

# Pre-designed KK&K<sup>®</sup> turbocompressors

The comprehensive product range from 600 up to 600,000 m<sup>3</sup>/h



# Pre-designed turbocompressors to meet the needs of the metallurgical, oil and gas and chemical industries.

## KK&K: A full range of world-class industrial turbocompressors

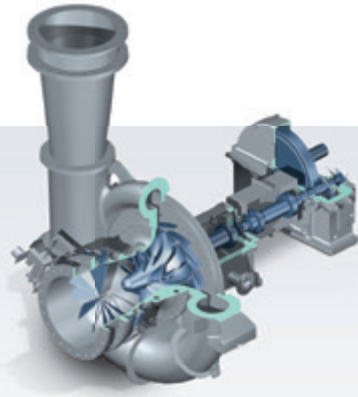
Howden offers a full range of pre-designed KK&K turbocompressors to meet the needs of the metallurgical, oil & gas, and chemical industries. Single stage compressors and blowers with separate gearbox, integrated gearbox, or direct coupled can be matched with a range of drivers – steam turbine or electric motor – in a solution that matches the needs of each unique customer. As one of the leading turbo machinery manufacturers with over 100 years experience and continuous development, and a fleet of more than 4,000 installed turbo compressors and blowers, we are a prime partner for your business.

With our unrivalled competence in compressor unit solutions from a single source, Howden offers a comprehensive range of pre-designed KK&K turbocompressors up to 600,000 m<sup>3</sup>/h, with the flexibility to address the specific requirements for your application.

Our standardised units with modular design ensure low life cycle and investment cost and short delivery times. Metallurgical, chemical and petrochemical plants as well as refineries are amongst the most common applications for our compression solutions.



Type	Gas flow (m <sup>3</sup> /h)	50,000	100,000	150,000	200,000	250,000	300,000	350,000	400,000	450,000	500,000	550,000	600,000
SF series	15,000 – 600,000 m <sup>3</sup> /h	█	█	█	█	█	█	█	█	█	█	█	█
SL series	15,000 – 400,000 m <sup>3</sup> /h	█	█	█	█	█	█	█	█				
R series	600 – 350,000 m <sup>3</sup> /h	█	█	█	█	█	█	█					
SFG series	5,000 – 300,000 m <sup>3</sup> /h	█	█	█	█	█	█						
ST series	5,000 – 150,000 m <sup>3</sup> /h	█	█	█									



## SF

(Formerly known as SFO or SFP series)

### Single stage turbo compressors with heavy duty design, up to 15 MW

The SF series is a range of single-stage turbo compressors with semi-open impellers. The rotor design features an overhung impeller, supported in a separate bearing pedestal with highest rigidity and optimised rotodynamic behaviour. Gas flows up to 600,000 m<sup>3</sup>/h can be handled. This machine range serves the most demanding duties in its industries, even in harsh environments. It sets the benchmark for safety and reliability, at lowest lifecycle costs, in favour of their owners. With package weights of over 50 tons, this machine is the most heavy duty equipment of its kind on the market. This compressor range is optionally available in a design compliant to API Std 617.

#### Technical data

Flow rates from 15,000 up to 600,000 m<sup>3</sup>/h

Pressure ratio up to 3.5

Impeller diameter up to 2,240 mm

Driver of your choice

#### Key features

Highest aerodynamic efficiency

Widest performance envelope on the market

Minimum cooling water requirements

Modular design principle

Standardised components

Wide range of proven aerodynamic impeller designs

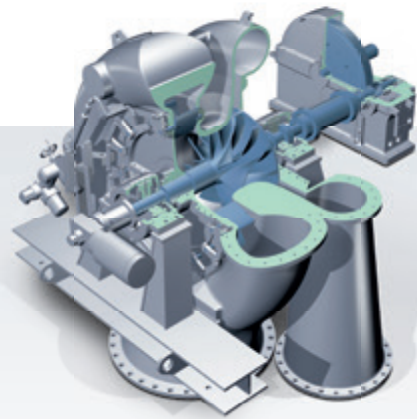
Flow control via inlet guide vane unit, variable diffusor guide vanes, speed control or combinations

