Honeywell | Connected Industrial

Honeywell's CNG Filling Stations

Saving costs through a direct connection to the natural gas grid

Solution Note

As part of Honeywell Elster Precision Solutions, the Honeywell entity WÄGA in Germany has established itself as a designer and manufacturer of natural gas (CNG) filling stations. With this offering Honeywell supplies the very latest, innovative, green technology in fueling cars with natural gas. For the technology, service and maintenance of the systems, customers can call on a competent and experienced team which has been completing CNG projects in Germany and abroad for many years.

The direct connection to existing low-pressure, medium-pressure or high-pressure natural gas grids means that there is no need to use upstream pressure reducing stations. This results in significant savings on operational costs.

Compressed Natural Gas (CNG)

CNG has established itself as a very good alternative to conventional fuel for cars and goods vehicles. The use of CNG reduces dependence on mineral oil while also improving emissions and significantly reducing costs for the end user. Environmental concerns drive are the driver behind new legislation reducing the emission limits for vehicles. The use of CNG vehicles is an attractive way to meet these new requirements.

The need for a full-coverage CNG supply grid to serve the growing car fleet is rising, in the end this will greatly benefit the role out of CNG fueled cars on a larger scale and help preserving the environment.

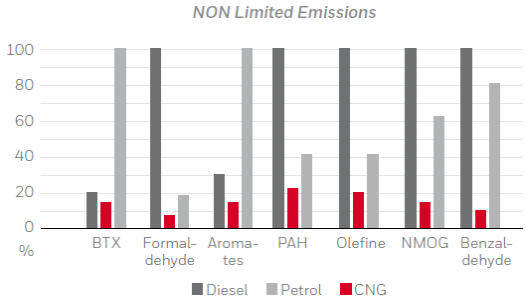
CNG technology has proven itself in Europe but even more so in other regions like Asia Pacific, China, South-America, Iran and India as a safe solution with an acceptable range. Filling up with CNG requires a similar amount of time as filling up with diesel or petrol. However, the user saves fuel costs of around 40%. Many governments have fixed the subsidies for CNG for many years to help achieve a permanent reduction in emissions. Natural gas vehicles emit around 30% less CO2 and 99% fewer particulates.

The use of renewable biogas offers some interesting synergies with respect to CO2-free fuel. The biogas injection stations which are also supplied by Honeywell form an additional component of an environmentally friendly overall solution.

Honeywell CNG Filling Stations

With WÄGA Honeywell has been involved with CNG filling stations since 2006. The system manufacturer within the Honeywell Group is responsible for this innovative technology. Our range of services not only includes the planning, design, construction and commissioning work, but above all providing advice,

The EU has issued directives to support the use of CNG. On the one hand, these relate to the need to reduce CO2 emissions through the use of alternative fuels while on the other, they are intended to improve the supply infrastructure for alternative fuels within the EU. The network of CNG filling stations should be expanded by 2025 so that a filling station is available on all roads within a distance of 150 km.



compiling the requisite approval documentation and turnkey completion. We have an experienced team available for service and maintenance work.

The core component of a Honeywell CNG filling station is a water-cooled compressor with a variable stage design (oil-free as an option) which is approved for installation in areas with explosion protection zone classification (Zone 1).

The CNG systems are planned and installed in compliance with DVGW Code of Practice G 651 / VdTÜV Directive 510 and prEN 13638:2007 as well as all the supporting technical provisions quoted in them.

Honeywell WÄGA also holds a DVGW certificate for CNG systems including CE certification. For applications outside of Germany, the filling stations are designed to comply with IGEM/TD/16.

4-stage CNG Compressor Type 4DA 300 with Upstream Natural Gas Treatment

Scope of Application

Honeywell CNG filling stations are tailored to typical design features. The use of the stations is designed for a very wide inlet pressure range from 100 mbar to 200 bar.

The delivery capacities of the compressors can extend from 65 Nm³/h to 7500 Nm³/h. The corresponding electrical connection ratings are 22 kW to 400 kW.

CNG filling pumps can be supplied for cars (0.3 to 40 kg/min) or for heavy goods vehicles and busses (1 to 100 kg/min). The delivery rate of a CNG filling station must be designed for filling pressures of up to 300 bar so that a filling pressure of up to 250 bar in the vehicle tank can be achieved, depending on the temperature-compensated filling process.

Since CNG stations are installed near commercial zones and residential areas, they must also comply with noise protection regulations. With this in mind, placement conditions in conventional concrete buildings are taken into account as well as the use of sound-proofed containers.

