KAESER COMPRESSORS®

# Rotary Screw Compressors

**DSDX Series**

With the world-renowned SIGMA PROFILE

Flow rate up to 34.25 m³/min, Pressure up to 15 bar

**www.kaeser.com**

DSDX series

# For optimum efficiency

KAESER KOMPRESSOREN pushes the boundaries of compressed air efficiency and availability once again with its latest generation of **DSDX** series rotary screw compressors. The intelligent fusion of established basics and innovative detailed solutions in system design not only enhances ease of operation and maintenance, but also gives these rotary screw compressors their distinctive modern appearance.

## DSDX – The multi-saver

Delivering improved specific package input power, the flow-optimised and further-refined SIGMA PROFILE rotors provide the basis for the compressor's world-renowned energy efficiency. Power consumption is reduced still further through the use of highly efficient IE4 drive motors and KAESER's loss-free 1:1 direct transmission of motor power to the airend. Moreover, the radial fan meets the efficiency requirements for fans in accordance with Directive (EU) 327/2011. Last but not least, the advanced SIGMA CONTROL compressor controller achieves additional energy savings by minimising cost-intensive idle times through a variety of selectable control mode options, e.g. Dynamic control.

## Service-friendly = Economical

The distinctive, eye-catching exterior system design is complemented by intelligent internal component layout for even greater cost efficiency. For example, all service and maintenance parts are directly accessible from the front, which not only saves time (and therefore money), but also increases compressed air system availability.

## Perfect for compressed air stations

DSD series rotary screw compressors are the perfect partners for high-efficiency industrial compressed air stations. The internal SIGMA CONTROL compressor controller offers various communications interfaces (e.g. Ethernet), which, when connected within the KAESER SIGMA NETWORK, make seamless communication with the SIGMA AIR MANAGER 4.0 compressed air management system or in-house centralised control technology easier, safer and more efficient than ever before.

## Electronic Thermal Management

Powered by an electric motor, the sensor-controlled temperature regulating valve integrated into the cooling circuit is the heart of the innovative Electronic Thermal Management (ETM) system. The SIGMA CONTROL compressor controller monitors the intake and compressor temperature to ensure that condensate formation is reliably prevented, even at high humidity levels. ETM dynamically controls the fluid temperature, which increases energy efficiency when fluid temperatures are low. When DSDX machines are equipped with heat recovery, a second ETM system is fitted. This enables heat recovery function to be better adapted to the customer's exact requirements.

Up to
96 %
usable for heating

## Why choose heat recovery?

In fact, the question should be: Why not? Ultimately, up to 100% of the (electrical) drive energy supplied to any rotary screw 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 significantly improves the company's overall energy balance.



# Service-friendly

Made in Germany

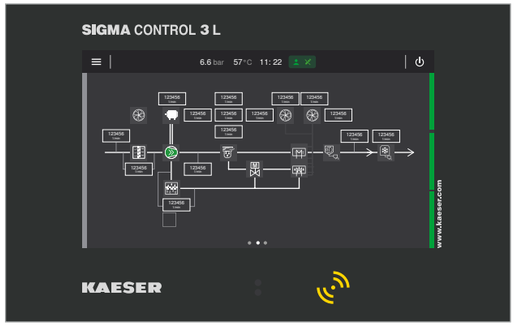
Image: DSDX 305, air-cooled

DSDX series

# Energy savings in every detail

## Save energy with the SIGMA PROFILE

At the heart of every DSDX system lies a premium-quality airend featuring the energy-saving SIGMA PROFILE. KAESER airends are equipped with flow-optimised rotors, which contribute significantly to the complete system's class-leading specific package input power.




## SIGMA CONTROL controller

Comprehensive overview of components and assemblies – including live values in real time. Intuitive icons show current system health status. Detailed views and settings options open at the click of a button. Clear visibility of the air, oil, cooling water and heat recovery circuits guarantees a pinpoint overview and optimal control.

