

Canned, clean and smart

STC-ECO hermetically sealed integrated motor compressor unit for dirty-gas applications onshore, offshore, and subsea

Answers for energy.

SIEMENS



Canned, clean and smart

STC-ECO hermetically sealed integrated motor compressor unit for dirty-gas applications onshore, offshore, and subsea

The challenges of upstream dirty-gas compression together with other demanding applications which have traditionally suffered from poor seal reliability call for a radically different approach to the design of compression solutions.

Introducing the STC-ECO. Based on Siemens field-proven hermetically sealed technology, the STC-ECO is a compact, fully integrated, sealless motor-compressor unit of low complexity. It has been specifically designed to meet the requirements of the most demanding applications in the upstream business. These applications have either suffered from poor seal reliability — notably upstream of the glycol dehydrator — or involve hazardous and toxic gases, containing H₂S, mercury, CO, etc.

After two years of field operation, the prototype of the STC-ECO has proven the credibility of its concept and design, which offers significant benefits for owners, operators and the environment.

Increased plant safety

The STC-ECO features a fully integrated, canned design. Compared to solutions consisting of discrete components, this represents a substantial reduction of interfaces and, hence, providing a major improvement in plant safety.

Increased uptime

The STC-ECO has been designed for ultimate ruggedness while at the same time reducing complexity. With 5+ years maintenance intervals, it offers superior availability and unparalleled lifetime value.

Zero emissions

The STC-ECO have been developed with special attention to applications involving hazardous and toxic gases. Its sealless, canned design means zero emissions for ultimate HSE compliance.

Compact footprint

The STC-ECO comes with a built-in variable-speed drive, offering maximum flexibility of operation. At the same time, the vertical, integrated concept enables a drastic reduction in the overall footprint, requiring minimal space in the plant layout.

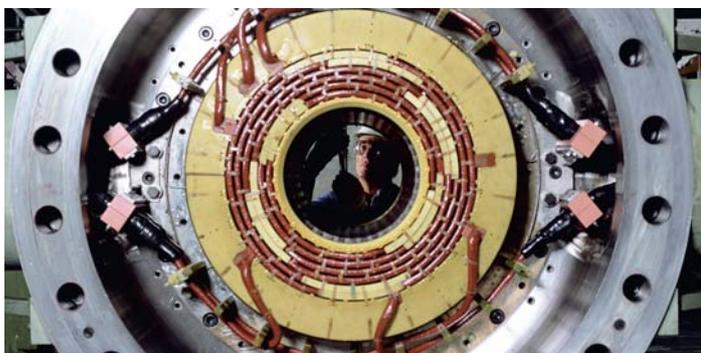
STC-ECO — A fully proven solution

Representing a quantum leap in compressor technology, the STC-ECO has been co-developed by Shell and Siemens, two companies enjoying a long-standing mutually cooperative relationship. Key to the success of the project, the Shell research team has been part of the joint development group. To date, the STC-ECO is the only API-conforming sealless compression solution available for dirty-gas applications without need for clean-gas supply.

Preceded by months of extensive inhouse testing, in autumn 2006 the STC-ECO prototype was deployed at NAM's Vries-4 gas gathering site near Groningen, Netherlands. For more than 20 months, it has operated with dirty process gas in modulating mode and under routine asset control. During this time, it was subjected to a wide range of contaminants, including sand, and water.

A scheduled inspection after its first year of general use-and-abuse operation in saturated gas confirmed that the STC-ECO prototype was in excellent condition. Not only did the test prove the suitability of the design for the intended applications, but additional tests also supported the confidence in achieving the desired 5-years maintenance interval, which had been among the key performance criteria in the development of the STC-ECO.

Following the completion of field testing, the STC-ECO prototype continued to operate as a standard machine, achieving some 10,000 operating hours by August 2008, effectively transforming the unit from prototype-under-test to an extension of normal production facilities.



The STC-ECO with its top being removed for inspection.

Technical specifications

STC-ECO, the Siemens sealless technology platform, has been designed for dirty-gas application in the upstream, midstream and downstream sectors. Focus applications will include field depletion, gas-and-oil separation, gas gathering, gas lift and many others. Its unique design features offer a range of unparalleled benefits:

- Increases uptime due to absence of seals, and minimal number of sub systems
- Environmentally friendly due to zero emissions
- Allows for a smaller compressor building due to a footprint reduction of > 40 percent compared to a conventional VSD-driven compressor with intermediate gear
- Easy to install as a single integrated solution
- Less maintenance due to reduced number of auxiliary systems
- Wide operating range through variable-speed drive

