

Snam Rete Gas

60 units, 92 bar

Snam Rete Gas s.p.A, member of the ENI group, manages the Italian network for the transportation of natural gas to local distribution points. Pressure reduction plants are located in between the main gas pipelines and the local networks. They use heat exchangers to heat the gas before the first decompression and to heat combustible gas for boilers. The most commonly used technology in the plants is Shell & Tube, installed vertically in order to minimise space.

Six years ago Snam Rete Gas carried out research to improve these plants. There were many things to take into consideration, such as the large space requirements of Shell & Tube heat exchangers and installation in seismic areas.

The heat exchangers receive natural gas at a variable pressure between 30 and 75 bar and it is necessary to ensure that the gas is heated from +5°C to +38°C, in any conditions, by using warm water at +70°C. Due to the variable pressure, the design pressure has to be 92 bar shell side and 12 bar plate side. The gas side must be drainable in order to remove condensate or other liquids which can be condensed during start up.

Datcor have worked together with Snam Rete Gas over the last six years to find solutions to fit their requirements.



Benefits found with Vahterus PSHE units are follows:

- They are compact and have very high k values
- Seismic areas and wind have no impact on the structure of PSHE
- They can work very well with variable and high pressures; 92 bar design is not a problem
- They are reliable in unstable conditions, variable gas flows, temperatures and pressures
- Due to flexible structure of PSHE, it was possible to satisfy requests such as max pressure drops on both sides (natural gas and water), dimensions of connections, positioning of connections, positioning of sockets for thermometers and gauges
- There are no moving or replaceable parts in Vahterus PSHE; easy maintenance
- As they are made of one material, they don't have different rates of expansion
- They are completely welded
- The circular shape ensures uniform distribution of stresses; there are no dead zones.

Solutions with Vahterus PSHE

The technical solution has been developed through many different stages over the years. First a single exchanger was divided into two parts so that in the upper part there was the process natural gas, while in the lower part the gas for the boiler was heated. Hot water flowed inside plates to heat both of the gases.

The second solution was a system of two connected exchangers: the larger for the process natural gas, and the smaller for gas to be heated for the boiler, by using only one inlet/outlet for heating water.

The third solution was again a single heat exchanger without any difference between process natural gas and gas for the boiler, but the whole flow was heated to a certain temperature high enough to guarantee the functionality of the system.

The current solution is only to change from an accessible, openable shell configuration to a fully-welded shell construction.

Vahterus Oy is the pioneer and inventor of -Plate&Shell-® Heat Exchangers (PSHE) technology. PSHE combines the high heat transfer capabilities and compact nature of plate exchangers, with the temperature and pressure capabilities of Shell & Tube. Since 1990, Vahterus have been working to design, manufacture and deliver the most compact and cost effective solutions to our clients in many sectors, in many applications.

More information and contact details for all countries can be found at www.vahterus.com

CASE STORY