## IE4 – Energy-saving motors

It goes without saying that every KAESER DSDX series compressor features a highly efficient, energy-saving IE4 drive motor.

## Correct temperature assured

The innovative Electronic Thermal Management (ETM) dynamically controls fluid temperature for reliable prevention of condensate formation. This enhances energy efficiency, for example, by enabling heat recovery to be precisely tailored to meet customers' exact requirements.

DSDX series

# Efficient in every way

## Dependable condensate pre-separation

Integrated as standard, the KAESER axial centrifugal separator with electronic ECO-DRAIN condensate drain provides an exceptionally high degree of separation (> 99%) with minimal pressure loss. Dependable and energy-efficient condensate separation is therefore assured, even at high ambient temperatures and humidity.

## Eco-friendly fluid filters

The eco-filter elements housed in the aluminium fluid filter enclosure are “metal-free”. They can therefore simply be disposed of thermally at the end of their service life.

## Service-friendly

Just like the air filter, which is simple to change from the front of the unit, all other maintenance components are also easy to access. Quicker maintenance and service tasks reduce operating costs and increase availability.

## External lubrication

Electric motors must be lubricated whilst running. On DSDX compressors, service personnel can perform this task safely from outside the machine. This applies to both the compressor drive motor and the fan motors.

DSDX series

# Clever cooling for significant savings

## Low operating temperature

Fans with variable-speed motors are thermostat-controlled to generate only the exact amount of cooling air required for low operating temperatures. This significantly reduces the overall energy demand of DSDX rotary screw compressor systems.

## Low compressed air temperature

Effective aftercooling helps to maintain a low compressed air discharge temperature. In combination with the centrifugal separator, this ensures the removal of large amounts of condensate, which is then drained off without energy loss via the electronically controlled ECO-DRAIN. This in turn reduces the burden on downstream treatment components.

## Coolers cleaned from the outside

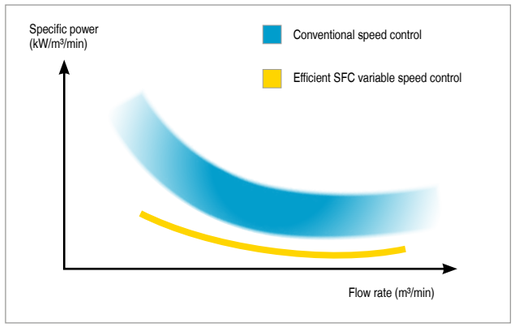
Unlike internal radiators, the externally mounted coolers on all DSDX systems are easy to access and simple to clean. Operational reliability and availability are therefore enhanced, as contaminant build-up is easily spotted.

## High residual exhaust air thrust

The integrated radial fans are significantly more efficient than axial fans and provide high residual thrust. This generally enables hot exhaust air to be directly ducted away without need of an auxiliary fan.

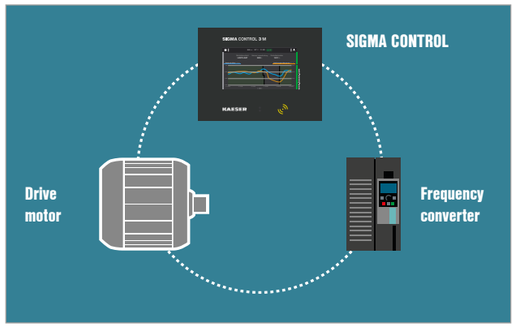
DSDX SFC series

# Compressor with variable-speed drive




## Optimised specific package input power

In every compressed air station, the variable-speed rotary screw compressor is the system with the highest load. DSDX SFC models are therefore designed to provide maximum efficiency without running at extreme speeds. This saves energy, maximises service life, and enhances reliability.




## SIGMA CONTROL: Optimum efficiency

The combination of a perfectly matched frequency converter, drive motor, and controller enables a high degree of efficiency across a broad operating range, and also serves to minimise machine vibrations. Thanks to the thermally optimised control cabinet, operation in ambient temperatures up to +45 °C is no problem.

