision liquid metering systems are supported by the PKS Advantage Program, which offers best-in-class products from various established companies. These systems are available with turbine, Coriolis, ultrasonic, magnetic, vortex and PD flowmeters.

RTU 2020

The RTU 2020 gives customers perfect 20/20 vision of their processes through efficient remote monitoring, and diagnostic and asset management capabilities. The design is highly power-efficient to operate on solar panels when installed in remote locations. In combination with Experion SCADA, the RTU helps users visualize what they need to know to simplify management of field assets (meters, transmitters, gas chromatographs, etc.).

Experion PKS

Honeywell redefined industrial automation with Experion PKS (Process Knowledge System), the first enterprise-wide distributed control system (DCS) designed to merge traditionally disparate functions and systems across the manufacturing enterprise, the Experion PKS enables better overall collaboration that allows plant personnel to make better decisions to improve business performance, safety, efficiency and agility.
Honeywell’s integrated Terminal Automation Solution (TAS) helps managing the movement of hydrocarbons through the world’s network of pipelines, tankers and terminals, eliminating losses and meeting strict government regulations. Honeywell supplies total automation from field to boardroom to terminals worldwide, with integrated applications for inventory management, oil movement, operations scheduling and industrial security. Only a truly integrated solution, such as the Honeywell TAS solutions, help to keep the capital and operational expenses of a terminal facility to a minimum, and gives terminal owners, managers, and operators the advantage they need in today’s highly competitive markets.

**Meter Provers**

Honeywell offers a choice of flowmeter proving skids for liquid metering systems. These range from master meter and bi-directional flow provers, to compact and portable provers for a variety of applications. The Honeywell Enraf Small Volume Prover meets the most stringent requirements for flowmeter proving. It is designed for use with all modern flow measurement devices, including PD, Turbine, Coriolis and Ultrasonic meters and comes with the new SVP Controller, offering a 3.5" 6-line, multifunction display that gives users real-time visual monitoring and control of the operation for the first time. This advanced prover is available as a standalone unit, mounted onto a purpose-built trailer, or installed onto a modular metering or loading skid. It is designed to precisely displace a constant volume of fluid with each cycle. This assures consistent proving results with repeatability equal to or exceeding 0.02%, as defined by API. Superior sealing integrity and fluid compatibility are made possible by PTFE-filled seals and the unit has a constant displaced volume of 100%, regardless of the meter location. The prover is ideal for custody transfer meter proving, as well as offshore and stationary applications, due to its small size and wide turndown flow range ratio of 1200:1. The prover’s precision, smoothbore cylinder and measurement piston assembly includes an integral bypass valve in order to minimize disturbance to flow streams. Its external optical switches have a repeatability of 0.0001 of an inch or better. This allows the prover volume to be very small without sacrificing performance or accuracy.

Honeywell is also a recognized industry leader when it comes to integrated pipeline and terminal automation projects.
The benefits of blending products at the load rack are numerous, and include reduced dependency on multiple storage tanks and greater load rack flexibility by creating variable product load arms. Honeywell Enraf provides high quality, well-engineered skids for blending of two or more products to a predetermined specification during a standard flow process. Applications run the gamut: from ship feed and storage tank processes, to aircraft and tanker trucker refueling.

The design of Honeywell Enraf’s blending skids simplifies the addition of an ethanol or bio-diesel blending capability to the load rack. The small footprint blender facilitates:
- Accurate specification of static and dynamic seals
- Precise volume measurement of ethanol and bio-diesel
- Volume growth factor when mixing ethanol into petroleum
- Varied communication interfaces into the existing load rack
- Flexibility of varying blend ratios.

By using the MicroBlender for single-stream applications, or the Multi-stream Blender for multiple stream/product applications, loading terminals can ensure a smooth installation, accurate blend ratios, and extended equipment life. Honeywell Enraf’s loading automation system manages and controls loading and unloading in a safe, secure and efficient manner. The system allows compliance with the ever-changing market requirements; enables just-in-time supply and minimized stocks by linking carriers, suppliers and customers; and helps users increase terminal throughput while reducing costs. The integrated loading automation solution utilizes a powerful load computer and multi-functional Terminal Manager automation software. The Access Terminal is a range of instruments specifically designed to ensure security at tank terminals, and the Securiterre system eliminates the explosion hazard. These elements comprise a total package meeting the demands for reliability, flexibility and safety.

Specific blending requirements can include:
- Ethanol bio-fuel blending
- Diesel bio-fuel blending
- Fuel oil blending
- Mid-grade fuel blending
- Chemical blending
- Fertilizer blending.
Peace of Mind Assured with End-to-End Project Management

Honeywell offers dedicated skid design as well as engineering and manufacturing centers in numerous locations worldwide, staffed by a team of experienced mechanical, electrical and chemical engineers.

Experts in flow measurement and analytical technology are also based in these locations. We believe a true measurement solution requires more than just supplying instrumentation and systems. Instead, it must be part of a total package that includes consulting, training programs, maintenance, and ongoing customer service. Honeywell has the global resources to support you in all phases of your project.

Our project management capabilities include:

- Mechanical and electrical design
- Purchase of components
- Manufacturing of pipe spool and construction elements
- Mechanical assembly including inspection tests
- Site erection
- Supervision
- Commissioning
- After-sales service.
Optimize with Precision—for All Your Metering & Control Applications

The Elster Precision Solutions are used in a wide range of industries and applications. From combined Gas and Liquids metering systems in the off-shore industry in the Pacific Ocean, to LNG terminals in the US, citygate stations in China to a bio methane grid injection system on a farm in France, Honeywell offers fully compliant and turn-key solutions.

Project Examples:

**Shanghai, China**

**Application:**
LNG receiving terminal

**Description:**
Metering system for gas custody transfer

**Equipment:**
• Q.Sonic-4 20” ANSI 900
• 2” x 20” (DN500) + 1 future run
• Inlet/outlet headers—36” ANSI 900# RTJ
• Metering runs—20” ANSI 900# RTJ
• Metering panel
• Control panel
• Analyzer shelter (GC).

**Operating Conditions:**
• pressure: 62 to 139 bar = 897 to 2014 psi
• temperature: -5°C to 30°C = 23°F to 86°F
• flow rate: 84,360.00 to 1,180,000.00 Nm³/h.

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**Raz Az Zawr, Saudi Arabia**

**Application:**
High pressure transmission line

**Description:**
Sales gas metering skid for custody transfer

**Equipment:**
• 2 Ultrasonic meter runs 16”-600# (DN 400) with double z-configuration and motor operated valves
• 2 flow control valves 12”-600# (DN-300)
• Outlet header 20”-600# (DN 500)
• Station control panel with 2 flow computers
• 1 Analyzer shelter with gaschromatograph and moisture analyzer.

**Operating Conditions:**
• pressure: 66 bar = 960 psi
• temperature: 150°F = 65°C
• flow rate: 197 MMSCFD or 220,334 Nm³/h.

**Special Service:**
Black powder application.
For More Information
To learn more about Honeywell’s Elster Precision Solutions, visit www.honeywellprocess.com or contact your Honeywell account manager.

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