Rotary Screw Compressors
SM Series
With the world-renowned SIGMA PROFILE
Free air delivery 0.30 to 1.50 m³/min, Pressure 8 – 11 – 15 bar
Intelligent design – SM Aircenter

Kaeser’s SM series ‘Aircenter’ systems offer more than space-saving compressed air production, treatment and storage. They redefine the concept of turnkey compressed air systems, as each model features the very latest technology to ensure unrivalled user advantages and outstanding performance. All three modules – the compressor, refrigeration dryer and air receiver – are enclosed within one cabinet, so that the whole system operates as an integrated package. The components within every Kaeser ‘Aircenter’ package are perfectly matched to provide optimum energy efficiency, ease of maintenance and unrivalled durability.

What do users expect from a compressor system?

They expect maximum efficiency and reliability. This sounds simple, but these advantages are influenced by many different factors: Energy costs, for example, taken over the lifetime of a compressor, add up to a multiple of investment costs. This not only applies to large systems, but also to smaller packages such as SM series compressors. Efficient energy consumption therefore plays a vital role in the production of compressed air. The air system must also deliver the compressed air in the correct volume, at the required quality, and provide exceptional reliability. This is essential to ensure maximum availability of compressed air powered production equipment. Last but not least, a truly efficient compressed air system should incur minimal maintenance costs. This is achieved by using high quality components and through logical design which allows excellent accessibility to all maintenance points. KAESER rotary screw compressors fulfil all of these needs and provide the basis for highly efficient compressed air production.

SM Rotary Screw Compressors
Compact Compressed Air Power

Pedestal – Robust – Reliable

Each KAESER rotary screw compressor airend uses SIGMA PROFILE rotors – specially developed by KAESER – that require approximately 15 percent less energy than conventional rotors of the same air delivery capacity. The airends in SM units use even further refined rotors.

Sigma Control

The SIGMA CONTROL compressor controller is a robust PC-based industrial computer with a real-time operating system and update capability. ‘Traffic light’ style LEDs clearly indicate system operational status.

Dual-flow fan

The patent-pending dual-flow cooling fan produces the cooling air flow for the drive motor on one side and the cooling air for the package on the other. The crescent-shaped fan blades help to further reduce sound emissions.

Powerful – Efficient – Quiet

As the most efficient way to achieve a given drive power, KAESER uses large, low speed rotary screw airends. This ensures that the specific power is always within the optimal range. SM series units use a flexible V-belt drive system to precisely determine airend speed dependent upon the airend being used. Low airend speed also means that components are subjected to less wear and consequently last longer, whilst noise emissions are also significantly reduced in comparison with high speed airends. This is particularly important for compressors installed directly in work environments.
SM – Maximum Versatility

SM with energy-saving dryer
Kaeser’s compact modular design with integrated refrigeration dryer (T version) has significant advantages: The dryer is contained in its own separate cabinet within the unit to prevent exposure to heat from the compressor package, which consequently enhances reliability. The dryer shut-down feature – which is linked to compressor operation – can also be selected via the compressor controller to further reduce energy consumption.

Variable speed control also available
The use of variable speed control can provide definite advantages for specific applications, which is why the SM 12 is also available with this feature. The SIGMA FREQUENCY CONTROL (SFC) module is integrated within the compressor control cabinet and, like the SIGMA CONTROL and SIGMA CONTROL BASICS compressor controllers, is a quality product manufactured by Siemens.

Aircenter: The integrated solution
The compact SM Aircenter series from Kaeser provides cost-effective compressed air production, treatment and storage with minimal space requirement. The compressor, dryer and 270-litre air receiver are integrated within a single housing. Each unit is optionally available with a micro-filter or micro-filter combination.

Cooling system with dual-flow fan
The high-efficiency cooling system uses an innovative dual-flow fan (patent pending) that not only ensures exceptional performance, but which also keeps sound emissions to an absolute minimum. The system uses separate flow paths for the compression air and for the motor and fluid cooling air to guarantee sufficient reserves even at high ambient temperatures of up to 45°C. Compression efficiency and motor cooling are enhanced by drawing in the air for motor cooling and compression from the ambient surroundings. Furthermore, sound levels are exceptionally low as the air flows through the cooling system at low speed. This system also significantly contributes to the effectiveness and reliability of refrigeration dryers in T-version packages.

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. Furthermore, there’s no need to remove the housing cover to inspect fluid levels or drive belt tension, as these can be checked via a convenient inspection window. T versions are also equipped with a service opening for the test button on the refrigeration dryer’s electronic condensate drain.

EMC tested and certified
Electromagnetic compatibility (EMC) is particularly important for compressors in order to ensure optimum system performance. The electromagnetic compatibility of the components and of the complete machine has been tested and certified in accordance with EMC guidelines as per EN 55011.

Energy savings
Energy costs account for over 70 percent of total compressed air costs. This can therefore amount to a significant sum even for smaller compressed air systems, which is why KAESER uses the very latest technology to ensure that every compressor provides best possible energy efficiency. These compressors form the basis for reliable and cost-effective compressed air production as part of a correctly planned and integrated compressed air supply system.

Tailored control
Developed in close co-operation with Siemens, the SIGMA CONTROL BASIC multi-function controller provides all the advantages of modern compressor control technology without the additional costs associated with PC-based control systems. Using the proven ‘Dual’ and ‘Quadro’ control modes, this advanced control system will commuticate with – and constantly monitor – the compressor package. If necessary, system messages can be defined as alarms and, with the addition of an optional memory module, can be forwarded to a master control system. The memory module is simply plugged into a specially allocated slot in the ‘SIGMA CONTROL BASIC’, which then controls the compressor system via a Kaeser ‘SIGMA AIR MANAGER’.
Equipment

Complete unit
Ready for operation, fully automatic, super silenced, vibration damped, all panels powder coated.

