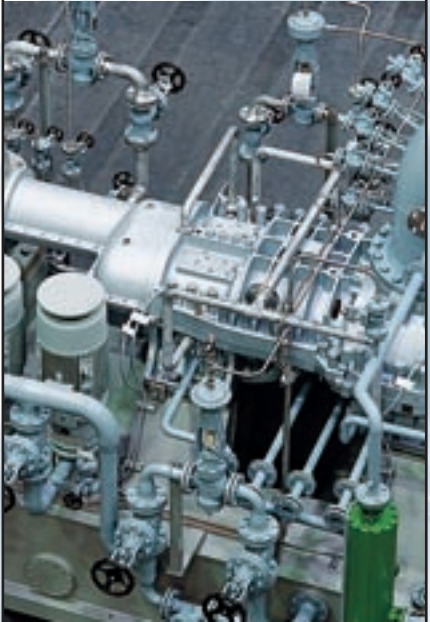
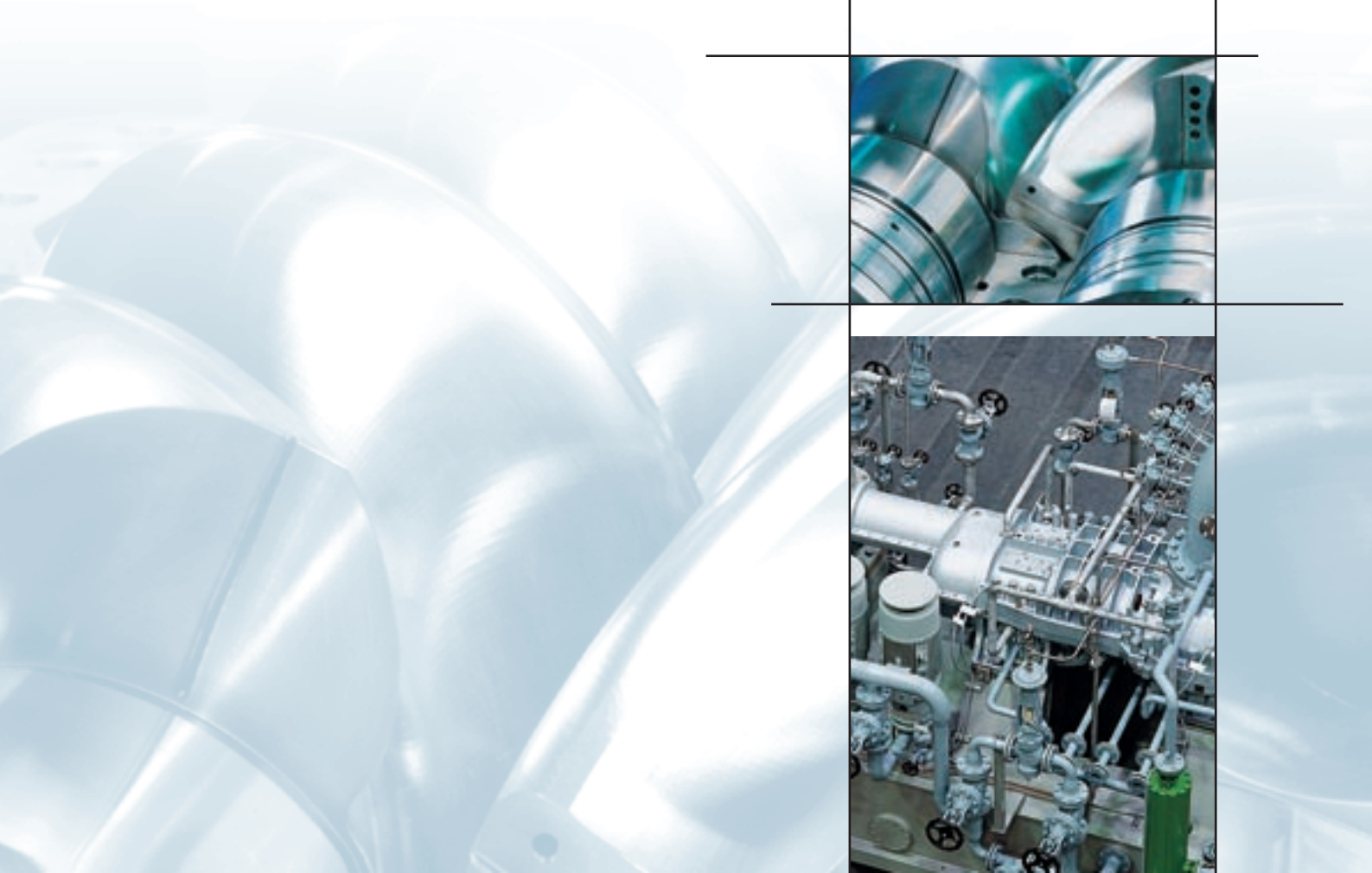




Screw Compressor Units for Hydrogen Purification



Application

Modern hydrogen plants are normally operated with Pressure Swing Adsorption (PSA) units for purification of hydrogen. The advantage offered by the PSA procedure, compared to former purification methods, is the high purity of the hydrogen up to 99.9%. In addition to pressure swing adsorbers, feed-gas and waste-gas compressors are often required.



Process Information

The feed-gas compressor is needed to feed the adsorber with the hydrogen-rich gas. Typical feed gases are syn-gas, coke oven gas and styrene monomer gas. Waste gas is produced during the regeneration of the adsorbers. Sometimes this waste gas (also called tail gas), can be used as fuel gas or at refinery service returned to the refinery process. Often this requires a compressor as well.

Customer benefits

As a positive displacement compressor, the screw compressor is ideal for handling the relatively light hydrogen-rich gas. Compared to a centrifugal compressor, higher pressure ratios can be reached in one single stage. If the feed gas comes out of a styrene monomer unit or a coke oven plant, the screw compressor can easily be equipped with liquid injection. Offering a reliability which is similar to that of turbocompressors, process-gas screw compressors are normally operated unspared.

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Project Data

Screw Compressor Unit

Installation:	Leuna, Germany	Dow-BSL, Germany
Type:	SKUEL408	CP200/CP128
Gas:	Waste gas	Feed gas
Volume flow [m ³ /h]:	14,034	5,486
Molecular weight [kg/kmol]:	10 to 36	5.8
Suction pressure [bar (a)]:	2.5	2.4
Discharge pressure [bar (a)]:	8	27
Speed [rpm]:	5,173	9,640 / 13,130
Driver power [kW]:	2,150	2,300