

Profiles

Customer Magazine 3/2017



HON5020: High-pressure Regulator with SSV

Ultrasonic with Turbine: A Powerful Combination

Transducer Replacement in Q.Sonic USMs

ControlEdge RTU Improves Asset Management

Safety is a basic human need



Alexander Schmidt
DACH Sales Director

Abraham Maslow classified and described it as the second basic need in his hierarchy of needs as early as in the 1940s. This need for safety is just as important today. According to an Emnid survey after the general election in Germany, the subject of safety still preoccupies around 70% of Germans. Times have become regarded as universally less safe. Recent events such as the terrible attack in Las Vegas or the latest computer viruses such as the Bad Rabbit malware are reported to us every day by the media. They change our conduct and the way in which we live.

Safety relating to industrial and private gas utilization is perhaps not as obvious but no less important. Hardly anybody thinks about it but everybody expects that their home, particularly now in autumn and with the approach of winter, will be kept cosy and warm by their heating and that if their home is heated by gas, this will be done without any risk to those who live there. We are so used to it that we hardly notice it any longer but precise specifications and guidelines in the gas industry have been regulating the fuel's transport, handling and use for over 140 years. In a joint effort, industry experts have created a safe environment in which we can always feel safe. But even here, the basic conditions are changing. The slump in the price of oil, network development plans, the conversion from L gas to H gas or biogas and hydrogen in the natural gas network demand an adjustment to these time-tested rules and technologies to ensure that supplies are safeguarded and continue to be safe at all times.

Safety has always been and continues to be a focal point for Honeywell, regardless of whether it relates to controlling a complete refinery or chemical plant with solutions such as the Safety Manager and integrated cyber security, or high- and low-pressure gas distribution. In close communication with our customers, for example during the Gas Day in Munich to which we were once again able to welcome over 60 customers, not only do we manage to maintain our high standards in our products and solutions, but they are also the subject of ongoing development. This is exactly what has happened with our most recent development of the new HON5020 high-pressure regulator with integrated safety shut-off valve. A product which builds on the trust that our demanding customers have in Honeywell as a reliable supplier.

We continue to develop our sales and service team and keep them up to date by means of providing ongoing training. Since I took up the position of Sales Director for Germany, Austria and Switzerland in August 2014, the quality and safety expertise of our employees who have direct contact with you, our customers, has been an absolute priority.

Honeywell continuously invests in the safety of its technologies and staff. Thus, you can count on us every day for the next 140 years as well – we will continue to ensure that this valuable fuel is supplied to your applications in adequate quantity and the required quality.

Yours sincerely,
Alexander Schmidt

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HON5020 – a Series Which Has Got What it Takes

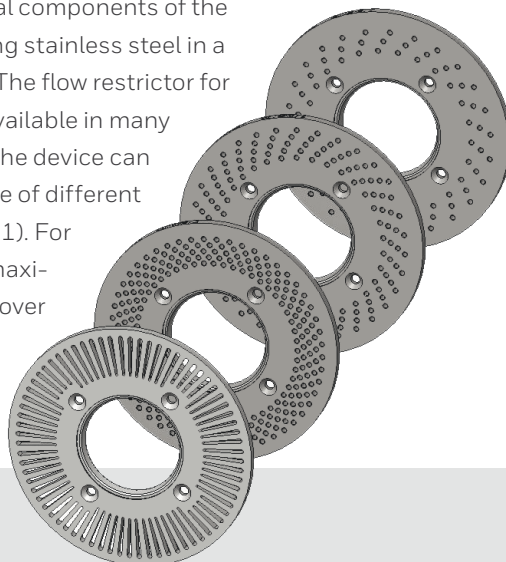
The newly developed gas pressure regulators in series HON5020 are an extensive family of pilot-controlled diaphragm regulators in nominal sizes from DN 25 to DN 150 and pressure ratings from PN 16 to ANSI 600. In addition to a wide range of options, the integrated SSV should be mentioned first of all.

The HON5020 delivers excellent control quality over a wide range and fast response times for highly dynamic requirements as imposed by industrial applications.

The core of the device is the easily accessible regulating diaphragm which is also the only wear part in the actuator. This, in turn, minimizes maintenance work. An integrated noise reduction unit is, of course, another feature of the range and is perfectly positioned below the flow restrictor. Retrofitting is possible at any time, for example, during a maintenance intervention.

Value has been attached to quality, reduced wear, and a long service life in every respect. This is reflected in the design as well as in the choice of materials. For example, the flow restrictor, one of the critical components of the regulator, is produced using stainless steel in a water jet cutting process. The flow restrictor for reducing the flow rate is available in many different versions so that the device can be adjusted to a wide range of different operating conditions (Fig. 1). For the operator, this means maximum investment security over the complete product life-cycle.

Fig. 1: Flow Restrictor: 100%, 75%, 50% and 25%



HON5020 With Integrated SSV

As part of the extensive range of Honeywell high-pressure regulators, a comprehensive selection of tried-and-tested pilots (series HON 6XX) is available for the HON5020, which are suitable for all tasks, from classic outlet pressure regulation to complex automation.

The SSV uses a valve rod/disc design for nominal sizes DN 50 to DN 100 and is positioned axially opposite the flow restrictor/diaphragm assembly. It is triggered by indirect control devices from the existing portfolio which promise high accuracy. A new, innovative design has been used for the shut-off mechanism: The triggered SSV is returned to its operational



position by an attachable lever using a shaft gearing mechanism. This improves handling and significantly reduces the release forces required. It also makes the device more compact. The entire safety shut-off valve is inserted into the actuator housing as a single piece from below. This makes it possible to complete maintenance work decentrally at the installation site. Alternatively, a replacement unit can be installed to make the whole device ready for use again immediately.

