



# Rotary Screw Compressors

## SM Series

With the world-renowned SIGMA PROFILE

Flow rate 0.39 to 1.64 m<sup>3</sup>/min, Pressure 5.5 to 15 bar

# Long-term savings

Discerning compressed air users expect maximum availability and efficiency even from smaller compressors. It will come as no surprise therefore that KAESER's SM series rotary screw compressors go far beyond meeting these key expectations. Not only do they deliver more compressed air for less energy, but they also combine ease of use and maintenance friendliness with exceptional versatility and environmentally responsible design.

## SMart with SIGMA 06

The latest generation SM series rotary screw compressors feature the new SIGMA 06 airend with further-refined SIGMA PROFILE rotors for even greater intake volume and efficiency. The result? Up to 13 percent reduced energy requirement and up to 10 percent higher flow rate.

## Energy-saving performance

The efficiency of a machine depends on the total costs incurred throughout the equipment's entire service life. With compressors, energy costs account for the lion's share of total expenditure. KAESER therefore designed its SM series compressors with optimum energy efficiency in mind. Refinements to the energy-saving SIGMA PROFILE airend rotors and the use of Super Premium Efficiency IE4 motors (Premium Efficiency IE3 motor in the SM 10) have significantly contributed to the increased performance of these versatile compressors. The combination of the SIGMA CONTROL 2 internal controller, low airend speeds, minimised internal pressure losses and KAESER's unique cooling system has helped to push the boundaries of efficiency even further.

## Optimised design

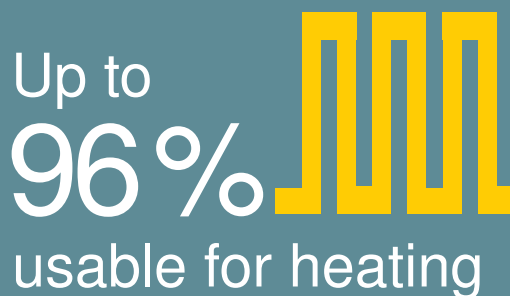
The new SM models all share logical and user-friendly design throughout. For example, the left-hand side panel can be removed in a few simple steps and allows excellent visibility of the system's intelligently laid out components – moreover, all maintenance points are easily accessible. When closed, the sound-absorbing compressor enclosure keeps operational sound levels to a minimum thereby ensuring a pleasantly quiet work environment. In addition, the enclosure features four inlet openings for separate airflow cooling of the compressor, the motor, the control cabinet and the compressor intake air. Last, but not least, SM series compressors are impressively compact, which makes them the perfect choice for applications where space is at a premium.

## Modular system concept

SM series compressors are available as standard versions, as so-called "T" models (equipped with an integrated, thermally shielded refrigeration dryer) and as "AIRCENTER" models that additionally include an under-slung air receiver. KAESER's intelligent modular design therefore offers incredible flexibility. Moreover, the SM 13 model is also available with an integrated frequency converter for infinitely-adjustable flow rate control.

## Why choose heat recovery?

The question should in fact be: Why not? Amazingly, up to 100 % of the (electrical) energy input to a compressor is converted into heat. Up to 96 % of this energy can be recovered and reused for heating purposes. This not only reduces primary energy consumption, but also improves the applicable company's total energy balance.



Up to  
**96 %**  
usable for heating

# Quiet and powerful, durable and reliable



Image: SM 13

KAESER



KAESER



SIGMA CONTROL 2

www.kaeser.com

7.8bar	09:26	75°C
ON LOAD		
Key	- on	ipA - Load
Run	18005h	Load 17105h
Maintenance inc.		1995h

KAESER  
KOMPRESSOREN  
02/20XX



SM series

# Design is in the details



## SIGMA PROFILE airend

At the heart of every SM system lies a new premium quality airend featuring KAESER's SIGMA PROFILE energy-saving rotors. Operating at low speed, KAESER's airends are equipped with flow-optimised rotors for superior efficiency.



## SIGMA CONTROL 2

The SIGMA CONTROL 2 ensures efficient control and system monitoring. The large display and RFID reader provide effective communication and maximum security. Multiple interfaces offer exceptional flexibility, whilst the SD card slot makes updates quick and easy.



## Tomorrow's technology, today: IE4 motors

KAESER is currently the only compressed air systems provider to equip its compressors with Super Premium Efficiency IE4 motors as standard, thereby delivering maximum performance and energy efficiency.



## Efficient cooling

KAESER's innovative cooling system uses a high efficiency dual flow fan and separate air flow channels for cooling of the motor, the fluid/compressed air aftercooler and the control cabinet. This not only achieves optimum cooling performance, low compressed air discharge temperatures and minimal sound levels, but also promotes efficient air compression.