## Separate SFC control cabinet

A separate control cabinet protects the SFC frequency converter from compressor exhaust heat. A dedicated fan keeps operating temperatures in the optimum range to ensure maximum performance and service life for the SIGMA FREQUENCY CONTROL.

## EMC-certified complete system

It goes without saying that the SFC control cabinet and SIGMA CONTROL controller are tested and certified to EMC Directive EN 55011 for Class A1 industrial power supplies, both as individual components and as a complete system.

**SCAN**

Scan the QR code for more information about **heat recovery**.

*http://www.kaeser.com/products/rotaryscrewcompressors/heatrecovery/*



Heat recovery

# Energy from compression

Up to 96 % usable for heating

## Heat recovery simply makes sense

100% of the electrical drive energy supplied to a compressor is converted into heat energy. Of that heat, up to 96% can be recovered and reused for heating purposes. Use this potential to your advantage!

## Space heating with hot exhaust air

Heating made simple: thanks to the radial fan with high residual thrust, exhaust heat (hot air) from the compressor can be easily ducted away to spaces that require heating via thermostatic control.

Up to +70 °C heat

## Process, heating and service water

Hot water at temperatures up to 70 °C can be produced from compressor exhaust heat via an optional plate-type heat exchanger system. ETM enables the temperature to be adjusted to the customer's individual requirements. Moreover, heat recovery system activation and deactivation is made possible via the SIGMA CONTROL.

## Systems for hot water usage

The integrated system, comprising a heat exchanger, thermostatic valve and complete pipework, requires no additional space in the machine and can recover 76% of DSDX compressors' total power consumption by using their exhaust heat to generate hot water.

DSDX SFC series

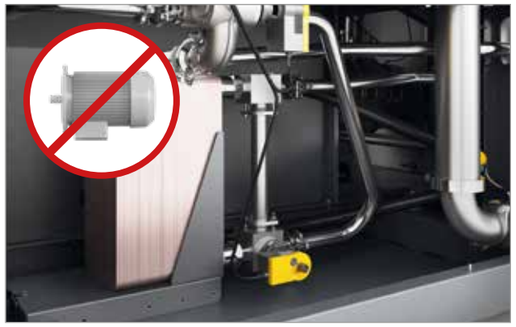
# Heat recovery – Energy-saving, versatile, flexible

## Dual Thermal Management

DSDX systems with integrated heat recovery are equipped with two electromotive temperature control valves (ETM), one for the heat recovery system and one for the machine's oil cooler.

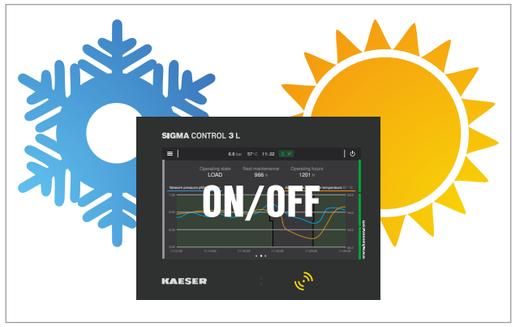
## Flexible temperature

The SIGMA CONTROL controller enables precision setting of the airend discharge temperature for the compressed air needed in order to achieve the desired water discharge temperature from the heat recovery system.



