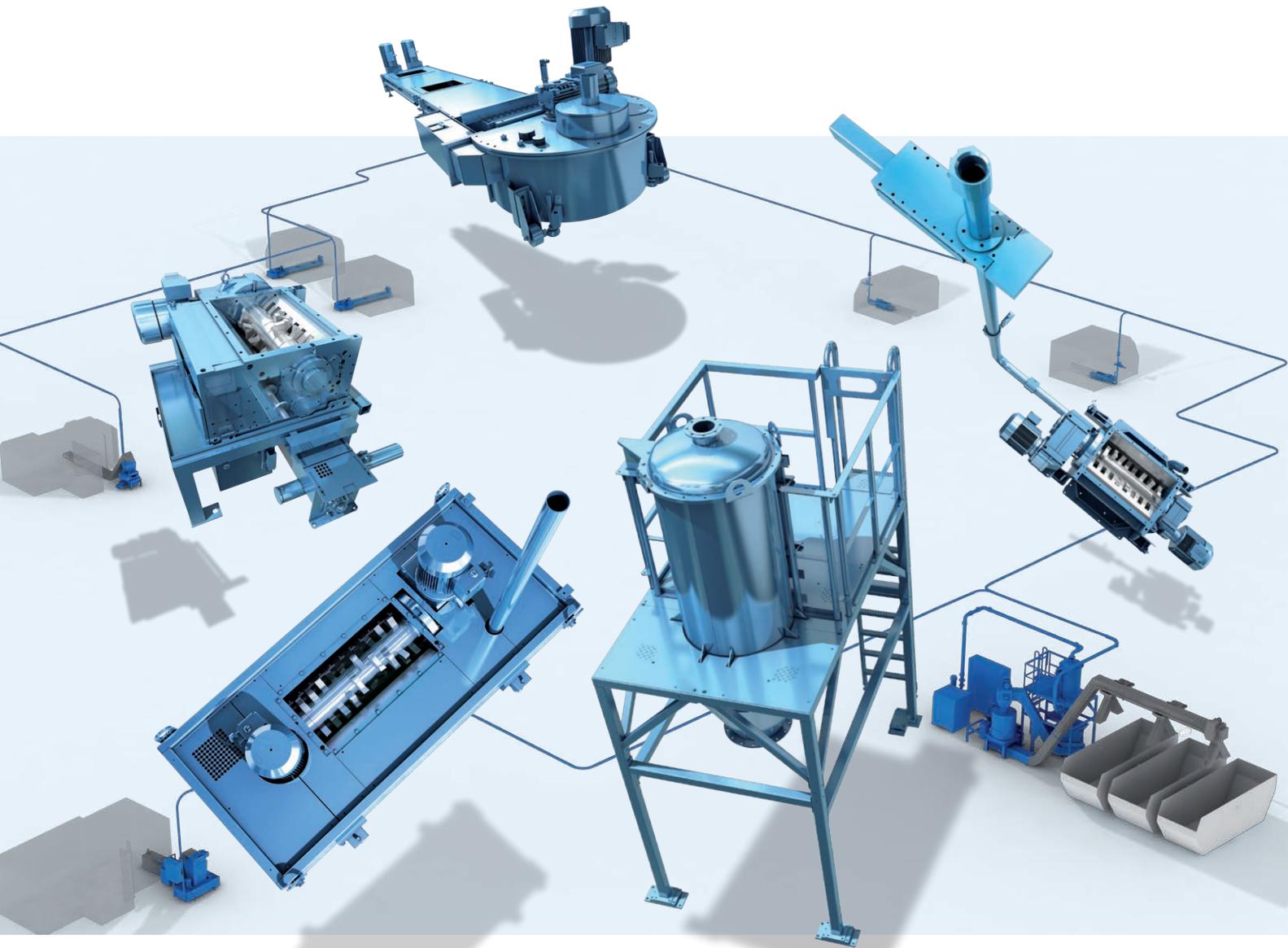


KNOLL
.It works



Central systems

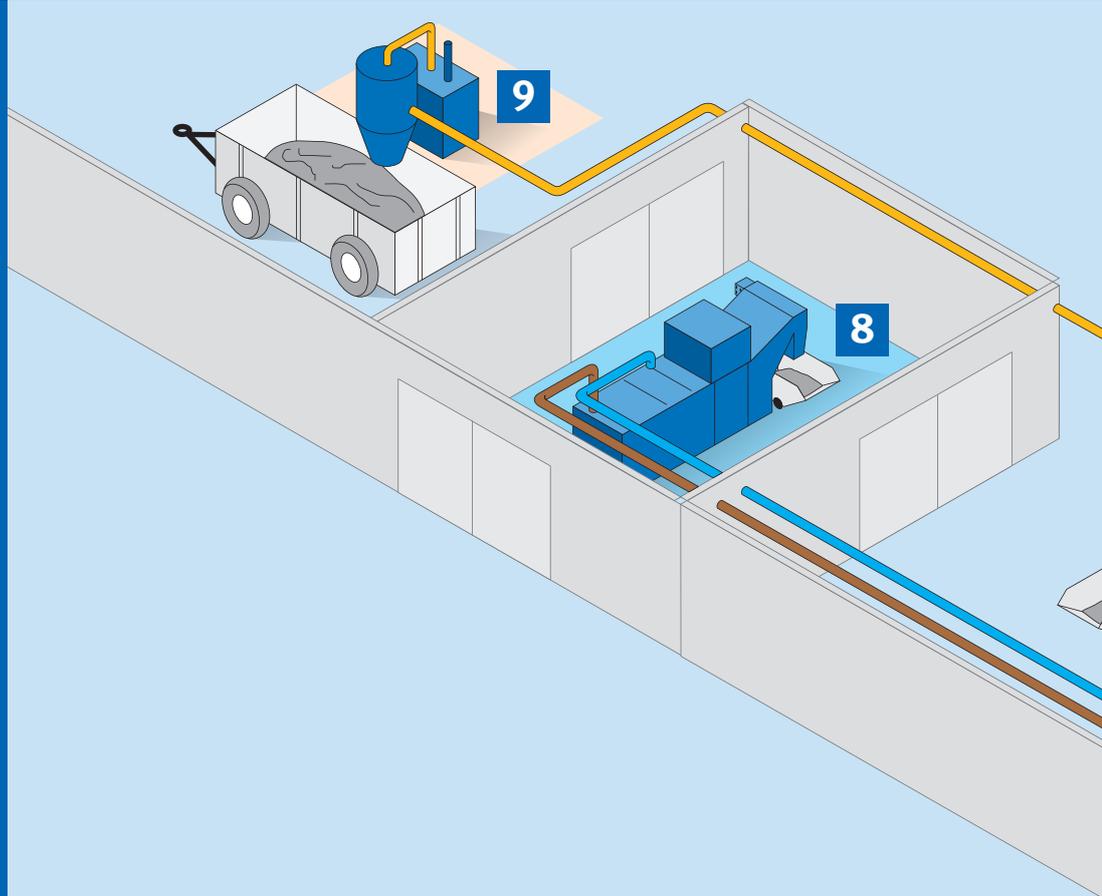
Areas of application

The circulation system is suitable for fully automatic recirculation of chip/cooling lubricant mixture from multiple machine tools to a central separator/filter. The separator/filter supplies the machines with treated cooling lubricant. The system is employed in large production areas with 30 or more machines and as a standalone solution (wet machining).

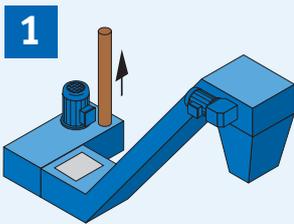
Properties

- Maximum flexibility when setting up or relocating machinery
- Little floor space required due to elevated piping
- No system components in the factory floor
- Little maintenance and care required

Supply.
Transport.
Process.

