

PROFILES

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Market launch of the medium-pressure regulator series
HON 380

Themis[®]log2.0 The Upgrade into the Future

Finding Alternative Paths

New Gas Train System for Hydrogen Blending:
Good Stuff for H₂ Upgrade

Honeywell

IT IS TIME TO CUT BACK.



Jean-Paul Piques
Global Gas Product
Line Director

On Coffee. What else?

Most of us have become accustomed to their morning caffeine fix and would find it difficult, impossible even, to consider giving it up. Isn't coffee, the favorite drink of the civilized world? However, when you get to the point where, even bad coffee is better than no coffee at all, or you like coffee because it gives you the illusion that you might be awake, or even your couch is coffee-colored, and you can thank a well known brand and clumsiness for that, you know, you do not need to be told, that something has gone awry.

That can happen to everyone, that certainly happened to me, leaving me alone to solve the coffee problem – a sort of catch-22, where in order to think straight I needed caffeine, and in order to make that happen I needed to think straight.

As you may have already guessed from my liberal reuse of famous coffee quotes, our industry is also faced with its own gordian-knot, one of arbitrating between its own economic addiction to fossil fuels source of supplies against environmental and geopolitical constraints that point in the opposite direction, if only to mitigate

externalities. Our industry is at a cusp, looking with a bit of awe at its major transformational moment, and while you will be left alone to make those critical decisions on your energy mix, you can rely on Honeywell to provide the lego blocks of your transition to renewables.

Having successfully deployed hundreds of Biogas injection skids in various geographies, leveraging standardization and scale economies, we have turned our attention to H₂ injection skids where we have replicated the model. Those compact and cost-efficient designs should help accelerate and simplify our industry transformation. These skids are available today and can be assembled seamlessly with the other elements of this emerging value chain.

So, if you are thinking to cut back on fossil, and see renewables as your next strategic move, let us talk, we can always have a good and spirited conversation over a fresh cup of coffee!

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MARKET LAUNCH OF THE MEDIUM-PRESSURE REGULATOR SERIES HON 380

The time has come: Honeywell starts with the market launch of the newly developed gas pressure regulator HON 380 in the PN 16 medium pressure range.

The name of the new series is rooted in the proven HON 3XX Series, but the HON 380 was developed independently, essentially from scratch.

The focus here is on:

- Straightforward, modular structure
- Large performance range
- Serviceability
- Compactness

But like every new member of the family, the HON 380 also brings a lot of new and unique things with it. The regulator has been developed and approved for the familiar pressure rating of ANSI 150, up to 20 bar. In the German-speaking market, the device family is supplied as suitable for PN 16. In addition to the standard PN flanges, we can therefore also supply ANSI flanges.

The market launch starts end of 2022.

The modularity within the series is a highlight. Depending on the outlet pressure range, different regulating assembly sizes are combined with the different housing sizes. There is a valve seat size for each housing size, which covers the entire performance spectrum (Fig. 2).