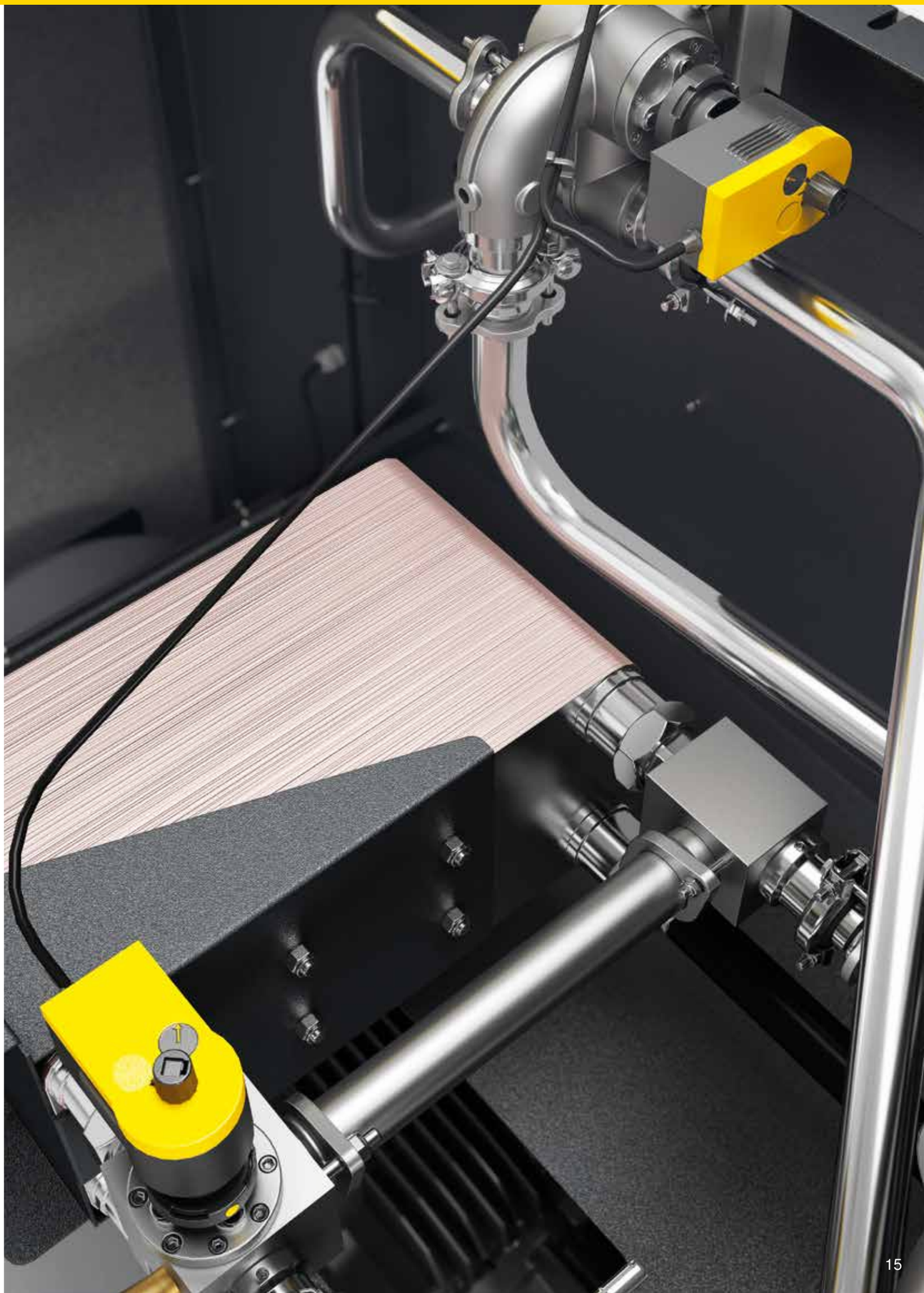
## Save energy with SIGMA CONTROL

If all of the heat energy is drawn off by the heat recovery, the SIGMA CONTROL recognises that cooling is no longer required for the system cooler and, as a result, the fan on the oil cooler is switched off. This results in further energy savings.




## Winter ON – Summer OFF

Should no heat recovery be required, during the summer months for example, it can simply be deactivated via the SIGMA CONTROL: under ETM control, the system immediately starts to operate again at maximum energy efficiency with the lowest possible airend discharge temperature.



# Drive systems

## Fixed speed, fixed flow rate

### Base load DSDX

KAESER compressors are optimally designed for a specific operating speed. They deliver a constant air volume at a fixed motor speed – achieving maximum efficiency. This makes them ideal for applications with constant or slightly fluctuating compressed air demand.