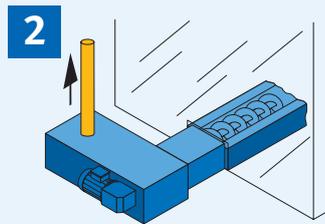


System components



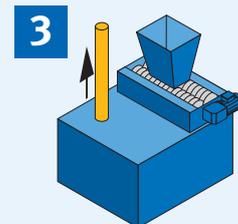
Chip conveyor system

Chip conveyor (a), combinable with pre-separator, tank (g), pumps (c), chip breaker (f) and control system (h)



Integrated chip conveying station, dry

Suction station (e) with chip conveyor (a), combinable with chip reducer (f) and control system (h)



Supplied chip conveying station, dry

Suction station (e), combinable with chip reducer (f) and control system (h) (ideal for retrofitting)

B Suction conveyor system

Areas of application

Vacuum systems are suitable for fully automatic chip transport from multiple processing machines to a central collection point. Ambient air is used as the carrier medium, which transports the dry or slightly moist chips over a conveying distance of up to 560 m. The system can be used in manufacturing areas with a large number of machines (wet and dry machining).

Properties

- Maximum flexibility when setting up or relocating machinery
- Piping easy to relocate, minimal space requirements
- Safe, fast and clean conveyance with long life
- Little maintenance and care required
- A mix of materials (e.g. aluminium, steel or cast iron) is possible on one system

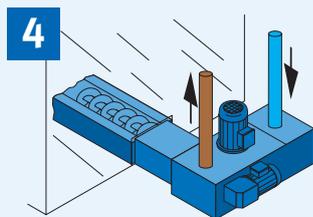
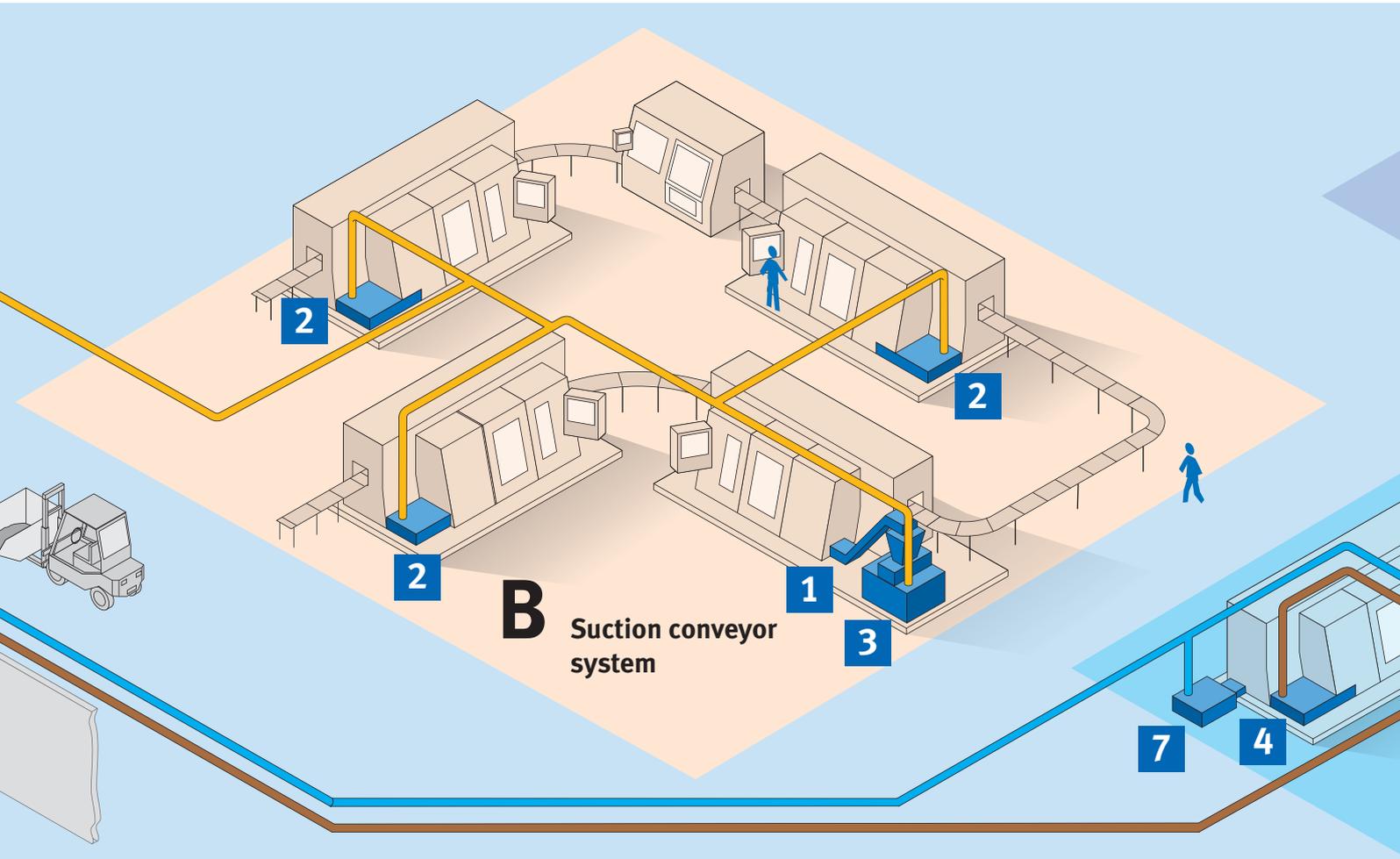
C Conveyor system with collecting conveyor