Backward curved impellers or radial tip with three-dimensional blades

Excellent wear resistance over the complete impeller

Maintenance friendly design

OEM packages with KK&K steam turbine available



## SL

(Formerly known as SL/SLO series)

### Single stage turbocompressors with heavy duty between-bearings design, for coke gas service

The SL series is a range of single stage turbo compressors with semi-open impeller design. The impeller is mounted between the bearings. This series is especially designed for coke gas service. Gas flows up to 400,000 m<sup>3</sup>/h can be handled. This machine range serves the most demanding duties in cokerries all over the world and provides top class safety and reliability at low lifecycle costs to their owners.

#### Technical data

Flow rates from 15,000 up to 400,000 m<sup>3</sup>/h

Pressure ratio up to 1.45 (coke gas service)

Discharge pressure up to 2 bar

Impeller diameter up to 1,800 mm

Driver of your choice

#### Key features

Impeller being mounted between bearing

Minimal radial loading

Modular design principle

Standardised components

Wide range of proven aerodynamic impeller designs

Flow control via inlet guide vane unit or speed control

Maintenance friendly design

OEM packages with KK&K steam turbines available

Dual drive option available (Electric motor + KK&K steam turbines)





## R

(Formerly known as SCHIELE – R series)

### Single stage turbo blowers with heavy duty design

The R series is a range of single-stage turbo blowers with closed-type impellers in a fabricated, modular design, allowing optimum adaption to nearly all process requirements. This machine range derives from the legacy Schiele brand. Gas flows up to 350,000 m<sup>3</sup>/h can be handled. This machine range serves demanding duties in process gas or air service, even in harsh environments. It provides state-of-the-art safety and reliability at lowest lifecycle costs to their owners. It is available in direct drive configuration, as well as with speed transmission gear, or integral gear. This machine range is optionally available in a design compliant to API Std 673, 617 or 672.

#### Technical data

Flow rates from 600 up to 350,000 m<sup>3</sup>/h

Pressure ratio up to 1.7

Impeller diameter up to 2,240 mm

Driver of your choice

#### Key features

Large variety of impellers, casings and materials

Various shaft seal systems

Different bearing versions and lubrication systems

Flexibility in direction of rotation and discharge nozzle

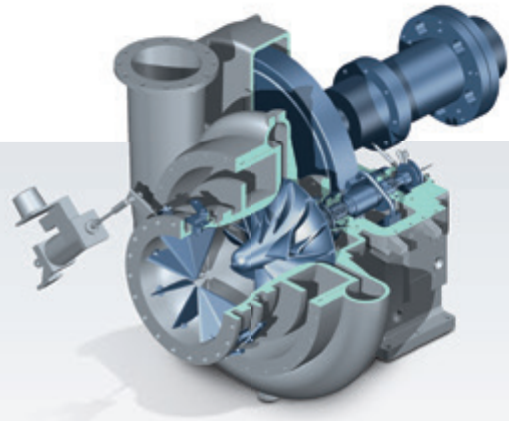
Wide range of proven aerodynamic impeller designs

Flow control via inlet guide vane unit, speed control or combinations

Maintenance friendly design

High efficiencies

OEM packages with KK&K steam turbines available



## SFG

(Formerly known as SFNG, SFOG or SFPG series)

### Single stage turbocompressors with integral gear

The SFG series is a range of integrally geared single-stage turbo compressors with semi-open impellers. The impeller is overhung mounted directly onto the high-speed shaft of the gearbox. Gas flows up to 300,000 m<sup>3</sup>/h can be handled. This machine range serves demanding duties in clean process gas or air service, even in harsh environments. It provides state-of-the-art safety and reliability at lowest lifecycle costs to their owners. This machine range is optionally available in a design compliant to API Std 672 or API Std. 617.