### Your goals, our commitment:

DSDX base load compressors stand out for their functional, durable drive technology and supreme levels of efficiency.

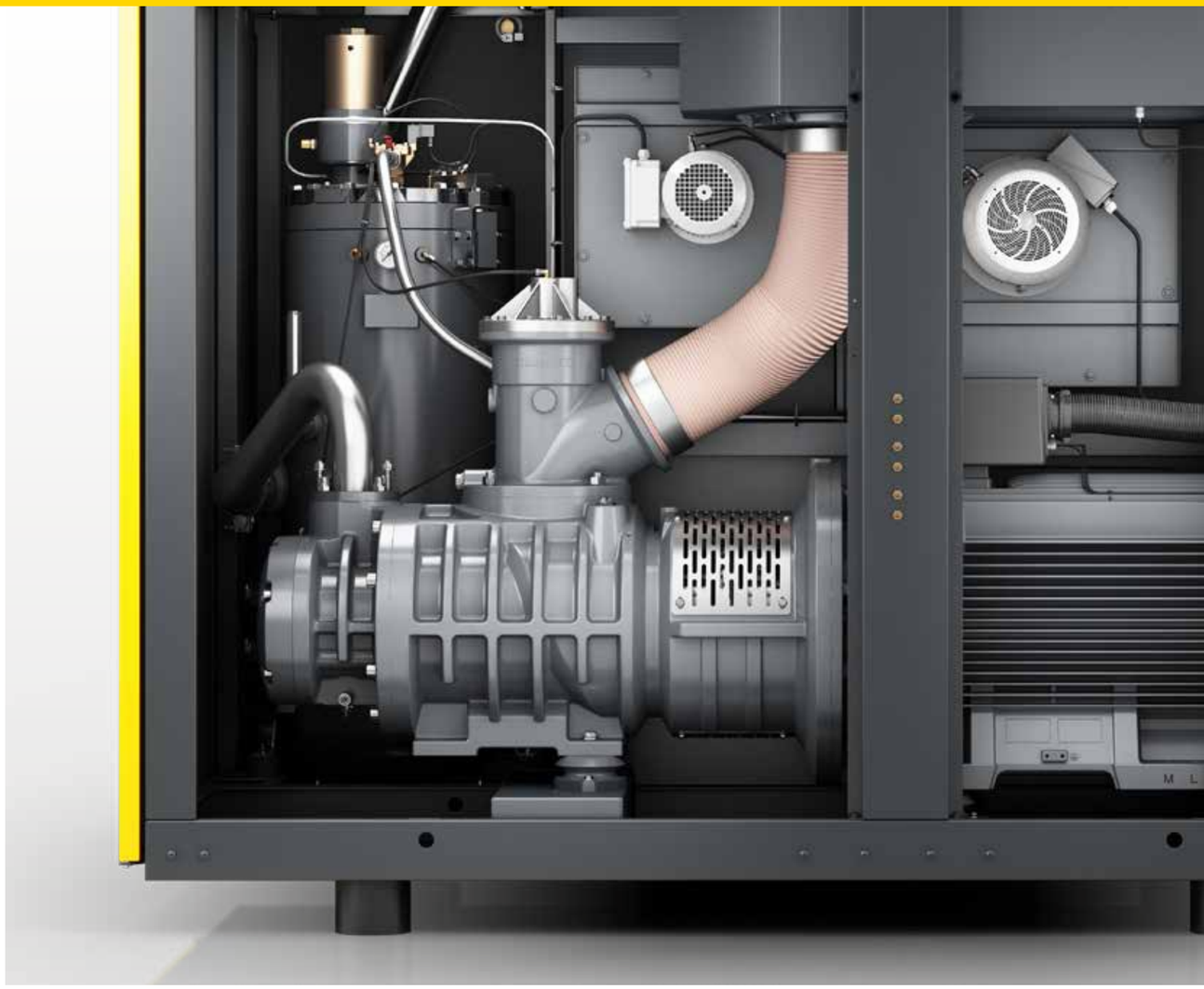
## Variable speed, variable flow rate

### Peak load DSDX

Maximum flexibility and sustainability: thanks to their variable-speed drive motors, DSDX peak load compressors from KAESER always deliver the exact volume of compressed air that is actually required. This makes them particularly efficient in applications with variable compressed air demand.