SM T (SFC) series

## Also available with refrigeration dryer and variable speed control



### SM with energy-saving dryer

The compressed air refrigeration dryer is installed in a separate enclosure to prevent exposure to heat from the compressor package. The automatic dryer shutdown feature further aids energy-efficient performance.



### Variable speed control also available

The use of variable speed control can provide definite advantages for specific applications, which is why the SM 13 is also available with this feature. The frequency converter is integrated into the compressor system's control cabinet (with separate fan) and is thermally isolated.



### Even quieter

The new cooling system provides outstanding cooling performance and enables optimum sound-proofing. Normal conversation can take place right next to the running compressor.



### Maintenance friendly

All maintenance work can be carried out from one side of the unit. The left housing cover is easily removed to allow excellent component accessibility.



Image: SM 13 T





Image: AIRCENTER 13

AIRCENTER

# The compact and efficient compressed air station



## Connect and go

Simply connect the power supply and air distribution network to this compact compressed air package and you're ready to go. That's it!



## Durable air receiver

The 270-litre air receiver is especially designed for installation in AIRCENTER systems. All inner and outer surfaces are coated to provide excellent corrosion protection and to ensure long service life.



## Service-friendly design

The left-hand housing cover is easily removed to allow excellent accessibility to all service points. Inspection glasses allow convenient inspection of fluid levels, condensate drain and drive belt tension whilst the unit is in operation.



## KAESER FILTER products for pure air

Thanks to lowest-possible differential pressure, original KAESER FILTER (option) products efficiently ensure compressed air of all purity classes as per ISO 8573-1 and feature rapid and clean filter element replacement. They are available in four filter grades.





# KAESER

**SM 13**

**SIGMA** 







# Equipment

## Complete unit

Ready-to-run, fully automatic, super-silenced, vibration damped, all panels powder coated. Suitable for use in ambient temperatures up to +45 °C.

## Airend

Genuine KAESER single-stage airend with SIGMA PROFILE rotors and cooling fluid injection for optimised rotor cooling.

## Electric motor

Super Premium Efficiency IE4 (Premium Efficiency IE3 in the SM 10) electric motor of quality German manufacture, IP 55.

## Fluid and air flow

'Honeycomb' structure air intake filter, pneumatic inlet and venting valves, cooling fluid separator tank with triple separation system, safety valve, minimum pressure/check valve, thermostatic valve and fluid filter within the cooling fluid circuit, fluid/compressed air combination cooler.

## Refrigeration dryer (with T version)

Pressure dew point measurement via PT100 sensor and electronic level-controlled condensate drain with alarm contact as standard. Refrigerant compressor with energy-saving, cycling shutdown feature; linked to operational status of the compressor when inactive. Alternatively, continuous operation can be selected on site.

## Electrical components

Ventilated IP 54 control cabinet, automatic star-delta starter, overload relay, control transformer.

## SIGMA CONTROL 2

"Traffic light" LED indicators show operational status at a glance, plain text display, over 30 selectable languages, soft-touch keys with icons, fully automated monitoring and control. Selection of Dual, Quadro, Vario and Continuous control as standard. Interfaces: Ethernet; additional

optional communication modules for Profibus DP, Modbus, Profinet and Devicenet. SD-card slot for data-logging and updates. Reader and web server.

## SIGMA AIR MANAGER 4.0

The further-refined adaptive 3-D<sup>advanced</sup> Control predictively calculates and compares various operating scenarios and selects the most efficient to suit the compressed air application's specific needs.

The SIGMA AIR MANAGER 4.0 therefore automatically optimally adjusts flow rates and compressor energy consumption in response to current compressed air demand. This powerful feature is made possible by the integrated industrial PC with multi-core processor in combination with the adaptive 3-D<sup>advanced</sup> Control. Furthermore, the SIGMA NETWORK bus converters (SBC) provide a host of possibilities to enable the system to be individually tailored to meet exact user requirements. The SBC can be equipped with digital and analogue input and output modules, as well as with SIGMA NETWORK ports, to enable seamless display of flow rate, pressure dew point, power or alarm message information.

Amongst other key features, the SIGMA AIR MANAGER 4.0 provides long-term data storage capability for reporting, controlling and audits, as well as for energy management tasks as per ISO 50001.