#### Technical data

Flow rates from 5,000 up to 300,000 m<sup>3</sup>/h

Pressure ratio up to 3.5

Discharge pressure up to 50 bar

Impeller diameter up to 1,120 mm

Driver: Electric motor

#### Key features

Highest aerodynamic efficiency

Widest performance envelope on the market

Minimum cooling water requirements

Modular design principle

Standardised components

Integrated lube oil supply system

Wide range of proven aerodynamic impeller designs

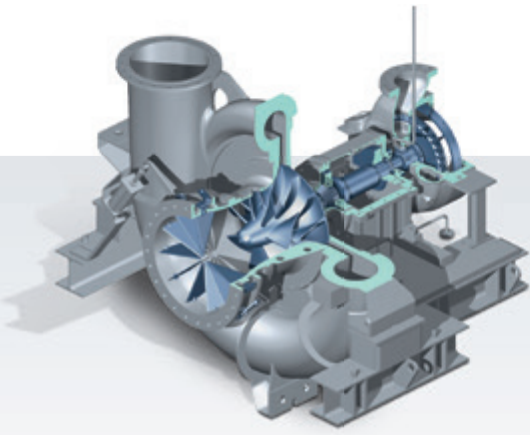
Flow control via inlet guide vane unit, variable diffusor guide vanes, speed control or combination

Backward curved impellers or radial tip with three-dimensional blades

Excellent wear resistance over the complete impeller

Maintenance friendly design





## ST

(Formerly known as ECM = Expansion Compression Module)

### Single stage turbocompressors with integrated steam turbine driver

The ST series is a range of integral turbo compressor / steam turbine- units with single shaft design. This compact design - impeller and turbine wheel are supported on a single rotor stand, with no coupling and gearbox - ensures very low steam consumption, high efficiency, low maintenance requirements and smallest footprint size. Gas flows up to 150,000 m<sup>3</sup>/h can be handled. This machine range serves demanding duties in process gas or air service, even in harsh environments. It provides state-of-the-art safety and reliability at lowest lifecycle costs to their owners, along with minimised initial capital expenditure. This machine range is optionally available in a design compliant to API Std 617 engineering practices and testing requirements.

### Technical data

Flow rates from 5,000 up to 150,000 m<sup>3</sup>/h

Pressure ratio up to 3.5

Impeller diameter up to 900 mm (compressor)

Driver: integrated KK&K steam turbines

### Key features

Highest aerodynamic efficiency

Widest performance envelope on the market

Very low steam consumption

Minimum cooling water requirements

Modular design principle

Integrated lube oil supply system

Wide range of proven aerodynamic impeller designs

Flow control via inlet guide vane unit, and speed control

Backward curved impellers with three-dimensional blades

Excellent wear resistance over the complete impeller

Maintenance friendly design



# Fields of application

Howden's KK&K compressors are designed and manufactured for demanding industrial applications.

### Petrochemicals and refineries

SRU (Sulphur recovery units)

Evaporation (e.g. oil sands – SAGD/Effluent treatment)

### Chemicals

Fertiliser (sulphuric acid)

Evaporation

MA/PA

MMA

Formaldehyde

Chlorine gas (wet)

Various chemical processes

### Metallurgy

Coke oven gas

Sulphuric acid

Converter blower

Ore roasting & processing

**The design of pre-designed turbo compressors meets the Customer's requirements, such as:**

Highest availability

Lowest operating costs

Corrosive gases

Optimised controls

One of the leading turbo machinery manufacturers with over 100 years of experience and continuous development, and a fleet of more than 4,000 installed turbocompressors and blowers; we are a prime partner for your business.



## At the heart of your operations

Howden people live to improve our products and services and for over 160 years our world has revolved around our customers. This dedication means our air and gas handling equipment adds maximum value to your operations. We have innovation in our hearts and every day we focus on providing you with the best solutions for your vital operations.



### Howden Turbo GmbH

Hessheimer Strasse 2  
67227 Frankenthal  
Germany

**Tel:** +49 (0) 6233 85 2578

**Fax:** +49 (0) 6233 85 2139

**Email:** [industrial-compression@howden.com](mailto:industrial-compression@howden.com)

**Web:** [www.howden.com/KKandK](http://www.howden.com/KKandK)



### Revolving Around You™