Fig. 1: HON 380 DN 50

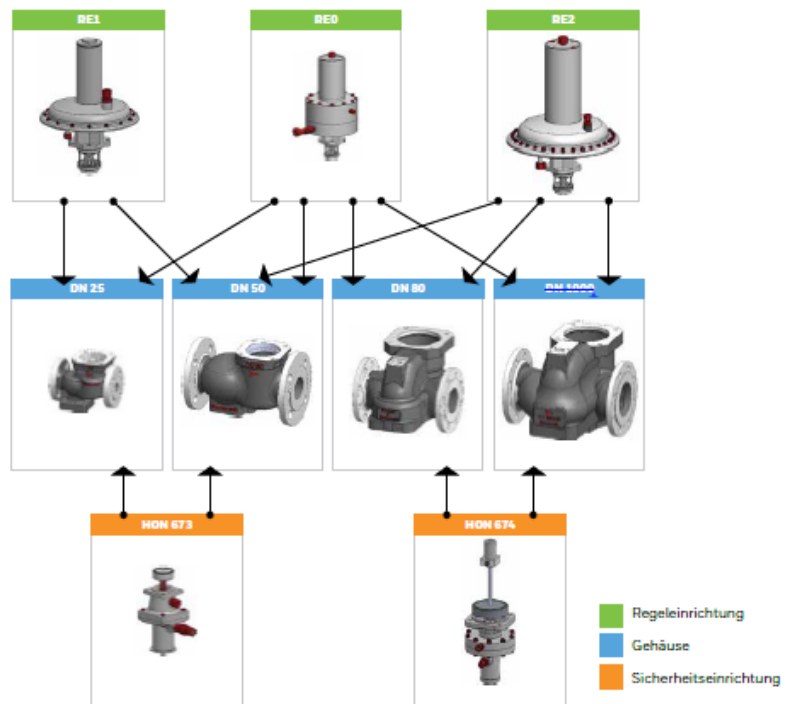


Fig. 2: Modular design

Together with the highly developed inlet pressure equalization, the highest demands on the flow rate can be met – the HON 380 from Honeywell maintains the optimal control quality over the entire inlet pressure range. Taken together, this results in a compact yet powerful design; moreover, it simplifies the construction.

This modularity also continues with the SSV. For the SSV control units, we have used the long-established SSV series HON 673 – for nominal sizes DN 25 and DN 50 – and HON 674 – for nominal sizes DN 80 and DN 100

One of the most important challenges in this project was to find a design that offers a high level of serviceability.

As the cross section (Fig. 3) shows, both the regulating assembly and the SSV control unit can be removed from the housing independently of one another. To maintain the regulating assembly, the screws under the measuring unit must be removed. Then the entire regulating assembly, including the valve unit, can be lifted out of the device. This allows direct access to the valve for inspection and maintenance work. In this way, the maintenance of the regulating assembly can be shifted to the workshop – if necessary, a freshly serviced unit can be plugged in.

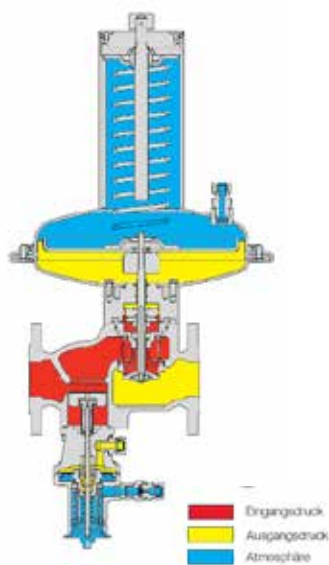


Fig. 3: Cross section HON 380 DN 25/DN 50

The same applies to the SSV control unit, which can be removed from the housing as a unit after removing the screws. Only the housing remains in the pipeline.

Great importance was attached to user-friendliness during handling. The outlet pressure adjustment, which is carried out via a spindle that is easily accessible from the outside, is another highlight. Practical usability is also the focus of the SSV reset facility. The pressure equalization process which must be completed before opening the SSV has been integrated into the reset process. The internal bypass in the device is opened by lifting the SSV stem so that the SSV is brought into the open position after pressure equalization.

Cast steel is used exclusively as the housing material in order to meet a wide range of requirements and to keep the complexity of the device series low. When designing the housing, it is important that it is compact and that the flanges are easily accessible from all sides. The nominal sizes DN 25 and DN 50, as well as DN 80 and DN 100, each follow a uniform design (Fig. 1 and 4).

Of course, the HON 380 holds an EC-type examination certificate according to the Pressure Equipment Directive 2014/68/EU in association



Fig. 4: HON 380 DN 80

with the standards DIN EN 334 and DIN EN 14382 – certified by the German Technical and Scientific Association for Gas and Water (DVGW).

As a result of its large capacity range and versatility in terms of outlet pressure, the HON 380 is the perfect device for applications in municipal gas distribution and for industrial use.