Areas of application

The rigid conveyor system is suitable for fully automatic transportation of chips from multiple machine tools to a central collection point. The system is used in small and large production areas within a building (dry and wet machining).

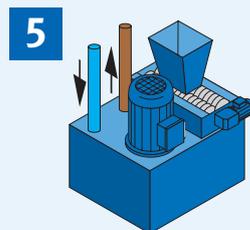
Properties

- Low flexibility when setting up or relocating machinery
- Simple technology
- Little planning required



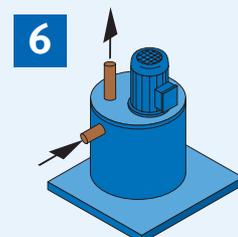
Integrated chip conveying station, wet

Pump back station (d) with chip conveyor (a) and pump (c), combinable with chip reducer (f) and control system (h)



Supplied chip conveying station, wet

Pump back station (d) with tank (g) and pump (c), combinable with chip reducer (f) and control system (h) (ideal for retrofitting)



Lifting station for finishing

Standard pump back station (d) or custom installation with tank (g), pump (c) and control system (h)

D Chip conditioning system

Areas of application

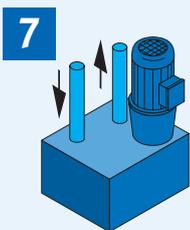
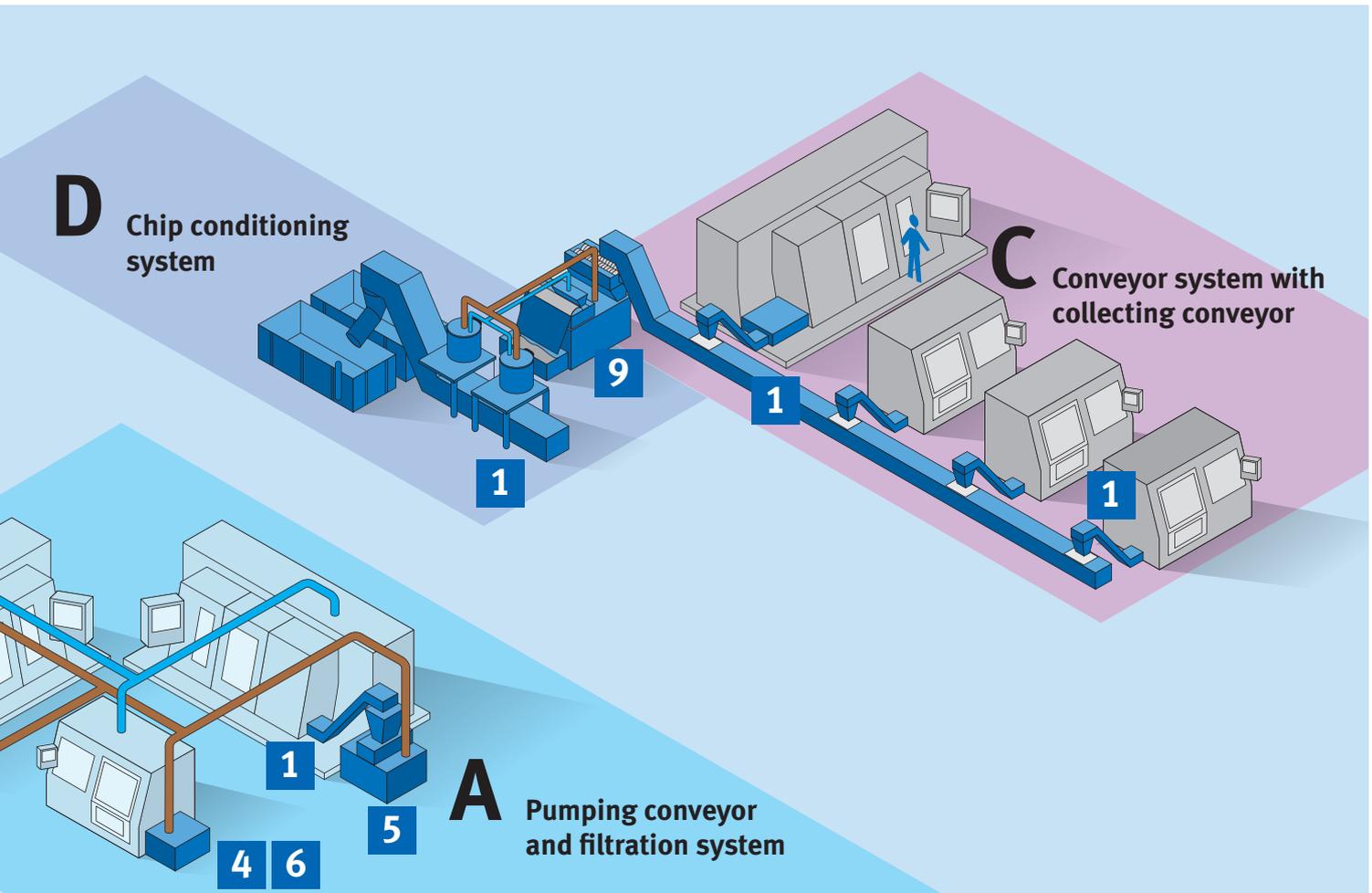
The chip conditioning system is suitable for both semi automatic and fully automatic conditioning of metal chips. Chips are conveyed from the machine tools by automatic conveyor systems or operating personnel with wagons/containers. The system can be used in almost all areas of production in the machining industry. Various materials (e.g. aluminium, steel or cast iron) can also be conditioned via separate systems.

