

SCREW COMPRESSOR FOR BIOMETHANE PRODUCTION



In modern biomethane production plants, the screw compressor is used as the primary compression stage because of its efficiency, reliability, and ability to treat large flow rates continuously, efficiently, and reliably. Downstream, the reciprocating compressor acts as a booster, bringing the gas to the higher pressures required for feed-in or storage. This combination ensures maximum energy efficiency, low maintenance, and 24/7 operational reliability.

High level Description

- The screw compressor is the ideal solution for primary compression of biogas in upgrading plants. Designed to handle particularly low suction conditions (100 to 500 mbar), it guarantees high performance even with variable flow rates up to 2500 Smc/h and discharge pressures up to 16 barg.
- The range includes installed powers up to 400 kW, making the system suitable for both small- and large-scale installations. All units are available in a "plug & play" containerized configuration, which simplifies installation and reduces start-up time.
- The heart of the system is the compressor housing, mounted on a removable skid to allow immediate access and quick replacement in case of maintenance.
- SAFE also provides the integrated cooling system, ensuring thermal efficiency and optimal management of the compression cycle.
- With these features, the SAFE screw compressor combines reliability, operational continuity, and ease of operation, ensuring maximum efficiency in biomethane production facilities.

Datasheet

TECHNICAL FEATURES	UNIT OF MEASURE	VALUES
CONFIGURATION	-	Compressor combined with electric motor
SUCTION PRESSURE	bar (psi)	100 - 500 mbar
PRESSURE IN DISCHARGE	bar (psi)	Up to 16 barg
MAX FLOW-RATE	Scm/hr	2500
POWER RANGE	kW(Hp)	75 - 400
NOISE LEVEL	dB(A)	Up to 60 dB@1m
DIMENSIONS	meters (feet)	4m to 6m in containers
OPERATING TEMPERATURE	°C (°F)	-20°C / +40°C
CERTIFICATIONS	-	-
COOLING SYSTEM		Water-based, with SAFE supply aircooler*
LUBRICATION SYSTEM		The compressor uses oil-bath screws**
INLET GAS RELATIVE HUMIDITY		Up to 40%
MATERIALS		Carbon steel and stainless steel on request
CONTROL MODE		The compressor is adjusted on the basis of suction pressure, which affects the engine speed***

OPTIONAL

- Heat recovery system from oil
- Subcooling system with chiller
- Biogas thermoregulation system at compressor outlet

*can be integrated to the container, on the roof or side-by-side

**we have three stages of oil filtration after compression, a first horizontal separator placed under the compressor that does an initial filtration, then two more filters for water and oil on the discharge

***there is also a recirculation system inside the compressor that provides more flexibility in flow rates and pressures

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