### Your goals, our commitment:

DSDX peak load compressors stand out with their exceptional flexibility when it comes to delivery volumes, guaranteeing impressive efficiency across the entire delivery range.

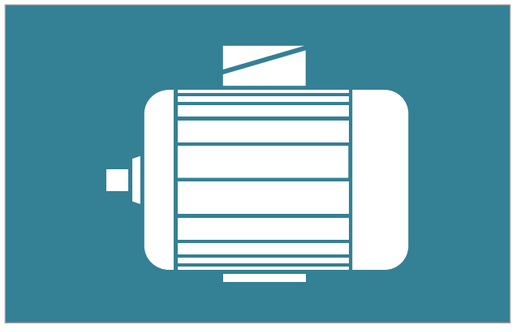


### IE4 SUPER PREMIUM EFFICIENCY

When it comes to base load compressors, IE4 Super Premium Efficiency asynchronous motors ensure best possible efficiency, thanks to their well-proven, durable technology and renowned service-friendliness.

### Perfect teamwork

IE4 motors guarantee energy-efficient operation whilst at the same time fulfilling European efficiency requirements. When combined with SFC technology, speed is precisely adjusted according to compressed air requirement, thereby reducing idle times and energy costs.



### Sustainable and service-friendly

The IE4 asynchronous motors fitted by KAESER are designed to conserve resources. High-quality electrical steel and optimised windings reduce material use and enhance efficiency. This makes the drive not only highly durable, but also easy to service.

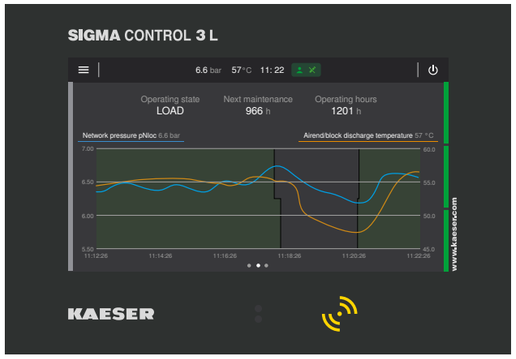
### Efficient and economical

Super Premium Efficiency motors deliver high efficiency levels throughout their entire speed range. This helps to save energy and therefore costs, even during partial load operation.

SIGMA CONTROL internal compressor controller

# SIGMA CONTROL

Intelligent, future-oriented, and efficient – the integrated SIGMA CONTROL compressor controller represents the future of cutting-edge compressed air systems. With its innovative platform concept for hardware and software, KAESER has set new standards in the control of stationary compressors. The SIGMA CONTROL not only boosts energy efficiency, but also enhances reliability and simplifies operation, whilst the touch display places intuitive control right at your fingertips. Clear visualisations provide an optimal overview of machine status, operating data, and maintenance information at all times. Fast navigation takes you directly to the key functions – no lengthy scrolling or searching required.



## Maximum control with KAESER Connect

With our KAESER Connect app, you always have an eye on your compressor. All values are displayed in real time, allowing you to remain continuously informed about the current status of your compressed air system. Push notifications keep you up to speed with developments: important updates, KPIs, maintenance counter information, and machine states are delivered directly to your mobile device. The machine report provides even more transparency and can be sent quickly and easily to your smartphone or E-mail. This allows you to manage your compressed air system efficiently and comfortably, with maximum security – wherever you are.

## Future-proof

Modular system architecture with universal, configurable IoT interfaces enables flexible adaptation to new requirements and technologies.

## Maximum dependability

Smart maintenance planning, early detection of deviations during operation, and detailed status messaging ensure reliable and interruption-free function.