Sound insulation
Lined with washable foam, anti-vibration mounts, double vibration damped.

Airend
Genuine KAESER rotary screw, single stage airend with SIGMA PROFILE rotors and cooling fluid injection for optimised rotor cooling.

Electric motor
German made premium efficiency (EFF1)

Technical Specifications – SM

<table>
<thead>
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<th>FAD range m³/min</th>
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**FAD range**

- ISO 1217; 1996, annex C
- Sound level to PN8NTC2.3 at 1m distance, free-field measurement

Equipment

electric motor to IP 55 (SM 12/15 IP 54) and insulation class F for additional reserve.

**V-belt drive with automatic belt tensioning**

Durably V-belt drive with automatic tensioning device for extended belt life.

**Fluid and air flow**

Honeycomb dry-air filter, pneumatic inlet and vent valves, cooling fluid reservoir with three-stage separator system, pressure release valve, minimum pressure check valve, thermostatic valve and micro-filter in cooling fluid system.

**Cooling**

Air cooled; separate aluminium coolers for compressed air and cooling fluid, dual-flow fan (patent pending) fitted to motor drive shaft.

**Electrical components**

Ventilated control cabinet to IP 54, automatic star-delta starter; motor-overload protection; control transformer.

**SIGMA CONTROL**


**Ergonomic control panel**

Red, yellow and green LEDs show operational status at a glance. Also features a plain text display, 30 selectable languages, touch keys with icons and a duty cycle indicator.

**Prime functions**

Fully automatic monitoring and regulation of airend discharge temperature, motor current, direction of airend rotation, air filter, fluid filter and fluid separator cartridge; display of performance data, service intervals of primary components, operating hours, status data and event memory data. Selection of Dual, Quadro, Vario and Continuous control modes as required.

(For further information refer to SIGMA CONTROL / SIGMA CONTROL BASIC brochure 730)

**Equipment**

Newly designed air conditioning units and compressed air receivers.

**Technical Specifications – SM**

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**FAD range**

- ISO 1217; 1996, annex C
- Sound level to PN8NTC2.3 at 1m distance, free-field measurement

**Dimensions**

**Professional planning**

Compressed air supply system with separate components

Only properly designed air systems can meet the demands for air quality, availability and efficiency that are placed on a modern compressed air supply. Therefore benefit from decades of compressed air engineering experience and let KAESER design your compressed air supply system.

**Equipment**

Rotary screw compressor
Refrigeration dryer
Air receiver
Aquamatic condensate treatment
Filter
ECO DRAIN condensate drain
Air-main charging system

**Technical Specifications – SM**

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**FAD range**

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- Sound level to PN8NTC2.3 at 1m distance, free-field measurement

**Equipment**

Newly designed air conditioning units and compressed air receivers.
Compressed air treatment with a desiccant dryer (down to -70 °C pressure dew point)

For air mains subject to sub-zero temperatures:
- Dairies, breweries
- Food and semi-luxury food production
- Very clean conveying air, chemical plants

Pure air and cleanroom technology
- Pharmaceutical industry
- Weaving machines, photo labs
- Paint spraying
- General works air, high-grade sand blasting
- Shot blasting
- Low-grade shot blasting
- Conveying air for waste water systems
- No quality requirements

For air mains subject to fluctuating air demand:
- Dairies, breweries
- Food and semi-luxury food production
- Very clean conveying air, chemical plants

Pure air and cleanroom technology
- Pharmaceutical industry
- Weaving machines, photo labs
- Paint spraying
- General works air, high-grade sand blasting
- Shot blasting
- Low-grade shot blasting
- Conveying air for waste water systems
- No quality requirements

Choose the required grade of treatment according to your field of application:

Examples: Selection of treatment classes to ISO 8573-1

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>Solids</th>
<th>Water/Condensate</th>
<th>Oil</th>
<th>Bacteria</th>
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<td>Upon request</td>
<td>Upon request</td>
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</table>

For sterile compressed air

For adsorption of oil vapours

- FST = Sterile filter
- FE = Micro-filter
- FD = Particulate filter
- AMCS = Air-main charging system

Contaminants:
- Solids
- Water/Condensate
- Oil
- Bacteria

Degree of filtration:

<table>
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<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<tbody>
<tr>
<td>Maximum particle size</td>
<td>Maximum particle concentration</td>
<td>Pressure dew point</td>
<td>Total oil content</td>
</tr>
<tr>
<td>µm</td>
<td>mg/m³</td>
<td>(μg/g)</td>
<td>mg/m³</td>
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<tr>
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<td>90</td>
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Explanation:
- THNF = Bag filter
- ZK = Centrifugal separator
- ED = Eco Drain
- FC = Pre-filter
- FE = Micro-filter
- FF = Micro-filter
- FG = Activated carbon filter
- FFG = Activated carbon and micro-filter combination
- DD = Desiccant dryer
- ACT = Activated carbon adsorber
- FST = Sterile filter
- Aquamat = Condensate treatment system
- AMCS = Air-main charging system

Compressed air treatment using a refrigeration dryer (+3 °C pressure dew point)

www.kaeser.com – e-mail: productinfo@kaeser.com

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www.kaeser.com – e-mail: productinfo@kaeser.com

*In refrigeration dryer, FE micro-filters are optional for TG to TI series dryers.

[Explanation of symbols and values provided in the diagram.]