The DN 150 version has a butterfly mechanism as used in the HON711 SSV, but with the valve seat turned through 45° (Fig. 2). This layout of the valve seat improves the flow characteristics and delivers a flow rate never before achieved

in a diaphragm regulator. In addition, this has resulted in a significant reduction in design height and weight.

The HON5020 naturally holds an EC-type examination certificate under the Pressure Equipment Directive 2014/68/EU in association with DIN EN 334 and DIN EN 14382 standards.

Technical Data:

- Inlet pressure range up to 100 bar
- Outlet pressure range 0.02 to 90 bar
- Flow coefficient: up to 11,500 m³/(bar*h)
- Flow reduction: 25%, 50%, 75%
- Sizes: DN 25, 50, 80, 100, 150
- Flanges PN 16, PN 25, PN 40, ANSI 150, ANSI 300, ANSI 600

The HON5020 with integrated SSV stands out due to its mix of innovative and time-tested design. Ease of maintenance and handling, adjustability to changing operating conditions and high flow rates are other major features of this series. A series which has got what it takes!

Paul Ladage

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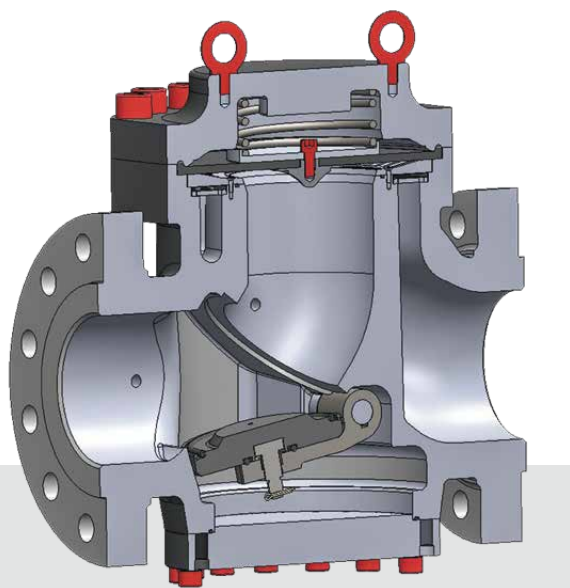


Fig. 2: HON5020 (DN 150)

A Powerful Combination

The combination of an ultrasonic gas meter with a turbine gas meter delivers a powerful system and provides gas transmission companies with a significant reduction in operational expenses (OPEX).

Pursuant to national law and/or contractual agreements, meters used for fiscal purposes are required to be initially wet calibrated before being put into operation. During their service lives, they typically need to be re-calibrated every 8 years. This period differs depending on the market and national law and/or contractual agreements, and is intended to ensure traceability of your meters in relation to the primary standard.

According to German Metrology and Calibration Regulations ("Mess- und Eichverordnung," Appendix 7, 5.6.7), when both meters are connected (continuously) in series operation, the

re-calibration interval may be extended every time by one year based on the annual deviation results. This regulation applies in commercial transactions between non-resident partners with a maximum flow of at least 1600 m³/h of gas in operating conditions. Provided that comparative measurements are taken at first commissioning and subsequently during the year, the deviation between the two gas meters in operation must not exceed 0.5% (half of the calibration error limits) compared to the deviation detected during commissioning.

Honeywell's SM-RI-X turbine meters set the standard in world-class calibration capability and are the result of many years of experience and our passion for ingenuity. Combining this with the Q.Sonic^{max} which set the new benchmark in gas flow measurement and custody transfer accuracy gave operators new-found confidence in multi-meter technologies that are not susceptible to the common mode failures of a single technology (i.e. two chordal path USMs in series).

Combinations of two ultrasonic gas meters are regulated by the PTB guideline TR G18, which says that ultrasonic meters can be combined in one of the following ways:

1. Ultrasonic meters to be combined need to be from different manufacturers or
2. Ultrasonic meters to be combined need to be designed with different meter path configurations



Honeywell fulfils the 2nd condition with the combination of the Q.Sonic^{plus} (that consists of diametrical and swirl paths) and the Q.Sonic^{max} (that consists of chordal and swirl paths) in series. Thus, Honeywell is the only player in the German natural gas industry who can supply this arrangement from a single source which is not susceptible to common mode failures.

The re-calibration interval of a combination of two ultrasonic gas meters can be extended under the same conditions as a combination of a turbine gas meter and an ultrasonic gas meter. In addition to this, the velocity of sound