## Greater efficiency

Intelligent control significantly reduces the energy consumption of your compressed air system.

## Comprehensive compatibility

Compatible with all KAESER compressors, whether current or previous models.



SIGMA AIR MANAGER 4.0 compressed air management system

# SIGMA AIR MANAGER 4.0

Adaptive, efficient and networked: demand-oriented compressed air management takes on a whole new meaning with the SIGMA AIR MANAGER 4.0. This advanced master controller coordinates operation of multiple compressors, as well as dryers or filters, with exceptional efficiency. A patented, simulation-based optimisation process determines future demand based on past compressed air consumption profiles. Thanks to networking of all components in the compressed air station via this intelligent master controller and the secure KAESER SIGMA NETWORK, comprehensive monitoring, energy management and predictive maintenance are all possible.

# The foundations of product development

KAESER sets new standards in dependability, efficiency and sustainability – and we are not content to stop there. We refine our products and services continuously, with one objective: achieving ever greater energy efficiency, best possible compressed air availability and optimum cost efficiency for our customers. KAESER products are designed not only to be highly efficient during operation; energy consumption is also minimised as far as possible during the production process. When it comes to our own investments and purchasing, we prioritise the acquisition of energy-efficient products and services. KAESER innovations help to significantly lower energy consumption and reduce operating costs. They also contribute to the preservation of resources and the reduction of emissions. With our energy-efficient solutions, we help our customers to achieve their own sustainability and environmental protection goals.
True to the KAESER philosophy of “More compressed air for less energy”, our products not only operate with exceptional cost efficiency and eco-friendliness, but also minimise the use of valuable environmental resources throughout production, distribution, and service.

## RETHINK

### Think and rethink anew

Sustainable product development requires new approaches and ways of thinking.

KAESER provides targeted Design Thinking training for employees at the Hasso Plattner Institute, driving new and innovative approaches to product development.

## RESEARCH

### Develop knowledge

KAESER has continuously advanced its expertise in compressed air technology for over 100 years.

Today, cutting-edge simulation and calculation tools, together with the validation of prototypes, provide the basis for the acquisition of knowledge.

This in turn establishes the basis for a highly efficient, dependable and resource-friendly compressed air supply.

## REDUCE

### Reduce resource consumption

The highest resource consumption in compressed air technology occurs over long-term operation.

Accordingly, the compressed air supply must be as energy-saving as possible. For KAESER, efficiency is the ultimate goal.

## REPAIR

### Maintenance-friendly design

Maintenance-friendly design and repairability are evaluated and optimised by KAESER’s Service Technicians during the development process.

# Equipment

## Complete system

Ready to operate, fully automatic, sound insulated, vibration damped, all panels powder coated; can be used in ambient temperatures up to +45 °C; service-friendly design: bearings for drive and fan motors can be relubricated externally

## Airend

Genuine KAESER single-stage rotary screw airend with energy-saving SIGMA PROFILE rotors and cooling-fluid injection for optimised rotor cooling; 1:1 direct drive

## Cooling fluid / air circuit

Dry-air filter with pre-separation, intake silencer, pneumatic inlet and venting valve, cooling fluid separator tank with three-stage separation system; safety valve, minimum pressure check valve, Electronic Thermal Management (ETM) and Eco fluid filter in cooling circuit, fluid and compressed air aftercooler (air-cooled as standard); two fan motors (one with variable speed control); KAESER centrifugal separator with electronically controlled, energy-saving condensate drain featuring zero pressure loss; piping and centrifugal separator constructed from stainless steel

## Water-cooled version (option)

Fluid and compressed air aftercooler designed as water-cooled plate-type or optionally as shell-and-tube heat exchanger

## Optimised separator system

The combination of flow-optimised pre-separation and special separator cartridges results in minimal residual fluid content of < 2 mg/m³ in the compressed air; this separator system requires less maintenance

## Heat recovery (option)

Optionally available with integrated fluid-water plate-type heat exchanger and equipped with additional thermostatic valve for fluid; external connections

