



SOLKANE[®] - Case Studies

SOLKANE[®] 507

CS_R507_01_E

Solvay Plant Rheinberg / YORK

- Application:** Chlorine liquefaction Unit – Chemical Industry
- Location:** Germany
- Equipment:** YORK: Two SAB128 HF screw compressor units, each capable of 113kW cooling power, water cooled condenser, $T_0 = -38^{\circ}\text{C}$, $T_c = 35^{\circ}\text{C}$
- Summary:** The capacity of one part (R22-installation) of a chlorine liquefaction unit within the electrolysis department of the Solvay plant in Rheinberg, had to be increased. Main components, such as the compressor and the evaporator, had to be changed. Due to EU regulation 2037/2000, R22 had to be replaced in this case by a substitute refrigerant. With respect to several safety and performance aspects, R507 was chosen. Chlorine is liquefied at a temperature of -35°C . The old condenser was maintained and an economizer-configuration was installed. The installation is working successfully since 2003.
- Remarks:** A special requirement was to find a refrigerant substitute, which fulfills the safety requirements deriving from a possible contact of the refrigerant with elementary chlorine (in case of a leak in the evaporator). Safety investigations have been carried out, including e.g. self ignition tests of R507/ Cl_2 mixtures. R507 has been evaluated as the only possible type of refrigerant, showing best performance, with respect to safety, economic and ecologic aspects, which could be used for Cl_2 -liquefaction installations nowadays.



P.O. Box 220
30002 Hannover
Hans-Boeckler-Allee 20
30173 Hannover / Germany

Phone +49/511/857-2653
Fax +49/511/857-2166
E-Mail refrigerants@solvay.com
Internet www.solvay-fluor.com