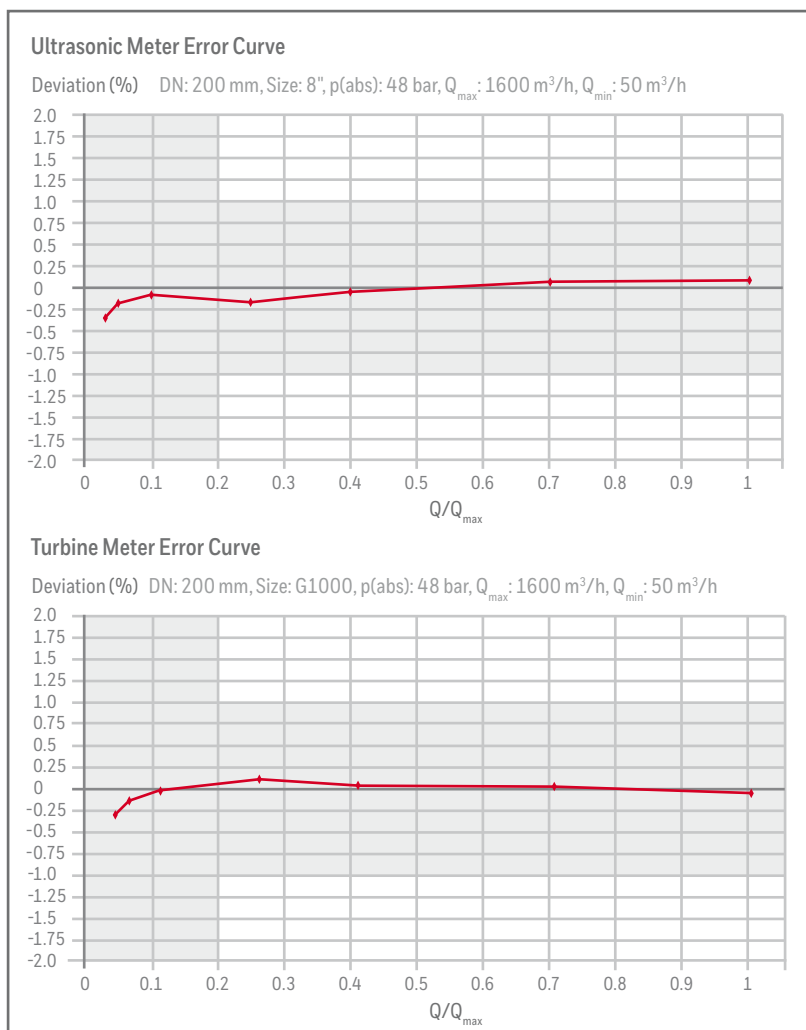
Flow characteristics of the Q.Sonic ^{max}					
Diameter Size			Minimum Q _{min} ^[1]	Minimum Q _t ^{[1][2]}	Maximum Q _{max} ^[1]
Inch	DN	Internal bore (mm)	(m ³ /h)	(m ³ /h)	(m ³ /h)
4	100	97	13	60	1000
6	150	146	18	130	2200
		139	16	110	2000
8	200	190	30	210	4000
		180	27	190	3500
10	250	240	48	330	5900
		230	44	300	5400
12	300	295	73	370	8300
		280	66	340	7500
14	350	325	85	450	10000
		305	75	400	8800
20	500	488.9	200	1050	21000
		431.8	160	800	16000
24	600	590.9	295	1500	30000
		532.22	240	1250	24000

Notes:

[1] If higher values are chosen for Q_{min} and/or lower values for Q_{max}, it has to be taken into account that Q_{min} ≤ 0,05 Q_{max} and Q_{max} / Q_t ≥ 5.

[2] According to the manufacturer's specifications, the following Q_t restrictions are applicable:

- for 1:20 ≤ Q_{min} / Q_{max} ≤ 1:50 Q_t ≥ 0,2 Q_{max}
- for 1:50 < Q_{min} / Q_{max} Q_t ≥ 0,1 Q_{max}



of all meter paths of both meters must not deviate more than 0.3% from the mean value.

With the updated revision of our MID type approval for the Q.Sonic^{max}, we have even made it easier to calibrate this combination as a metering package under MID. We have reduced the minimum transitional flow rate (Q_t) to match the "reduced" flow capacity of the SM-RI-X turbine meter of the same nominal size (see table) especially for this purpose.

With better solutions for fiscal measurement, we help gas transmission companies, underground gas storage businesses, and the LNG industry run more profitable operations.

If you are also interested in finding out how Honeywell's top-class ultrasonic meters (USMs) and/or turbine meters can reduce your OPEX, please go to <http://hwl.co/USM> or contact your local sales representative.

Eric Bras

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Transducer Replacement in Q.Sonic USMs

The North American Fluid Flow Measurement Council tests highlight another reason why Honeywell’s ultrasonic meters outperform the competition.

We’ve often said the flow meter is the cash register of the natural gas business. But there’s a big difference: You’ll usually know when your cash register isn’t working.

Inaccuracy in metering operations increases health and safety risks, and undermines the transparency of custody transfer. Undetected errors have a significant cost because they are rarely random, but rather accumulate. Relatively small inaccuracies can rapidly result in significant costs.

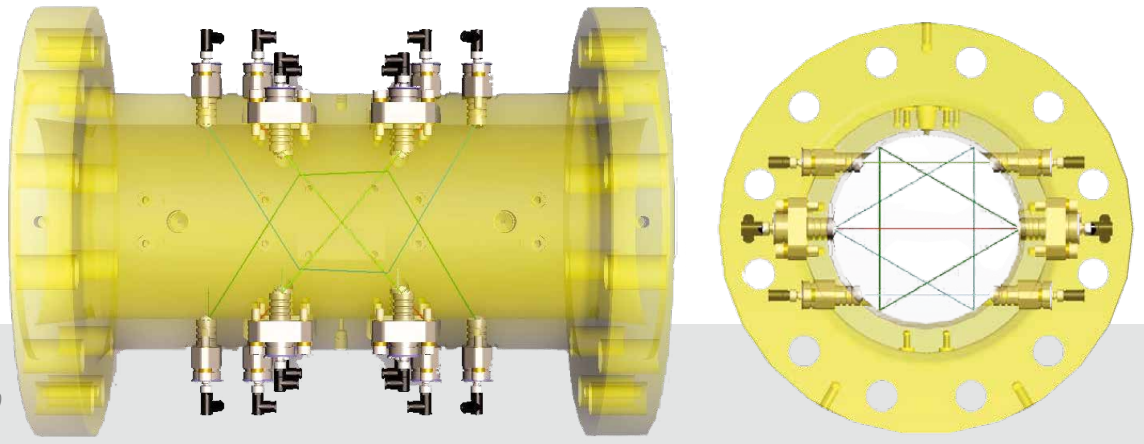
The table below shows the accumulative loss at a variety of flow rates, assuming a cost of US\$3/million BTU. The result can be losses of up to \$1.7 million a year – for each meter.