## Electrical components

IE4 Super Premium Efficiency drive motor with three Pt100 winding temperature sensors for motor monitoring, IP54 control cabinet, cabinet ventilation, automatic star-delta protection combination, overload relay, control transformer; variable-speed fan motor on oil cooler; SFC version features frequency converter for drive motor

## SIGMA CONTROL

Modular system with control unit and integrated inputs/outputs, designed for use with KAESER rotary screw compressors, traffic-light operating state display, fully automatic monitoring and control; Dual, Quadro, Dynamic, and Vario control modes, time switch for compressor functions (On, Off) or external outputs, base load sequencing function for operation of two compressors, high-performance processor hardware; all components designed for industrial conditions, capacitive touchscreen with optical bonding, Time-of-Flight and other internal sensors, SD card slot for updates, USS bus communications module adapter for frequency converter, RFID reader, Ethernet interface for connection to KAESER SIGMA NETWORK

Connection to centralised control systems available via optional communications modules for: Profibus DP, Modbus TCP, Profinet, and DeviceNet

## Efficient Dynamic control

The Dynamic control uses the motor winding temperature to calculate run-on times. This reduces idle times and cuts energy consumption. SIGMA CONTROL offers additional control modes if required.



# Technical data

## Standard version

| Model | Working pressure bar | Flow rate, *) complete system at working pressure m³/min | Max. gauge pressure bar | Drive motor nominal power kW | Dimensions W x D x H mm | Compressed air connection | Sound pressure level **) dB(A) | Weight kg |
|---|---|---|---|---|---|---|---|---|
| DSDX 245 | 7.5 | 25.15 | 8.5 | 132 | 2690 x 1910 x 2140 | DN 80 | 74<br>68 ***) | 3950 |
| | 10 | 20.4 | 12 | | | | | |
| | 15 | 16.15 | 15 | | | | | |
| DSDX 305 | 7.5 | 30.55 | 8.5 | 160 | 2691 x 1910 x 2140 | DN 80 | 75<br>68 ***) | 4450 |
| | 10 | 24.7 | 12 | | | | | |
| | 15 | 16.15 | 15 | | | | | |

## SFC version with variable-speed drive

| Model | Working pressure bar | Flow rate, *) complete system at working pressure m³/min | Max. gauge pressure bar | Drive motor nominal power kW | Dimensions W x D x H mm | Compressed air connection | Sound pressure level **) dB(A) | Weight kg |
|---|---|---|---|---|---|---|---|---|
| DSDX 245 SFC | 7.5 | 5.57 - 27.17 | 8.5 | 132 | 2940 x 1910 x 2140 | DN 80 | 74<br>68 ***) | 3950 |
| | 10 | 5.58 - 23.35 | 12 | | | | | |
| | 15 | 4.95 - 19.27 | 15 | | | | | |
| DSDX 305 SFC | 7.5 | 6.85 - 33.03 | 8.5 | 160 | 2940 x 1910 x 2140 | DN 80 | 74<br>68 ***) | 4450 |
| | 10 | 5.35 - 28.46 | 12 | | | | | |
| | 15 | 5.18 - 24.01 | 15 | | | | | |

*) Flow rate, complete system as per ISO 1217: 2009, Annexe C: Absolute 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)
***) Sound pressure level for water-cooled version

**More compressed air for less energy**

# The world is our home

As one of the world's largest manufacturers of compressors, blowers and compressed air systems, KAESER KOMPRESSOREN is represented throughout the world by a comprehensive network of wholly owned subsidiaries and authorised distribution partners in over 140 countries.

By offering innovative, efficient and reliable products and services, KAESER KOMPRESSOREN's experienced consultants and engineers work in close partnership with customers to enhance their competitive edge and to develop progressive system concepts that continuously push the boundaries of performance and technology. Moreover, decades of knowledge and expertise from this industry-leading systems provider are made available to each and every customer via the KAESER group's advanced global IT network.

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

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