These product innovations which are based on our time-tested HON 3XX Series upgrade the new medium-pressure family of devices to the state of the art. The outstanding control properties for very low to very high flow rates will quickly persuade you.

The clever handling for operation and maintenance guarantees low installation and maintenance costs.

KEY DATA REGARDING THE HON 380 AT A GLANCE:

Pressure rating:	PN 16
Nominal sizes:	DN 25, 50, 80, 100
Flow coefficients:	390, 1490, 3600, 4900
Inlet pressure range:	0.1 – 16 (20) bar
Outlet pressure range:	0.02 – 2 bar

Paul Ladage
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Link to Product page:

THEMIS[®] LOG2.0 THE UPGRADE INTO THE FUTURE

The world is currently not what it was 5 to 10 years ago. Everything is either changing or in upheaval. New technologies, new processes, new products and new ideas are conquering the markets. We hear it all the time on the radio or see it on TV or the internet – a new upgrade is here, upgrade to the new technology now, get the new generation now, etc. You see that this is the trend of the future.

Honeywell adheres to the same idea in the development of its products and the technologies to be used – also in the field of gas meters, especially in communications and, here in particular, in the field of mobile communications.

In 2014, we launched the first generation of commercial and industrial diaphragm gas meters with GSM/GPRS communication. Gas meters with built-in, battery-operated GSM/GPRS communication module, which transmits consumption data for the previous 24 hours to a data system once a day. At the time, this development was more than “state of the art” and has positively changed many processes at our customers’ facilities and set new efficiency standards.

The new generation of the themis[®]log2.0 index offers possibilities that go far beyond simple remote reading. The existing options (Time of Use and Block tariffs, load profiles, communications interval control, data logging, electronic temperature compensation, etc.) can be combined in such a way as to suit the needs of individual customers. A secure, over the air firmware update guarantees future-proof technology, which can also be adapted to new challenges later with little effort. An integrated electronic temperature

conversion also offers, in the commercial and industrial sectors, conversion of the volume to the base temperature. The index shows the converted volume directly on the display and transmits this to downstream systems. This function is optionally available for our versions BK-G...Ete.

In the field of communications, many new technologies have been developed and brought onto the market in recent years. This also applies to NB-IoT, which is now used in our new index version.

Our new generation of commercial diaphragm gas meters (CDM, BK-G10 to BK-G25) and industrial diaphragm gas meters (IDM, BK-G40 to BK-G100) is equipped with an electronic index that supports NB-IoT and GPRS. In detail, this means:

- The integrated communication module attempts to connect to an NB-IoT network. If this is not possible, the module will automatically connect to a GPRS network and then transfer its data in this way. This procedure is possible because we use a combined NB-IoT/GPRS module, which adapts individually to the existing network.
- At set intervals, the index will try again and again to first dial into the preferred network (NB-IoT or GPRS) and, if communication cannot be established, use the other network.
- The module supports bands 3, 8 and 20 in the NB-IoT range and the GSM frequencies 900 and 1800 MHz.
- With the DLMS/COSEM protocol, we rely on a standardized and widely used protocol that is employed in many areas and simplifies a connection to existing systems



With these new functions, we are very well prepared for the forthcoming generation change in the field of mobile communications and our customers can look forward to a planned shutdown of the GPRS service with ease. Currently planned installations do not need to be postponed, since these index versions offer investment security in this area.

However, we have not only set ourselves up for the future in the field of communication, we also offer our customers the necessary flexibility and security for their business in the areas of security and total cost of ownership. This means in detail, for instance:

- The themis[®]log2.0 index is approved for use in ATEX zone 0 (ATEX zone 0: II3/1 G IIB T4 together with a gas meter). Due to its topmost level of explosion protection, no cost-intensive site visits are required prior to installation.
- Thanks to its IP 65 enclosure and its ambient temperature range of -25°C to +55°C, its range of applications is further expanded.

