VANZETTI CRYOGENIC TECHNOLOGY

Press Release

Cryogenic pumps for an environmentally sustainable company fleet

Vanzetti Engineering supplied its cryogenic pumps for an important project involving the reconversion to gas of 60% of the vehicles of Contarina spa.

Cavallerleone, June 2021 – with its cryogenic pumps Vanzetti Engineering has contributed to a reconversion project for the company fleet of Contarina, a public waste management company operating in 49 municipalities in the province of Treviso.

The operation is part of a project financing agreement for the use of LNG (Liquefied Natural Gas) and CNG (Compressed Natural Gas) to power the fleet of vehicles Contarina uses to collect urban waste. The goal of the project is to achieve the gas reconversion of 60% of Contarina's vehicles - which currently mainly run on diesel - thanks to the construction and supply of a storage and distribution plant for LNG (Liquefied Natural Gas) and CNG by Liquigas, the Italian market leader in the distribution of LPG (Liquefied Petroleum Gas) and LNG.

Vanzetti Engineering contributed to the project through the supply of the **filling station – L-CNG and LNG**, which includes **2 alternative series VT-55 pumps** for the distribution of L-CNG, a **Skid with a submerged ARTIKA 160-2S cryogenic pump** for the distribution of LNG, as well as all the necessary cryogenic equipment.

This initiative represents an important first step in the creation of a completely sustainable company fleet. The construction of the LNG and CNG storage and distribution plant lays the foundations for the future use of biomethane produced by processing organic waste, thereby enabling Contarina to use self-produced sustainable fuel to power the vehicles in its waste collection fleet.

The use of LNG offers significant environmental advantages thanks to the use of clean fuels which emit a lower level of CO2 and particulate, but it also offers economic and social benefits since this solution reduces pollution and the associated health risks.

L-CNG filling station

In L-CNG filling station, liquid natural gas is stored in a cryogenic tank, which provides the fuel to the high-pressure reciprocating pump. Compressed LNG is pumped through an ambient vaporizer, where it is warmed and transformed into compressed natural gas (CNG). To complete the process, the CNG is then stored in a gaseous buffer, ready for refuelling vehicles.

The **VT-55 alternative cryogenic piston pump** has a simplex to triplex modular assembly to guarantee a capacity range of 20 to 179 lpm and a maximum distribution pressure of 420 bar. Moreover, the installed power ranges from 37 and 200 kW. The pump is equipped with a gear crank lubricated in oil which ensures maximum operating efficiency. The cold head of the pump has a seals cartridge that allow for quick maintenance operations.

The VT-55 is part of Vanzetti Engineering's family of alternative VT cryogenic pumps. The evolution of this model is the new **VT-3**, which comes in simplex, duplex or triplex versions in accordance with the

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required capacity, and has a maximum pressure of 420 bar. The VT-3 model is the ideal solution in terms of performance, safety, reliability and low maintenance requirements and can be provided on a skid with all accessories including sensors, instrumentation and valves for a safe and reliable control of the pump. The VT-3 was initially designed to satisfy the growing need for LNG power supply systems for high-pressure marine engines. Today it represents a valid alternative for L-CNG filling stations which require a high capacity and pressure.

LNG filling station

Liquid natural gas is stored in a cryogenic tank, which provides the fuel to the cryogenic centrifugal submerged pump. In the fuelling process, the pump carries out two main functions: to provide the fuel to the LNG dispenser for cooling of the lines and/or later supply of trucks and to pump the liquid to the LNG saturation (conditioning) heat exchanger for conditioning and preparation of the product before refuelling.

The **submerged ARTIKA 160** cryogenic pump was designed to operate completely immersed in the pumped cryogenic liquid and adapts easily to constant or intermittent use thanks to its special design incorporating the electric motor to the rotor-stator. The pump has virtually no items that are subject to wear and tear. Indeed, the only items that can deteriorate over time are the machine bearings, which is why these have been produced using highly resistant carbon-ceramic materials. Aside from constantly keeping the pump cold through the input of fresh fluid, the pumped cryogenic liquid also acts as a lubricant for the mechanical part. The special design of the pump allows the liquid methane to flow through it from the bottom upwards, making it suited for installation in a vertical position within cryogenic tanks in a variety of naval and industrial applications.