Meter capacity	Cost of 0.5% error per year at current prices
4" @ 60% capacity, 20 bar	~ \$50,000
8" @ 30% capacity, 30 bar	~ \$170,000
16" @ 50% capacity, 50 bar	~ \$1,690,000

The importance of accurate measurements, as well as the need to minimize maintenance and servicing, has done much to promote the use of ultrasonic meters (USMs). Versatile, with the ability to handle high pressures and wide flow ranges, and reliable, with no moving parts, they offer better long-term value and performance as well as greater accuracy than alternatives. They do not eliminate the challenges, however. While technology has improved, pressures on the industry have introduced new risks to measurement accuracy. Complex supply chains, for example, have increased the amount and range of dirty and wet gases being processed. Build-up of dirt on the pipe wall ultimately affects the flow and adds to the risk of undetected errors.

Fig. 2: Reflective Paths Used in the Q.Sonic^{max} (Left) and Q.Sonic^{plus} (Right)



Reflections on Dirt

Many factors determine the accuracy of an ultrasonic meter, but among the most significant are the components used and the path of the ultrasonic signal.

As far as the components are concerned, the transducers, which detect and convert the ultrasonic pulse used to calculate the speed of the flow, are the heart of the meter (Fig. 1). Honeywell's ultrasonic meters use high-grade,



Fig. 1: Transducer Holder With Alignment Disc

fully enclosed (to prevent outside interference with the signal), intrinsically safe titanium transducers with enhanced corrosion resistance.

When it comes to the path of the signal, meanwhile, all Honeywell ultrasonic meters use reflective paths

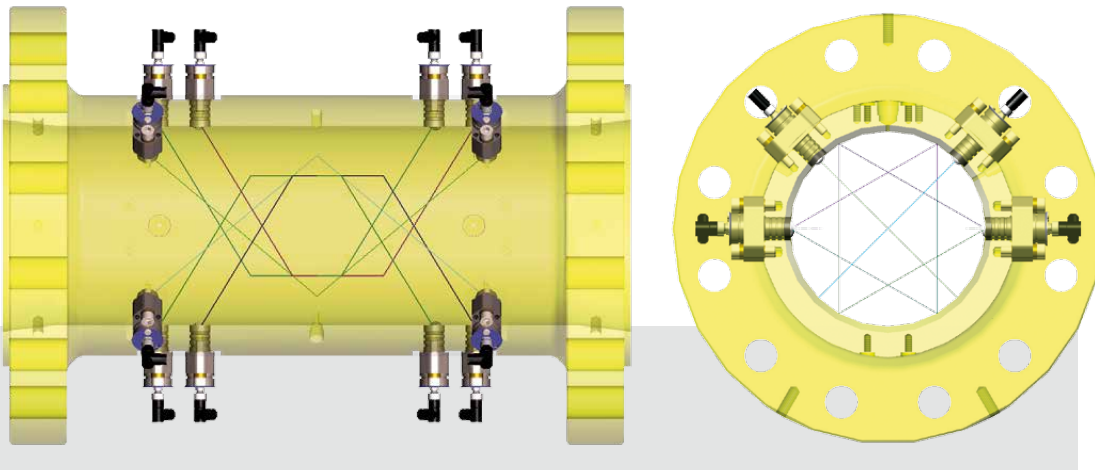
(with the flagship Q.Sonic^{max} using both double reflective paths and direct paths). The ultrasonic signal emitted by the first transducer in the pair bounces off the pipe wall before being detected by the second transducer arranged opposite (Fig. 2).

The use of reflective paths enables excellent measurement of the flow swirl and asymmetry that can lead to inaccurate readings. Combined with our meters' advanced diagnostics, it also allows quick detection of dirt and liquids inside the pipe. Only possible with reflective paths, this can cut uncertainty by up to 0.05%, saving operators tens of thousands of dollars or more, per meter, each year.

Dirt doesn't just stick to the pipe wall, though; it can also build up on the transducers, affecting their ability to operate. To avoid frequent servicing and recalibrations that reduce efficiency, meters are usually designed so that you can quickly clean or replace transducers without shutting down or depressurizing the system.

This introduces another challenge for accurate meter measurement, however: Ensuring transducers are of consistent quality and, crucially, ensuring the replacement process doesn't alter the path. Minor changes in the distance between the transducers when they're removed and replaced (either by a new transducer or after cleaning), will affect the measurement because the algorithm calculating the gas flow assumes a particular – and constant – path length.





How the Q.Sonic Measures up

It is this scope for inaccuracy that is measured in one of the regular tests conducted by the North American Fluid Flow Measurement Council (NAFFMC) as part of its USM Transducer Swap Research conducted at its facility.

Its 2017 update includes results of tests for three meters: The Daniel SeniorSonic; Sick's FLOWSIC600; and Honeywell's Q.Sonic^{plus}.

The test procedure involved replacing a number of transducers in the three meters while recording the measured flow rate before and after. Conducted under controlled conditions, any changes to the reading would reflect either

some inconsistency between the transducers being swapped, or, more likely, very slight changes in the placement of the transducer, changing the length of the measurement path.