*(See image to the right; excerpt from the SIGMA AIR MANAGER 4.0 brochure)*

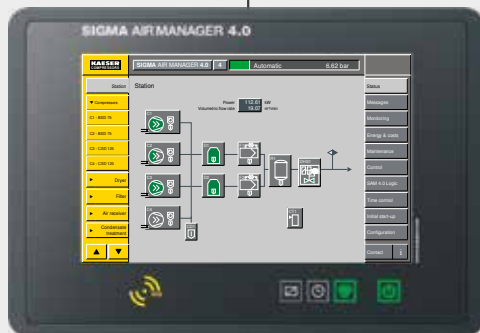


Digital output device, e.g. laptop



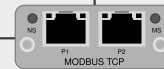
Control centre

KAESER CONNECT



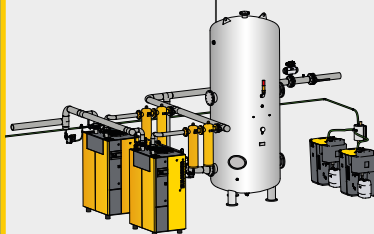
SIGMA AIR MANAGER 4.0

Communications module e.g. Modbus TCP

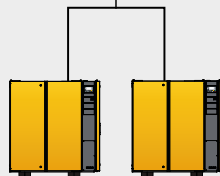


## KAESER SIGMA NETWORK

SIGMA NETWORK  
PROFIBUS Master



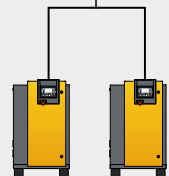
Various connection possibilities  
for treatment components



Connection of conventional  
compressors possible



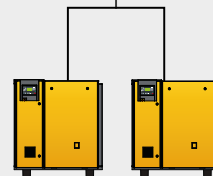
Controller:  
SIGMA CONTROL 2



Connection of compressors with  
SIGMA CONTROL 2



Controller:  
SIGMA CONTROL



Connection of compressors with  
SIGMA CONTROL; connection to stations  
with Profibus network (SAM 1 alternative)



# Secure data – secure business!

# Technical specifications

## Standard version

Model	Operating pressure bar	Flow rate <sup>1)</sup> Overall package at operating pressure m³/min	Max. working pressure bar	Drive motor rated power kW	Dimensions W x D x H mm	Compressed air connection	Sound pressure level <sup>2)</sup> dB(A)	Mass kg
SM 10	7.5	0.94	8	5.5	630 x 790 x 1100	G 3/4	62	220
	10	0.78	11					
	13	0.60	15					
SM 13	7.5	1.32	8	7.5	630 x 790 x 1100	G 3/4	65	240
	10	1.08	11					
	13	0.85	15					
SM 16	7.5	1.62	8	9.0	630 x 790 x 1100	G 3/4	66	240
	10	1.36	11					
	13	1.09	15					

## T - Version with integrated refrigeration dryer (refrigerant R-134a)

Model	Operating pressure bar	Flow rate <sup>1)</sup> Overall package at operating pressure m³/min	Max. working pressure bar	Drive motor rated power kW	Refrigeration dryer power consumption <sup>3)</sup> kW	Dimensions W x D x H mm	Compressed air connection	Sound pressure level <sup>2)</sup> dB(A)	Mass kg
SM 10 T	7.5	0.94	8	5.5	0.33	630 x 1090 x 1100	G 3/4	62	295
	10	0.78	11						
	13	0.60	15						
SM 13 T	7.5	1.32	8	7.5	0.33	630 x 1090 x 1100	G 3/4	65	315
	10	1.08	11						
	13	0.85	15						
SM 16 T	7.5	1.62	8	9.0	0.33	630 x 1090 x 1100	G 3/4	66	315
	10	1.36	11						
	13	1.09	15						

## SFC - Version with variable speed drive

Model	Operating pressure bar	Flow rate <sup>1)</sup> Overall package at operating pressure m³/min	Max. working pressure bar	Drive motor rated power kW	Dimensions W x D x H mm	Compressed air connection	Sound pressure level <sup>2)</sup> dB(A)	Mass kg
SM 13 SFC	7.5	0.39 - 1.40	8	7.5	630 x 790 x 1100	G 3/4	67	250
	10	0.40 - 1.19	11					
	13	0.42 - 0.95	15					

## T SFC - Version with variable speed drive and integrated refrigeration dryer

Model	Operating pressure bar	Flow rate <sup>1)</sup> Overall package at operating pressure m³/min	Max. working pressure bar	Drive motor rated power kW	Refrigeration dryer power consumption <sup>3)</sup> kW	Dimensions W x D x H mm	Compressed air connection	Sound pressure level <sup>2)</sup> dB(A)	Mass kg
SM 13 T SFC	7.5	0.39 - 1.40	8	7.5	0.33	630 x 790 x 1100	G 3/4	67	325
	10	0.40 - 1.19	11						
	13	0.42 - 0.95	15						



