Cirmac chooses Alfa Laval heat transfer components for Dutch biogas plant

Attero renewable natural gas plant, Groningen, The Netherlands **Case story**

Cirmac International BV, a company offering a strong value proposition and high industrial quality, has chosen Alfa Laval as its partner for the supply of plate and air heat exchangers for renewable natural gas projects. One example is Attero in Groningen, the Netherlands, which began production in 2010 and now has an output of 5 million m^3 of renewable natural gas per year.

Cirmac's R&D Manager, Geurt Aalderink: "We want more from a supplier than just supplying products. Uptime is a key value at these plants – problems with any equipment will cause issues. We feel secure with Alfa Laval because they have design know-how, a good reputation and a well-developed service organization."

Cirmac International is a global player in the upgrading of biogas to the same or higher quality than natural gas, with more than 25 plants already delivered in Scandinavia, Germany, France, Switzerland and the Netherlands. The upgraded biogas produced at the plants, also known as renewable natural gas, is a highly sustainable form of renewable energy and can be supplied to the natural gas grid or used as fuel for motor vehicles.

The Netherlands' largest renewable natural gas plant

Attero is the leading producer of renewable natural gas in the Netherlands. Biogas is produced by anaerobic digestion of organic waste, which is separated mechanically from municipal waste. The biogas is upgraded to renewable natural gas and injected in the natural gas grid of Groningen.

The raw biogas going to the treatment plant for upgrading has a flow rate of 1,000 Nm^3/h and the plant produces 710 Nm^3/h of renewable natural gas for injection into the natural gas grid. The gas is injected into the 8 bar grid, and has a Wobbe index of 43.46 – 44.41 kWh/Nm^3.

Cirmac has three technologies available for biogas upgrading. The technology used by Cirmac at Attero and similar plants is a type of amine system called LP Cooab®. The biogas is cleaned by removal of impurities such as water, hydrogen sulphide, and particles, and upgraded to a higher energy content by removal of carbon dioxide, so that it can be injected into the natural gas grid.

The hydrogen sulphide is removed in an activated carbon filter. The LP Cooab process then removes the carbon dioxide from the gas by absorption in an absorption tower, thus increasing the methane level from approximately 60-70% methane to a level of 99% methane.

Cooab liquid regenerated by heating

The Cooab liquid needs to be regenerated and therefore the system requires heat. The lean/rich interchanger decreases the need for heat to the system by heating the rich fluid with the lean fluid. The lean fluid needs further cooling before it goes to the absorption tower, and this is done in the lean cooler. The reboiler adds heat to the stripper column. After the biogas is upgraded, it is dried in a TSA system (Temperature Swing Adsorption).

The Attero plant is equipped with Alfa Laval gasketed plate heat exchangers, PHEs, for fluid cooling and rich fluid heating (using the lean fluid) and as a reboiler. Another Alfa Laval product used at the plant is an air heat exchanger for producing cooling water for various processes, such as for the lean cooler.

Compact and reliable

Geurt Aalderink: “Alfa Laval gasketed plate heat exchangers have the compact designs and reliability we need to fit into our plant designs.”

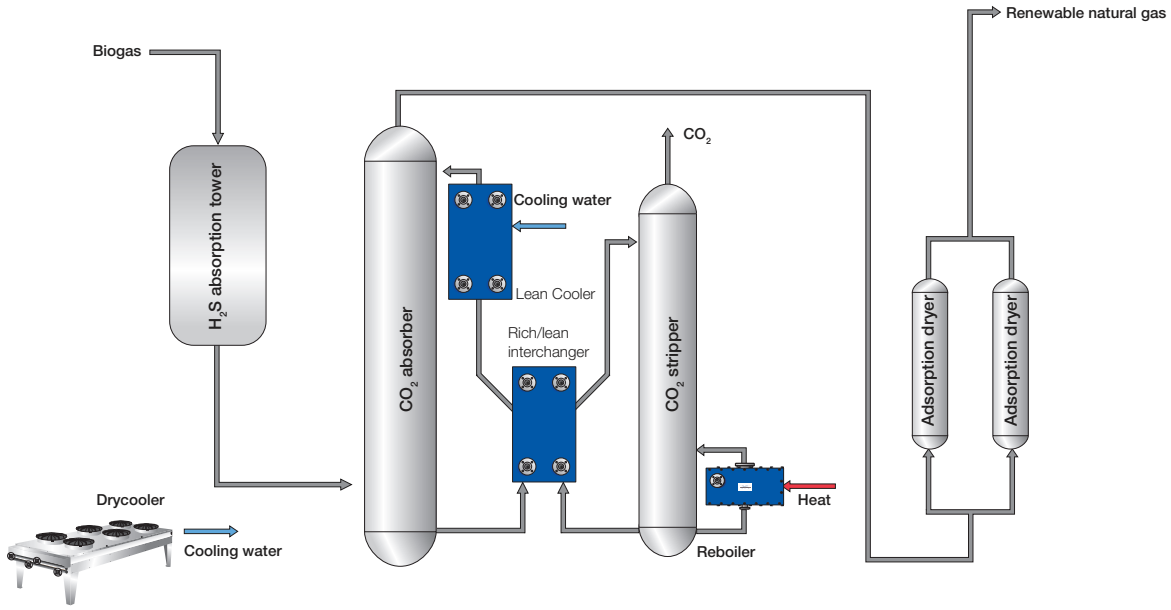
Cirmac International BV

Based in Apeldoorn in the Netherlands, Cirmac has been a pioneer in biogas upgrading since 1987. Since 1979 the company has been a global player in nitrogen generation, gas treatment and the upgrading of biogas into renewable natural gas. It is an innovative company that uses advanced gas-separation technologies to promote safety and sustainability.

Attero renewable natural gas plant, Groningen, the Netherlands

- Biogas produced by: Anaerobic digestion of organic waste separated mechanically from municipal waste
- Separation capacity: 160,000 ton/year
- Digestion capacity: 60,000 ton/year
- Flow rate of raw biogas to the treatment plant: 1,000 Nm^3/h
- Renewable natural gas production: 710 Nm^3/h, 5 million m^3 per year
- Renewable natural gas is injected into the 8 bar grid
- Wobbe index: 43.46 – 44.41 kWh/Nm^3

Attero aspires to become the leading waste management company in terms of sustainablility.



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Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com