An experienced pipeline field technician changed the transducers, but no external guidance was given during the change-out process. The technician was observed only for safety purposes.

The results are striking. The topline: Honeywell's Q.Sonic^{plus} significantly outperformed, with the change in measurement negligible even when all six transducer pairs were changed.

Transducer Replacement Testing



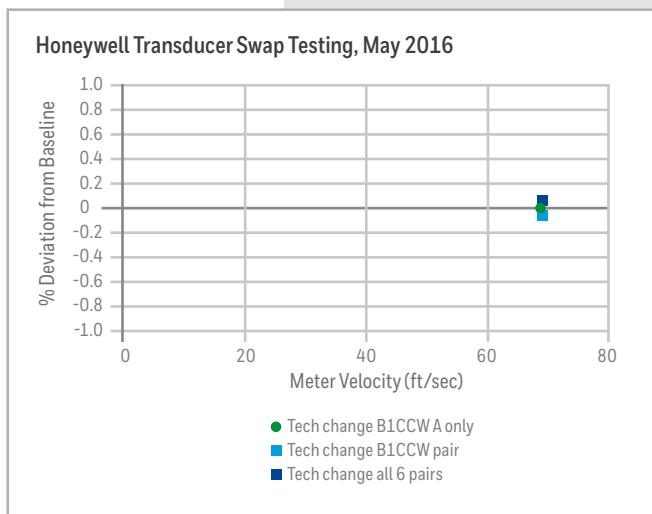
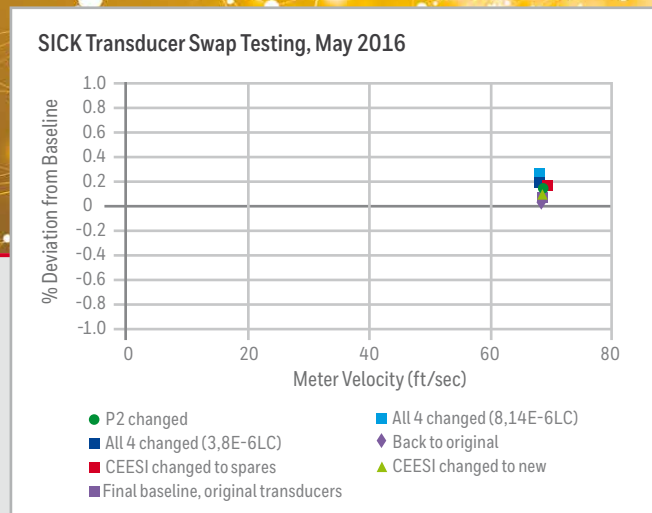
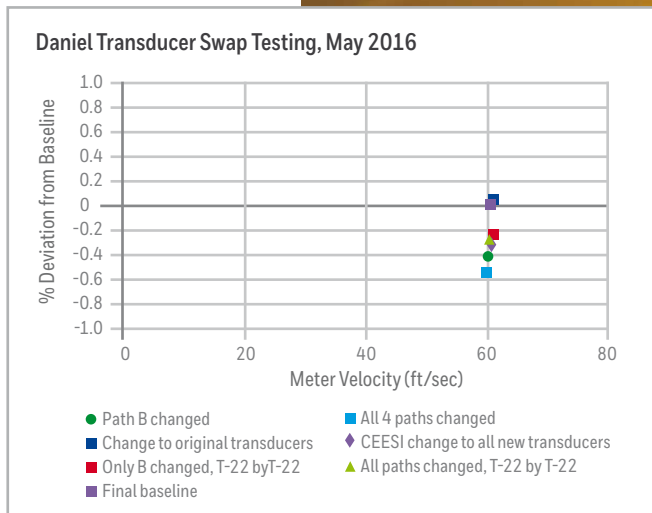


Fig. 3: Test Results for Daniel (Top Left), Sick (Top Right), and Honeywell (Bottom Left) Transducer Swap Testing

As can be seen, the Sick meter performed better, but again there was a significant deviation, particularly when all four transducers were changed – up to almost 0.3%.

Honeywell’s Q.Sonic^{plus}, by contrast, showed little deviation, even when all six pairs were changed: The results were clustered closely around the baseline, with less than 0.1% deviation.

To counter the risk of poor placement, Honeywell’s Q.Sonic meters use a simple alignment disc that enables them to be easily and accurately removed and replaced in the field by technicians without, as the test shows, any special tools or guidance. The results clearly demonstrate that this is extremely effective in ensuring precise and consistent fitting of all transducers. It also shows the consistency and quality of Honeywell’s production of these parts.

Test Findings

The above diagrams show the results from the three meters (Fig. 3).

For the Daniel meter, the inconsistency is immediately apparent. The deviation from the baseline is significant even when a transducer on one path is changed, with the measurement being up to 0.4% under the baseline. When all four paths are changed, that rises to more than 0.5%.

The source of this deviation is unclear, but it could be an inconsistency in the manufacturing of the transducers; when the transducers were taken out and the same ones put back in, the deviation was much smaller.

Conclusion

Flow meter accuracy is central to smooth and profitable operation across gas transmission companies, underground gas storage businesses and the LNG industry. Businesses need reliable, accurate readings they can count on.

And they need this accuracy in real world conditions. That means meters able to deal with disturbances to the gas flow from short inlets and other piping elements, and therefore using path



layouts that accurately detect swirl and asymmetry. But it also means meters that operate in environments where dirty gases are increasingly common; and therefore meters with transducers that can be cleaned or replaced efficiently, without disturbing the operation – and without affecting the accuracy of the reading.