- On-site activities can be reduced thanks to the long battery life with the use of a second battery (optionally available and integrated directly ex works) and the service life can be extended from approx. 10 years to approx. 20 years (depending on the NB-IoT/GPRS requirements). This avoids cost-intensive field deployments by trained personnel, as well as the currently unpredictable costs for batteries to be purchased in the future.
- The themis[®]log2.0 index offers secure, state-of-the-art end-to-end encryption of the data and supports symmetric encryption using AES-128 (GCM) according to UNI-TS.

The themis[®]log2.0 index is interoperable and can be read out and controlled both with the Honeywell meter data collection system Connexo and with many other available systems. On request, Honeywell not only supplies the gas meter, but also the complete meter data collection system that is perfectly matched to the themis[®]log2.0 index.

The new themis[®] generation is a successful addition to the existing product range of electronic indexes for residential, commercial and industrial diaphragm gas meters and is therefore part of Honeywell's smart meter solutions package. From mechanical indexes and smart index technologies to complete meter data collection and meter data management systems, Honeywell can supply everything required for an efficient, coordinated all-in-one smart metering solution.

Further information and details on the themis[®]log2.0 index can be found in our Docuthek using the following QR code

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Link to EI7 data sheet:



FINDING ALTERNATIVE PATHS

As the most recent developments in the political situation surrounding the energy supply have shown, the procurement of natural gas is becoming increasingly uncertain. And it is precisely the industrial sector, which is dependent on a stable supply of natural gas, that is affected.

Natural gas is available as a raw material and the industrial sector is dependent on this form of energy. But natural gas can also be provided by a substitute mixture (propane/air).

Between 1995 and 2002, Elster installed and commissioned so-called Wobbe systems or gas mixing systems for the glass processing industry. These systems were mostly supplied with compressed air from the factory's compressed air network or external compressors which delivered conditioning air. Through the operation of these Wobbe systems, the stabilization of the Wobbe index was achieved for part of or the entire internal natural gas network.

Certain industries are dependent on a stable heating value or Wobbe index of natural gas.

These industries include the glass and ceramics industries, brickworks, roof tile factories, etc. In short, industries where "the flame is the tool". And this "tool" should be as precise as possible because customers' quality demands are increasing.

The Wobbe systems built at that time stabilized the heating value of the natural gas through the metered addition of air or nitrogen. These Wobbe systems can usually be "upgraded" to substitute natural gas systems by using gaseous propane as the fuel gas instead of natural gas. However, this requires modifications to the control system, as well as the regulating and measuring equipment.

Of course, we can also plan and build new turnkey natural gas replacement systems.

By using our controls, the heating value or the Wobbe index can be regulated with high precision. The target heating value or target Wobbe index is recorded using a fast gas quality analyzer (e.g., a calorimeter).

Often, however, the stabilization of the Wobbe index is more important for the process than the heating value.

The Wobbe index is required to assess the interchangeability of fuel gases.

If, for example, natural gas is to be substituted by propane, it is not sufficient to produce a mixture with the same heating or calorific value. Since this mixture would have a higher density than the original natural gas, a larger mass flow rate (but a smaller volumetric flow rate, with the same nozzle diameter) would be produced through the nozzles of the burner, resulting in higher energy conversion.

It is only by including the density in the Wobbe index that the exact volumetric flow rate required for the same amount of energy and thus to achieve the same heat load in the burner (e.g., of a heating system) with the same nozzle pressure is obtained. If the mass or volumetric flow rate cannot be controlled properly, the burner nozzle must be replaced with a larger or smaller one.

$$W_s = \frac{H_s}{\sqrt{\frac{\rho}{\rho_0}}}$$

Superior
Wobbe index

or

$$W_i = \frac{H_i}{\sqrt{\frac{\rho}{\rho_0}}}$$

Inferior
Wobbe index

(Source: Translation of the German Wikipedia entry).

The Wobbe index uses the same unit as the heating value, namely kWh/m³.