Properties

- Drying of chips is a requirement for safe transportation on public roads
- Volume reduction cuts storage and transportation costs
- Recovery of chips and cooling lubricant conserves the environment and reduces costs

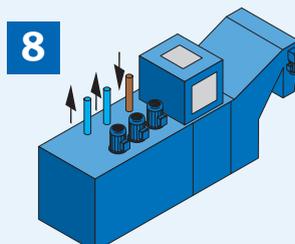
Possible main components

Lifting/tilting device | chip reducer | chip centrifuge | chip conveyor | shake out conveyor | magnetic separation system | briquetting press | cooling lubricant filter and header | control system and wiring | container filling | chip silo | control system



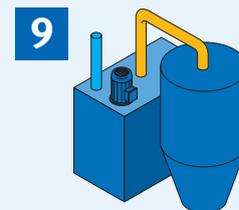
Pressure booster system

Process-adapted cooling lubricants supply in different pressure levels with pumps (c) and control system (h)



Filtration system

Filter/separator (b), combinable with tanks (g), sludge conveyor (a), pumps (c), temperature equaliser, control system (h) and other processing components



Extraction unit

System with chip and dust separator, blower, sluice system, control system (h) and steel construction

The concept for complete solutions tailored to customers' individual needs.



If metal chips and/or cooling lubricants are to be conveyed fully automatically from the machines to a central point and treated, system solutions are required. These are individual systems and components which are interlinked to create a system.

Which system is the most suitable depends on the project requirements. This may be, for example, classical, rigid chip conveying systems (belt conveyors) or modern, flexible, cross-linked bulk goods transportation systems (pumping or suction technology). Halls and machine layout, machining processes, materials, chip volume and length of conveying path, but also the degree of automation, flexibility, environmental stipulations, disposal costs and budgets are a selection of criteria which our planning experts take into consideration in the design of a suitable system.



KNOLL can offer you all the requisite services from project planning and production to commissioning - all from a single source. After that, our service department will be available to ensure that your system operates reliably and cost-effectively. If the system needs converting at any time, KNOLL is the right partner for you.

Product range

a Chip conveyors

Drag link conveyor K
For short chips, small parts and sludge.

Slat-band conveyor S
For long chips, chip balls, wool chips and parts.

Magnetic conveyor M
For short, ferromagnetic chips and small parts (e.g. stampings).

Drag link conveyor SF
For short chips and sludge.

Traction flap conveyor ZK
For long and short broken metal chips.

Coolant cleaning unit SR
For cutting off sedimenting short chips and sludge with a high coolant flow.

b Filters / separators

Cyclone unit F 60
Simple, modular centrifugal separator for separating sedimenting solids from low-viscosity liquids (e.g. emulsions) without filter consumables. Filter performance up to 90 l/min per module.

Fluid centrifuge CA 100
Automatic centrifugal separator for continuous ultrafine filtering of cooling lubricants and other industrial process liquids. Very good price-performance ratio. Max. filter output 120 l/min.

MicroPur® superfine filter
Backflush filter for separating superfine impurities from oils and aqueous solutions. The ideal area of application is the tool grinding of hard metal and HSS. High filtration grade (1-3 µm). Filtration capacity up to 480 l/min.

TURBO filter
Modular backflush filter for treatment of cooling lubricants without filter consumables, usually in combination with a sludge conveyor. Filter performance up to 250 l/min per unit.

Rotating vacuum filter VRF
Backflush filter integrated in sludge conveyors for cleaning of cooling lubricants without filter consumables. Filter performance up to 1000 l/min per unit.

Paper band filter PF
Simple band filter in flat-bed design for cleaning of cooling lubricants with filter fleece. Filter performance up to 1000 l/min per unit.

Compact filter KF
Compact band filter in trough design for cleaning of cooling lubricant with filter fleece. Filter performance up to 600 l/min per unit.

Hydrostat filter HL
Band filter in bevel design for cleaning of cooling lubricant with filter fleece. With simple vacuum technology. Filter performance up to 1000 l/min per unit.

Vacuum filter VL
High-performance band filter in bevel design for fine cleaning of cooling lubricant without filter consumables. With extended vacuum technology, optionally with pre-coating system or filter fleece. Filter performance up to 1500 l/min per unit.

Vacuum filter VLO
High-performance band filter for cleaning of cooling lubricant without filter consumables, for example profile grinding with processing oil. Filter performance up to 900 l/min per unit.