Honeywell's solution has proven to be simple but effective, and significantly more so than its competitors. It helps operators keep their meters accurate with a minimum of fuss.

David McNavish david.mcnavish@honeywell.com

Great Feedback From Visitors

Connecting With Customers at European Utility Week 2017

Following the success of last year's exhibition in Barcelona, Honeywell was once again a major contributor to the European Utility Exhibition in Amsterdam this year as well.

With our Smart Energy end-to-end solutions from connected home to connected utility in the electricity, gas, and water segments, we demonstrated that Honeywell can help utilities with fast, secure, and reliable smart metering roll-outs. We showed how our products can improve operational efficiency and economies of scale – protecting revenue, reducing losses, and serving customers better with leading software and hardware solutions, including managed connected services.

The design of our booth focused on our ability to innovate the connected utility future by applying more than 150 years of hardware technology expertise and Honeywell's proven software and cyber security capabilities in critical infrastructure, home & building industries. By incorporating a dedicated innovation room,



customers were introduced to the future with the latest product developments and a first glimpse at future software solutions.

The exhibition was well attended and there was great feedback from visitors to the booth. We look forward to being able to put Honeywell in the spotlight again next year when the EUW moves to Vienna.

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Back to the Detector!

If you are too young (born after 1975), then you might want to skip the introduction to this article. Because we will be talking about “Back to the Future.”

“Back to the Future” is a 1985 American science fiction-adventure-comedy movie. It is certainly not the greatest movie of all time, but it does have some significance. Enough to have won an Oscar for best sound editing, anyway. It is feel-good entertainment. As with any time travel movie, you might get lost in your thinking during the film because of the obvious paradox in it: Can you go back in time and change the past, and thus prevent your own existence? Can you even go “back” to the future at all? Evidently not, because the future is in front of you and going back means returning to the past. Time has only one direction, and that is forward.

With gas chromatographs (GCs), it’s a little different: Once you have injected the sample gas into the carrier gas, the carrier gas travels forward to the detector. You can change your mind halfway through the analysis and send some components back in another direction. Often that direction is “back to the detector.”

When we developed the EnCal 3000 back in 2005, we found a manufacturer of excellent GC channels (columns) which could analyze natural gas very quickly (in just 180 seconds), however, we were doing it differently than the competition. Chromatography in itself is quite



slow. If you have to wait until all components come out of the analysis column, you might be waiting for up to 15 minutes. So what did people do? After the pentanes were extracted from the natural gas, they reversed the column flow direction, regrouping any components heavier than hexane and flushing them back to the detector. The peak was then measured as C6+. This technique is called “backflush to detector” or “backflush to measure.” Our analyzer is much faster and features better peak separation. Therefore, the need for this “column-switching trick” was eliminated, which in turn makes the analyzer easier to troubleshoot and less prone to valve leaking issues. Moreover, as a result, we can name all components heavier than hexane, making it a more accurate analyzer. Even extending the analyzer to nonane (C9) (or even decane [C10] if required) is quite easy to do – without needing to replace any hardware.

But every advantage has a disadvantage, to put a twist on the quote made by the famous soccer player Johan Crujff. And since our device was one of the few that was capable of measuring all these components and was therefore extremely accurate, this feature was used against us as a “lock-out” specification, effectively preventing us from taking part in tendering procedures or calls for bids.

Our supplier tackled this problem for us and other users and came up with a solution. This solution enables us to now offer the “backflush to detector” option as well. As an extra bonus, we have managed to speed up the analysis such that the analysis time can even be less than 120 seconds.

This will allow us to respond to changes in your processes even better and thus control them better as well.

So besides having one of the most accurate analyzers on the market, we also have one of the most versatile: Up to 4 columns for analyzing methane up to dodecane (C12), along with analysis results in ppmV and %. And now that the EnCal 3000 features the backflush to measure option, we have taken our GC “back to the future.”

Hans-Peter Smid hans-peter.smid@honeywell.com

Fun From the Gas World

Thank you very much for the imaginative photos on the topic of gas! All those who send in contributions will receive a small gift as a thank you. Please send your pictures to:

gudrun.biedermann@honeywell.com



Something that would be unthinkable in Germany: A gas connection with no blind plug – discovered by Luciano Schrecke-Chiacchiararelli at Lake Garda in Italy.



The “flange academy” is twice as fun in open-air installations – discovered by M. Döller in San Francisco.

Three Ways to Manage Remote Distributed Equipment

Today's process industry operations are faced with converting "Big Data" from complex automation systems into relevant, actionable information. There is also an increased number of assets and data to manage. Operating companies must find ways to improve capacity management, accounting, and asset integrity to maximize throughput.

Oil and gas organizations require greater control standardization and sophistication to optimize their midstream distribution and storage processes. Critical assets are often widely scattered over areas where conditions are demanding. Operations such as pipelines and storage terminals can benefit from smarter automation.

Challenges in Remote Operating Environments

Industrial firms are under constant pressure to simplify management of remote operations if they are to meet their business goals.

For operators in oil and gas, mining, and other industries, a process controller should provide efficient monitoring, diagnostics, and asset management for distributed assets. It should also be designed for harsh environmental conditions and easy deployment at remote sites. After years of relying on basic data collection and local control, it's time for a new way of thinking:

- Enhance operational efficiency across the enterprise.
- Gain insights into the performance of large distributed operations.
- Minimize monitoring and diagnostic time for remote equipment.
- Simplify configuration and commissioning over thousands of assets.

