



## Give gas with SERTO

**SERTO has received ECE R110 approval for the use of its stainless steel check valves in natural gas applications. This is especially important in the rapidly growing market for natural gas and hydrogen-operated automobiles and fuelling stations. We are now able to offer a wider range of our compact products to our customers in this segment.**

"All automobile manufacturers are currently involved in developing alternative drive systems", explains René Glaus, Product Manager at SERTO. "Because our components are very compact and take less space, they are naturally in high demand. This new gas approval means that our customers now have access to tested and certified components." The stainless steel check valves in our product offering are ECE R110 approved up to 400 bar. Test reports are available for the SOL stainless steel tube unions, which were also included in the testing. These products are not certifiable as such.

### **Sector is delighted to have compact solutions**

The rapidly growing market for natural gas and hydrogen-operated automobiles and fuelling stations is more than happy about the availability of SERTO products for their applications. At the present time, natural gas is the only viable alternative to the well-known fossil fuels. It is not only cheaper than petrol or diesel, but also friendlier to the environment. The convincing arguments of vehicles powered by natural gas are mainly the lower fuel costs and the lower emission levels. CO<sub>2</sub> emissions are 20 to 25 percent lower than comparable petrol engines in normal operational cycles. The majority of natural gas vehicles can, however, not compare to petrol-driven cars as far as highway performance is concerned. Albeit a better performance for the same or smaller cubic capacity is possible. Natural gas vehicles can profit from this so-called downsizing in future because alternative drive systems can convincingly play out their strengths with turbocharging. Natural gas can be compressed to greater degrees due to its anti-knock properties. One problem at the moment is, however, the restricted range of only approx. 300 kilometres and the smaller tank capacity. "Every millimetre counts here," says Glaus. When looking to save space and weight, designers are very interested in small and compact components.

Similar to other SERTO tube unions, the check valves are a wrench size smaller than competitive products. Assembly and disassembly, as well as repeated assembly, is possible – according to our patented technology - radially. The double-ferrule mechanism works with a compression ferrule rather than a cutting ring. The tube is therefore not damaged, but only slightly deformed. Moreover, this protects against incorrect installation. The check valves are made of stainless steel 1.4571 and have been tested in the dimension range of 6–18 millimetres outer diameter. The components are approved for diverse groups within the pressure ratings (PN) 200, 330 and 400 bar.

**Brutal testing passed without objections**

With ECE R110 approval, products and components for fuel systems with compressed natural gas can be built into motor vehicles and fuelling stations. Testing was conducted according to ISO 15500 Part 2, 3 and 19. The components are subjected to a pressure test for three minutes at a pressure of 1000 bar. To test the gas tightness, they are subjected to temperatures ranging from -40 to 120°C. Additionally, they are tested for bending resistance, corrosion behaviour, vibration resistance and many other properties in this brutal test procedure. "Our check valves passed all the tests without any objections," emphasizes Glaus. "And because they were assembled for testing with our stainless steel tube unions on both sides, these are virtually certified as well."



Jungheinrich forklift:  
 Conversion from liquid to  
 natural gas

Example of Application

## Apex AG - Stainless steel SOL in natural gas refuelling stations

Twenty years of world-wide experience make Apex AG a competent partner in the use of gases as a fuel (LPG, natural gas, biogas, hydrogen). They offer their customers products and services with potential. With ECE R110 certification, SERTO has laid the foundation for a successful co-operation.

CH-4658 Däniken SO [www.apex.eu.com](http://www.apex.eu.com)  
 Natural gas industry



Natural gas storage facility with  
 SOL union

For Apex, natural gas automobiles are not just a business, they are a passion. And their employees set a good example by operating their own natural gas fuelling station and by driving with natural gas. The BONSAI refuelling stations from Apex, ideal for fleets of 5 - 10 cars, are supplied as turnkey solutions, easy and fast to install. Users can freely select the fuelling options. Apex also builds emergency power systems, diverse prototypes and special systems. And they are building a network in a clearly structured market: from consulting to training, calibration of filling pumps, testing natural gas components and even the used parts market.



BONSAI natural gas refuelling  
 station

### APPLICATION

SERTO products: **Steel and high-pressure stainless steel unions SOL, stainless steel valves SOL, connectors, ready-to-fit stainless steel pipes**

Installation: Process lines, in addition to measurement and control technology

### PARAMETERS

Medium: Natural gas  
 Pressure: 300 bar  
 Temperatures: -20° to +40° C



Natural gas storage unit at a  
 BONSAI refuelling station

The assembled lines together with the SOL radial union system, which can be mounted and dismantled radially at any time where space is tight, provides Apex AG with added value by keeping assembly time short.

**This forklift runs differently: full speed ahead with SOL and natural gas!** Standard forklifts operate on liquid gas. Jungheinrich commissioned Apex to convert this forklift to natural gas. The advantages of the SERTO SOL high-pressure unions are brought to bear in this special application.

*„The close cooperation and good customer relations, especially for tailor-made solutions, convinced me to work together with SERTO. SERTO is open to new ideas, shows willingness to cooperate and supports Apex in building prototypes as well.“*

Ueli Oester, CEO Apex AG