Essentially, a Honeywell CNG station consists of the inlet section, booster, dryer / condensate and oil separator, high-pressure accumulator, control equipment for vehicle filling, the CNG filling pump and the required automation technology, a Honeywell PLC.

One special feature of our water-cool CNG compressors is that both the oil and the compressed gas are cooled by water. The use of a water cooling system results in further energy savings. Only when the outdoor temperature rises above 20°C will the cooling fans be activated to keep the gas temperature downstream of the compressor below 40°C. Filling the accumulator with cooled gas ensures excellent economy.

Benefits of the Honeywell CNG system design

The operator can feed gas (up to 200 bar) into the CNG station straight from the natural gas grid. This saves on the costs for a conventional reducing and measuring station. This direct injection also significantly reduces electrical running costs since pressure resistance is guaranteed even for high inlet pressures.

The water-cooled compressors can be used even in high outdoor temperatures and supply maximum flow rates for fast, safe filling of cars and goods vehicles. Long waiting times at the pumps or even station failures in the hot months of summer can be avoided. The aim of making CNG filling stations just as customer-friendly, fast and safe as conventional filling stations so familiar to us all has been achieved and the future growing number of natural gas vehicles can be served efficiently.

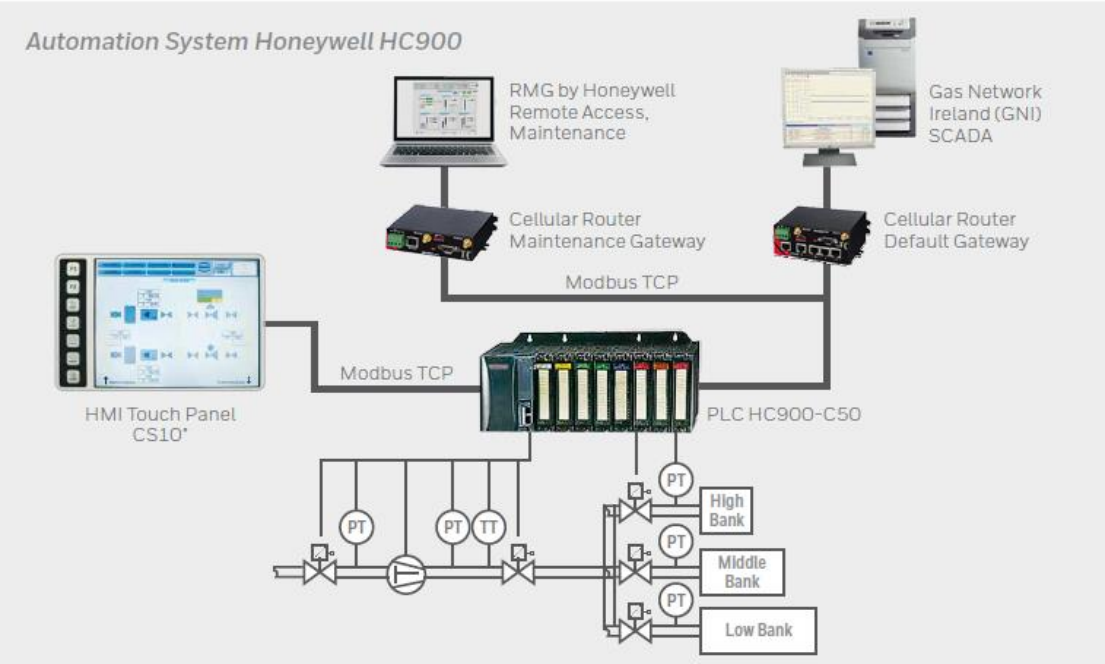
We at Honeywell Elster Precision Solutions have made it our goal to optimize your solution both technically and commercially. The example of natural gas filling stations shows how technical improvement can produce cost benefits for our customers.

Intelligent accumulator filling using the HC900 logic system

Furthermore, the noise levels generated by our compressors are significantly reduced as a result of them being water-cooled. Each CNG system can be tailored to specific customer requirements since Honeywell supplies all the key components of the equipment (boosters, filling pumps and system controllers (HC900)).

Station automation with HC900

Our service organization with its 24-hour helpline covers all the maintenance needs of the systems. To enable us to react even quicker, our online service provided by the Honeywell automation system HC900 connects the system straight to our service department. However, the system has low maintenance requirements by design - the first maintenance intervention is required only after the system has been in operation for 4000 hours.



For More Information

To learn more about how Honeywell's Elster Precision Solutions can improve your gas measurement and control performance, visit www.honeywellprocess.com or contact your Honeywell account manager, authorized distributor or system integrator.

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SO-16-31-ENG
September 2016

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