- Improve measurement and control based on industry standards.
- Minimize travel to the field for troubleshooting and maintenance.
- Reduce overall ownership costs for field equipment.
- Bring projects online faster and with less risk.

How to Efficiently Manage Geographically Distributed Equipment

Optimal production and productivity is hard enough to achieve on a single asset level, much less in large geographically distributed operations. Industry experience has shown that the most effective ways to gain visibility into the production potential of distributed assets are through efficient remote monitoring, diagnostic, and asset management capabilities.

1. Implement Robust Asset Diagnostics and Monitoring

New developments in Remote Terminal Unit (RTU) technology have resulted in a shift from



Redundant CPU ControlEdge RTU



basic data collection and local control to smart and flexible data management that can significantly increase operational efficiency, improve reliability, lower maintenance costs, and reduce operator trips to the field.

A centralized asset management system uses smart device instrumentation to save considerable time in configuration, maintenance, troubleshooting, and diagnosing field devices. Using a series of well-equipped RTUs/process controllers, industrial operations can reduce equipment monitoring and diagnostic time from hours to minutes.

2. Utilize Flexible SCADA Templates for Asset Engineering

The latest SCADA systems employ standardized “Equipment Templates,” which radically simplify configuration and enhance operational efficiency across assets. Users can configure a system by adding a single piece of equipment requiring just a few details instead of separately building many points and operator displays. This reduces asset-engineering time by up to 80%. The latest advancements improve productivity and save time:

- Equipment templates include all related SCADA configurations by category.
- A dashboard-style interface auto-generates content from template information.
- Tabular displays show key parameters for similar pieces of equipment.

3. Optimize Management of Increased Volume of Field Equipment

Today’s SCADA solutions have evolved to offer much greater scalability. For example, as equipment volume increases across growing operations, input/output (I/O) modules can be added to manage the extra equipment and performance data.

Modern SCADA solutions also provide electronic flow metering (EFM) within the RTU itself – a more efficient approach when dealing with a large number of distributed assets.

A New Breed of Process Controller

Honeywell’s ControlEdge™ Remote Terminal Unit (RTU) is a modular, powerful, and scalable process controller. When combined with Experion® PKS and thanks to its streamlined SCADA configuration and superior operator experience, it meets the most demanding automation and control requirements. Operators can make sense of data with a single system including flow and quality calculations, line pack and leak detection information, and compressor maps. In addition, the RTU includes redundancy features to improve availability; it is designed for harsh environments and it allows safe remote monitoring, diagnosis, and management for reduced travel to the field.

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RABO® Goes America 2.0!

Rotary gas meter RABO® now available with direct-mounted Honeywell Mercury Instruments volume correctors to provide accurate flow measurement data.

Honeywell Process Solutions has expanded its portfolio of integrated gas measurement solutions in the U.S. We are now offering the standard rotary gas meter RABO® combined with a mechanical totalizer or instrument drive (ID), along with the direct-mounted Honeywell Mercury Instruments TCI temperature corrector or EC 350 volume corrector. This combination will deliver advanced measurement, control, and analysis technology from a single source, and thus reduce costs and integration challenges for customers.

Today, there is growing pressure on natural gas companies to deliver more energy, increase profitability, and minimize financial losses. Meanwhile, operators must reduce operating expenses (OPEX) and tightly control capital budgets. One remedy to this situation is optimization of the distribution infrastructure used to deliver natural gas to households and commercial and industrial (C&I) consumers.

Honeywell provides end-to-end smart metering solutions for everything from wellhead to burner tip applications. Our advanced Elster



Fig. 1: RABO® With Direct-mounted TCI

Fig. 2: RABO® With Direct-mounted EC350

and Mercury Instruments technologies help gas transmission and distribution companies increase efficiency, protect assets, save money, and safeguard the environment. In addition, our products and services enable superior performance and optimal maintenance that extend the life of critical investments.

Honeywell's integrated solutions portfolio provides U.S. natural gas companies with a compact, reliable, and accurate gas measurement capability, meeting the fiscal measurement needs of commercial and industrial customers. As the world market leader in rotary gas meters and the North American leader in gas correction devices, Honeywell is able to offer unsurpassed system integration, software, and services from a single, highly qualified vendor.

The RABO® meters and EC 350 volume correctors are part of Honeywell's gas measurement and data management solution. The newly integrated offering delivers accurate flow measurement data converted to volume at standard conditions for billing purposes. It includes PTZ correction for commercial and industrial applications optimized for custody transfer.

Available in four sizes up to 14M, the RABO® meter comes in a heavy-duty, compact design with high impact-resistant index cover, aluminum body and impellers. It provides greater rangeability than competitive meters, increased maximum operational pressure (MAOP), low pressure drop enabling flexibility in station design, reduction in hazardous noise for safer operations, reduction in piston speed for longer asset life, and a low cost of ownership. The TCI is the most advanced electronic temperature-compensating index available for natural gas rotary meters. This rugged, reliable, and exceptionally accurate device is an ideal replacement for mechanical indexes. The EC 350 electronic volume corrector (EVC) offers best-in-class features such as improved accuracy, expanded memory, advanced diagnostics, and integrated cellular communications.

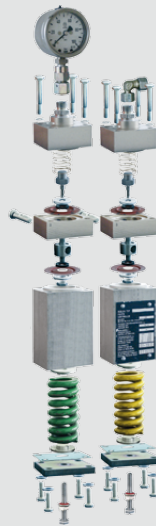
For more information about our Honeywell gas measurement & data management solutions, please visit www.hwill.co/gmdm.