#### AIRCENTER - Version with refrigeration dryer and air receiver

Model	Operating pressure bar	Flow rate <sup>*)</sup> Overall package at operating pressure m³/min	Max. working pressure bar	Drive motor rated power kW	Refrigeration dryer power consumption <sup>***)</sup> kW	Air receiver volume l	Dimensions W x D x H mm	Compressed air connec- tion	Sound pressure level <sup>**) )</sup> dB(A)	Mass kg
AIRCENTER 10	7.5	0.94	8	5.5	0.33	270	630 x 1220 x 1720	G 3/4	62	420
	10	0.78	11							
	13	0.60	15							
AIRCENTER 13	7.5	1.32	8	7.5	0.33	270	630 x 1220 x 1720	G 3/4	65	440
	10	1.08	11							
	13	0.85	15							
AIRCENTER 16	7.5	1.62	8	9.0	0.33	270	630 x 1220 x 1720	G 3/4	66	440
	10	1.36	11							
	13	1.09	15							

#### AIRCENTER - Version with variable speed drive

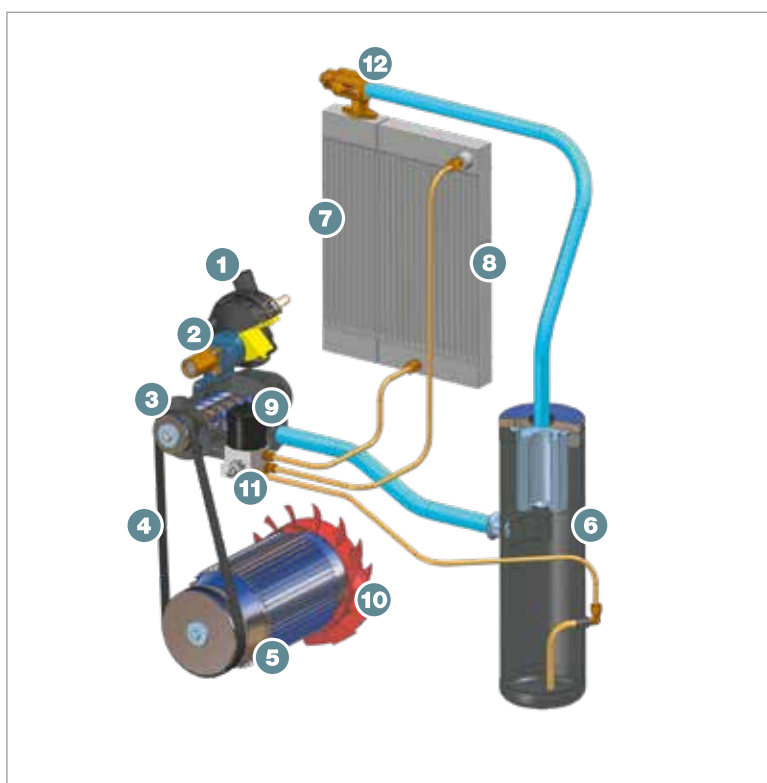
Model	Operating pressure bar	Flow rate <sup>*)</sup> Overall package at operating pressure m³/min	Max. working pressure bar	Drive motor rated power kW	Refrigeration dryer power consumption <sup>***)</sup> kW	Air receiver volume l	Dimensions W x D x H mm	Compressed air connec- tion	Sound pressure level <sup>**) )</sup> dB(A)	Mass kg
AIRCENTER 13 SFC	7.5	0.39 - 1.40	8	5.5	0.33	270	630 x 1220 x 1720	G 3/4	62	450
	10	0.40 - 1.19	11							
	13	0.42 - 0.95	15							

\*) Flow rate complete system as per ISO 1217: 2009 Annex C/E: inlet pressure 1 bar (a), cooling and air inlet temperature +20 °C

\*\*) Sound pressure level as per ISO 2151 and basic standard ISO 9614-2, tolerance: ± 3 dB (A)

\*\*\*) Power consumption (kW) at ambient temperature +20 °C and 30 % relative humidity

## How it works



- (1) Inlet filter
- (2) Inlet valve
- (3) Compressor airend
- (4) Belt drive
- (5) IE4 drive motor
- (6) Fluid separator tank
- (7) Compressed air aftercooler
- (8) Fluid cooler
- (9) Fluid filter
- (10) Fan
- (11) Thermostatic expansion valve
- (12) Minimum pressure check valve

# The world is our home

As one of the world's largest compressed air system providers and compressor manufacturers, KAESER KOMPRESSOREN is represented throughout the world by a comprehensive network of branches, subsidiary companies and authorised partners in over 100 countries.

With innovative products and services, KAESER KOMPRESSOREN's experienced consultants and engineers help customers to enhance their competitive edge by working in close partnership to develop progressive system concepts that continuously push the boundaries of performance and compressed air efficiency.

Moreover, the decades of knowledge and expertise from this industry-leading system provider are made available to each and every customer via the KAESER group's global computer network.

These advantages, coupled with KAESER's worldwide service organisation, ensure that every product operates at the peak of its performance at all times and provides maximum availability.



## KAESER KOMPRESSOREN SE

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