The Wobbe index of the mixed gas is adjusted by a volume ratio control system. The required volume ratio is determined by calculating the input heating value (propane/butane). The gas volumes (propane and air) are determined using gas volume

measuring instruments (usually quantometers or rotary gas meters). The consumer can then determine the purchase volume. The amount of air is regulated in proportion to the volume using a high-speed regulator (e.g., pneumatically

or electrically operated control valve) and metered into the fuel gas flow with great precision. The quality of the mixed gas is monitored by a high-speed gas quality analyzer.

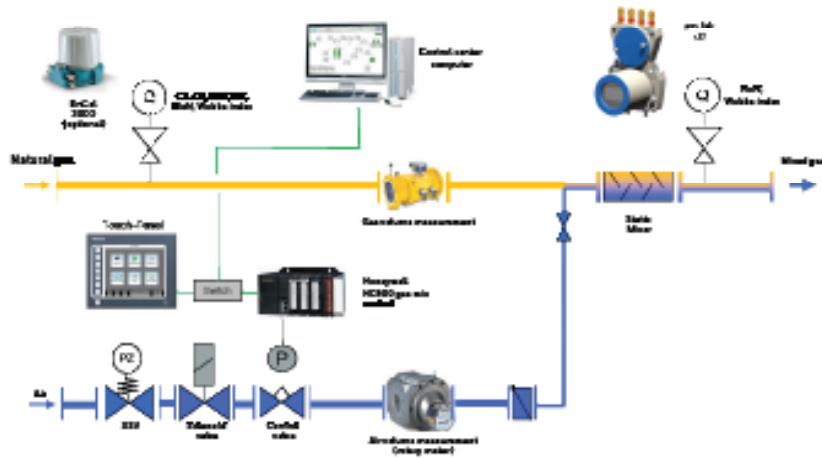


Fig. 1: Functional representation of a simple Wobbe system for natural gas

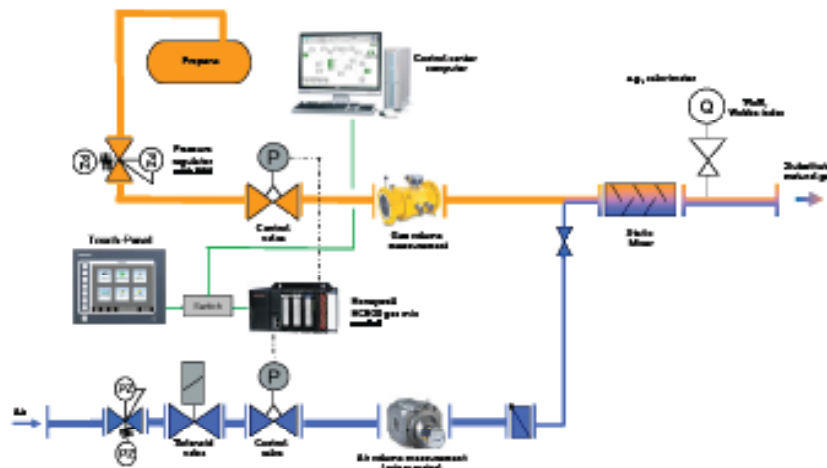


Fig. 2: Functional representation of a substitute natural gas system

A state-of-the-art programmable logic controller (e.g., the Honeywell HC900) with visualization system and data communication to a control center is used as the station computer.

However, at Honeywell we are not fixated on our own control systems. If you as a customer want a different control system (e.g., the SIMATIC S7), then we will remain your partner and supply you with a complete system.

Honeywell is also your contact for tailor-made, turnkey all-in solutions.

Honeywell is also your contact for tailor-made, turnkey all-in solutions. Often, the space available at our end

customers' facilities means that the substitute natural gas system cannot be installed in the same room that houses the gas supply system.

Sometimes, the compressed air supply system with a drying unit and nitrogen generation system also has to be included in the planning, or an additional building must be erected on the customer's factory site, etc.