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Honeywell Gas Technologies GmbH

Top Spare Parts Service for Gas Pressure Regulators

Pre-configured modular spare parts kits are now available for regulators and safety devices from Honeywell Gas Technologies GmbH based in Kassel.



They include all the wear parts required for maintenance work. This means that energy supply companies no longer have to take the time and effort required to source individual parts. The kits and components are price-neutral which means that customers do not incur any additional costs.

The advantages are obvious:

- Simple ordering process
- Low MRP costs
- Just one material number for the entire kit
- Pre-configured spare parts kits for almost every product series
- Fast availability

Honeywell on the Subject of Investment Security

Honeywell Gas Technologies GmbH in Kassel has been a reliable partner to the gas industry for decades. This also includes consistent spare parts supplies with short lead times. Even in the event of a product change, e.g., in the case of a new development, supply of spare parts is guaranteed for periods going far beyond those standard on the market, despite the previous device having been discontinued. This ensures maximum investment security for our customers.

We are convinced that this new offering will improve our service for you, thus satisfying market demand.

If you have any questions about our spare parts kits or their availability, please do not hesitate to contact us.

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Honeywell Gas Technology After the Diversification

On January 1, 2017, the sale of RMS Messtechnik by Honeywell to Dalian Energas Investment Co., Ltd. became effective. Allow us to look back and reflect on the reasons and the effects this event had on our customers.

The Background

The takeover of Elster Holding AG by Honeywell in 2015 required the consent of the cartel authorities in both the USA and Europe. While this acquisition was regarded as unproblematic in many respects, the authorities in Brussels expressed a good deal of concern about the monopoly position this deal would create in the fields of flow computers and high-pressure gas metering. Approval for the takeover was therefore made conditional on the sale of these divisions.



RMG at the Kassel Site



Honeywell was thus required to sell the metering equipment business of RMG Mess- und Regeltechnik. In June 2016, a contract was signed with Dalian Energas Investment Co., Ltd. (a 100% subsidiary of Dalian Energas Gas-System Co., Ltd. from the People's Republic of China) to this effect. This contract then became effective on January 1, 2017 after approval was issued by the authorities.

What was sold and what was not

As specified by the regulatory authorities, only the metering equipment business was sold to Dalian – the regulating equipment and project businesses remained with Honeywell. This diversification was relatively easy to achieve as the RMG metering equipment business was concentrated at Butzbach while the regulating equipment business was based at Kassel which meant that no production relocation was required to meet the authorities' requirements.

Renaming the Company

As part of the sale of the metering equipment business of RMG GmbH, all rights to the RMG brand and its product brand labels also had to be sold to Dalian and could no longer be used by Honeywell as of January 1, 2017. This meant that RMG Regel- und Messtechnik GmbH in Kassel had to be renamed.

What sounds like a minor change was actually a mammoth task as all 120,000 technical drawings, certification documents, and casting molds, the majority of which bore the RMG logo, had to be modified not only at the Kassel site but also at all our suppliers'. And all this had to be completed within five months – with no room for negotiation. When the project team successfully completed this project at the start of 2017, Honeywell had invested more than \$1 million in the renaming process. Since January 1, 2017, your business partner in Kassel has been known as Honeywell Gas Technologies.

Honeywell Gas Technologies Kassel

Our core business still remains the development, production, and service of regulating equipment for our customers, seamlessly continuing the 100-year tradition of this site. In 2017, activities from other Honeywell regulator sites in Chesterfield and Woodstock were relocated to the Kassel site to strengthen the position of both the development center of excellence and the production site itself. The activities of WÄGA GmbH in the project business also ensure that Honeywell Gas Technologies is and remains THE center for all gas regulator questions from our customers both in Germany and around the world.

Data Loggers Keep up With the Times

The first battery-operated data logger type DS-100/B for gas meters developed by Elster in 1987 set new standards at the time.

The DS-100 could already record consumption values using the reed contact in the gas meter and save them for 24 months. It was an integral part of Elster's extensive long-term pulse recording system LIS-100. At the time, a fitter was deployed on site, if possible on the first day of every month early in the morning, to read the saved consumption data from the devices using a specially developed cable-bound read-out device type AS-100. Back in the office, the collected data were transferred to a personal computer via a serial interface. After manual data processing, a print-out of the hourly values was produced to bill the industrial customer. This was then generally kept in a folder.

And today?

The latest generation, type DL230, reads the original meter values of the connected gas meter with an encoder index and saves them every hour. Manufacturer-independent meter data management systems read the devices at least three times a day using the integrated communication modules, primarily via IP networks. The data is validated by these systems and substitute values are calculated for missing values automatically on the basis of specified rules. The prepared data is transferred automatically using standardized formats and messages to all the market partners involved for allocation, balancing and billing without a single human hand having to move.

A development like this is only possible if products undergo continuous improvement. Elster-Honeywell has done some research and has come up with some interesting facts and figures which cannot be taken from technical data sheets:

More than 58,000 data loggers have been sold globally since 1986.

86% of them are in Germany alone, primarily for billing RLM gas metering systems.

Data loggers have been supplied to **29 countries**, even to Australia for transferring the data from battery-operated volume conversion devices in the outback.

The DL230 "manages" **more than 8600 parameters and measurements**. The DS-100/B could only deal with 60.

The program memory of the DL230 has a **capacity of 2048 kByte** while the data logger DS-100/B got along with just 16 kByte.

Honeywell products are kept right up to date so that customers can manage their work reliably. Thank you for placing your trust in Honeywell.

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Data Logger Generations:
DL230 and DS-100



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