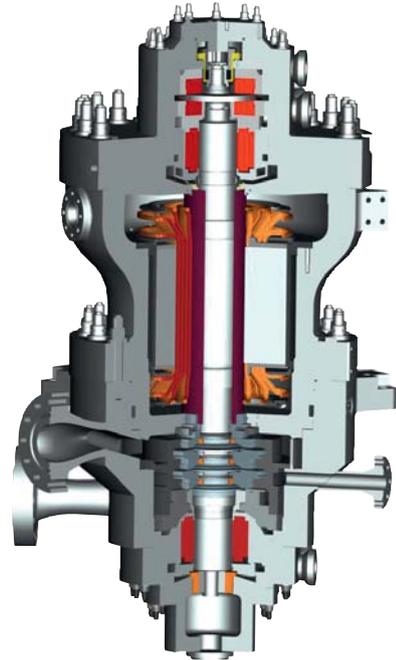
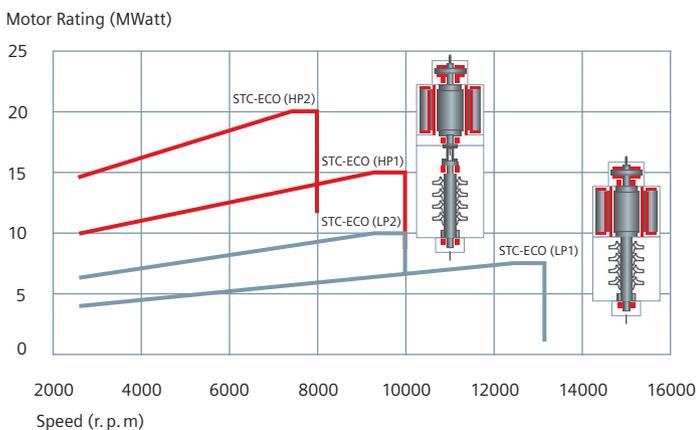
The STC-ECO fully complies with API617 specifications and can also be supplied to NACE standards. It will be available with four different power ratings:

	LP1*	LP2	HP1	HP2
Power (MW)	7,5	10	15	20
Rated speed (rpm)	12.200	9.500	9.500	7.600
Speed range (typical)	30 – 105%			
No. impellers	up to 6	up to 6	up to 8	up to 8
Configuration	inline and back-to back			
Casing design	1500#	1500#	2500#	2500#
Dimensions (m)	4.8 x 4.1 x 4.6		to follow soon	
Footprint reduction (%)**	> 40	> 40	to follow soon	

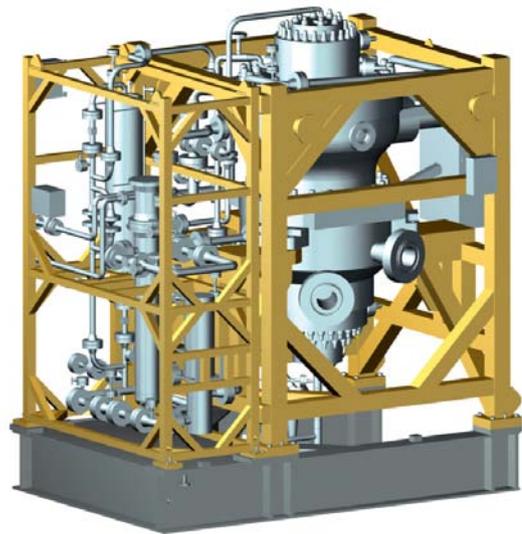
* installed and operational

** compared to standard compressor package including converter and cooler bank (2 x 100%)

STC-ECO product range



Longitudinal cut through the STC-ECO, showing motor/compressor section at the center, and active magnetic bearings at the top and bottom end.



The STC-ECO will be delivered as a skid-mounted unit measuring a mere 4.8 x 4.1 x 4.6 meters.

Published by and copyright © 2008:

Siemens AG

Energy Sector

Freyeslebenstrasse 1

91058 Erlangen, Germany

Siemens AG

Energy Sector

Oil & Gas Division

Wolfgang-Reuter-Platz

47053 Duisburg, Germany

Siemens Energy, Inc.

10730 Telge Road

Houston, Texas 77095, USA

For more information contact

E-mail: oil-gas@siemens.com

Oil & Gas Division

Order No.: E50001-G440-A103-X-4A00

Printed in Germany

Dispo 05400 c4bs No 4429, 4502 WS 10083

Printed on elementary chlorine-free
bleached paper.

All rights reserved.

Trademarks mentioned in this document
are the property of Siemens AG, its affiliates,
or their respective owners.

Subject to change without prior notice.
The information in this document contains
general descriptions of the technical options
available, which may not apply in all cases.
The required technical options should therefore
be specified in the contract.