Vacuum filter VLX
High-performance band filter for fine cleaning of cooling lubricant for machine cutting processes, and specifically grinding processes. Max. filter performance 5600 l/min.

C Pumps

Screw pump KTS
Dry and wet installed high-pressure pump for cleaned cooling lubricant, optionally in a highly wear resistant version. Volume flow up to 900 l/min, pressure up to 150 bar.

Screw pump KTSV
Extremely wear resistant high-pressure pump for conveying and dosing free-flowing to high viscosity media in process engineering. Volume flow up to 50 m³/h, pressure up to 150 bar.

Progressing cavity pump MX
Easy-to-service and easy-to-clean hygiene pump for free-flowing to compact and lumpy media in the food, pharmaceutical, paint and chemical industries. Volume flow up to 100 m³/h, pressures up to 10 bar per stage, limiting pressure 80 bar.

Centrifugal pump T
Vertical immersion pump for delivering cooling lubricants and wash water. Volume flow up to 1600 l/min, pressure up to 6 bar, grain size up to 30 mm.

d Pump back/recirculation stations

Pump back station RIK
For integration into machine beds. With pump back tank, screw conveyor(s) and chip reducer (optional). For steel only suitable to a limited extent.

Pump back station RKR
For side installation on single units and transfer lines. With pump back tank, return pump(s) and chip reducer (optional).

Reverse pump station RSR
For side installation on machine tools which produce small amounts of chips, particularly grinders. With pump back tank and return pump(s).

Recirculation station RIP/RIS
Compact disposal and delivery unit designed for installation in special-purpose machine tools, for unmanned transfer of chips to a central separator/filter by means of coolant (RIP version) or suction air (RIS version).

e Extraction stations

Extraction station AT
Simple design with hopper. For medium capacity of short chips and installation under discharge conveyors.

Extraction station AT/SBS
With hopper and screw conveyor. For high capacity of short chips and installation under discharge conveyors.

Suction station AT/SBS/ZVD
With hopper, chip reducer and screw conveyor. For medium and high capacity of long chips and installation under discharge conveyors.

f Chip reducers

Chip reducer ZV + ZVD + ZVDD
For reducing metal and plastic chips. For auxiliary use on machine tools (can also be retrofitted) or at central collection points.

Chip reducer ZH
The chip reducer ZH is a component of the machine-integrated pump-back station RIK. It is installed if longer chips or chip balls are produced during machining operations. After

pumping back, the chips are of the quality necessary for further processing in centrifuges or presses.

Chip reducer ZHV
The chip reducer ZHV is a component of the machine-integrated pump-back station RIK. It is installed if longer chips or chip balls are produced during machining operations and a screw is sufficient for removing the chips. After pumping back, the chips are of the quality necessary for further processing in centrifuges or presses.

g Tanks/containers

- Containers for filter fleece, sludge and chips
- Standardised and machine-customised cooling lubricant tanks
- Project-specific large tanks
- Safety collecting troughs with WHG certification (Federal Law for the Protection of Water)

h Control systems

- Electrical design (EPLAN, ELCAD)
- Programming the PLC control systems and visualisation systems (Siemens, Rockwell, Bosch, Schneider, etc.)
- Switch cabinet construction

Project planning, Engineering, Project management

- Specialist advice, planning and design
- Layout and calculation of complex pipeline networks
- Preparation of project-specific invitations to tender
- Project management
- Customised special designs

Service

- Mechanical and electrical assemblies
- Building site management
- Commissioning
- Process supervision
- Maintenance, servicing
- Plant conversion/expansion
- Retrofit, overhauls
- Training

Accessories

- Chip carriage SWA
- Cooling lubricant temperature control device
- Foreign-oil separator
- Cooling lubricant metering and mixing devices
- Magnetic separators
- Chip centrifuges
- Chip presses
- Lifting/tipping equipment

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