An existing Wobbe system can possibly be converted to a substitute natural gas system. The necessary measures can be determined during an on-site visit.

We would be happy to visit you on site to record and evaluate your individual requirements for your (substitute) process gas supply.

With our know-how, our specialized gas volume measuring instruments, gas quality analyzers and automation solutions, our competent specialist departments and an experienced project team, we, Honeywell, are the right partner for the implementation of your individual system solutions.

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NEW GAS TRAIN SYSTEM FOR HYDROGEN BLENDING: GOOD STUFF FOR H2 UPGRADE

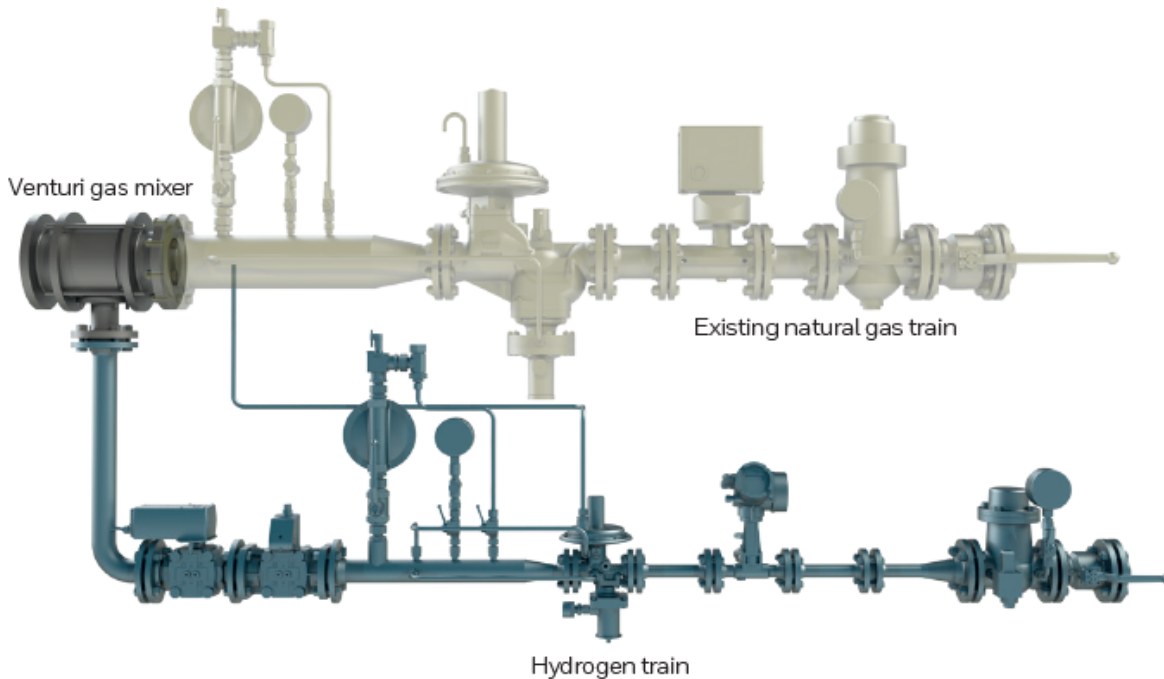
How about a future-oriented retrofitting of your existing system for hydrogen applications?

Based on decades of experience in measuring and control technology for gases and hydrogen, Honeywell has developed a new gas train for H2. The result is a flexible and precise supply for existing and new systems.

This compact solution, adaptable to any engine control system, allows for effective use of the engine room, along with significant space and cost savings.

WHY HONEYWELL

- More than 150 years of experience in the gas industry
- Global solution provider in control, measuring and regulating equipment
- Solutions for transportation, storage, distribution and consumption of natural gas
- Local support with global expertise and service
- Provider from a single source with an extensive portfolio (HGT, Elster, Kromschröder, Maxon, etc.)



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