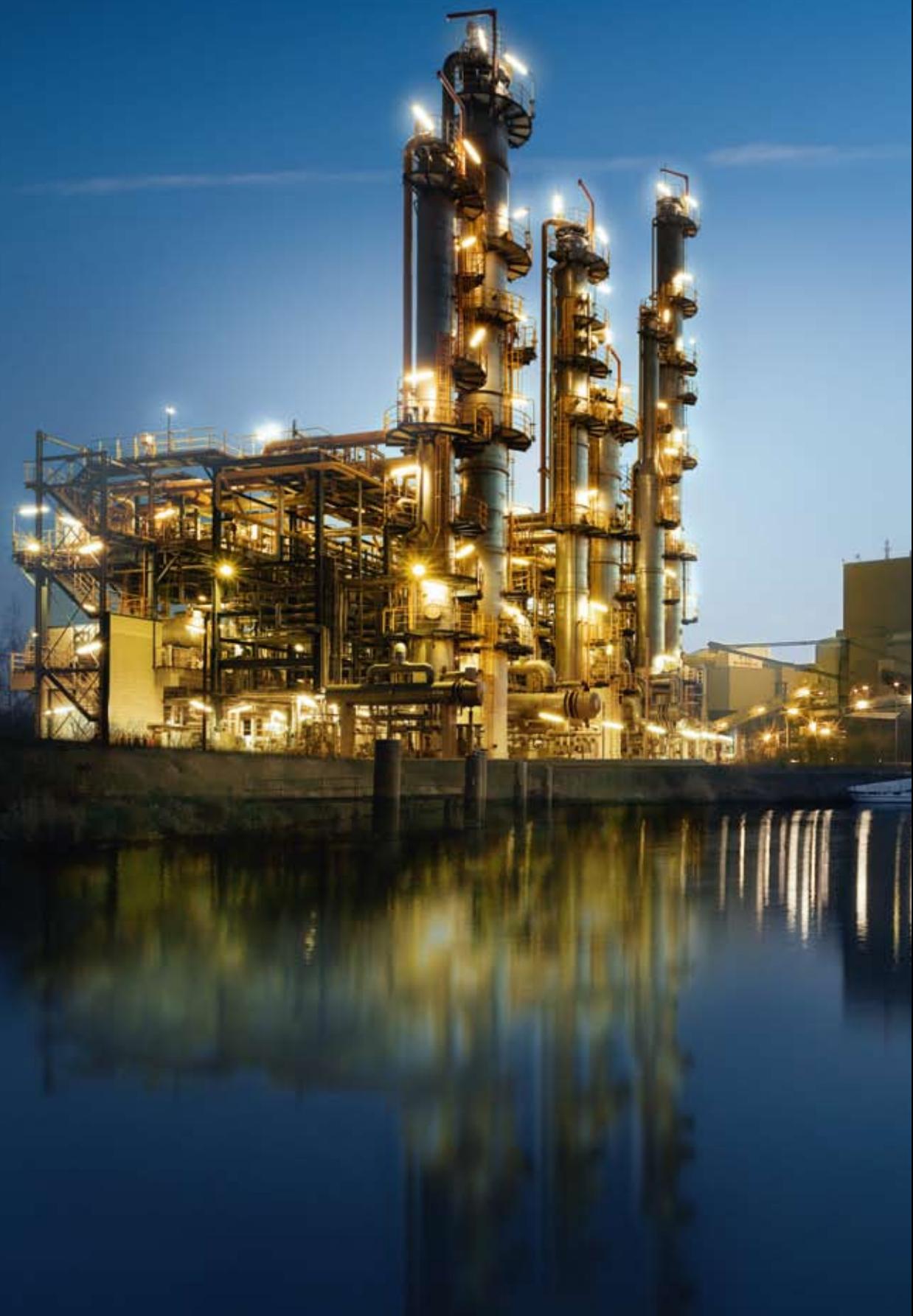


The chemistry is right with KSB.

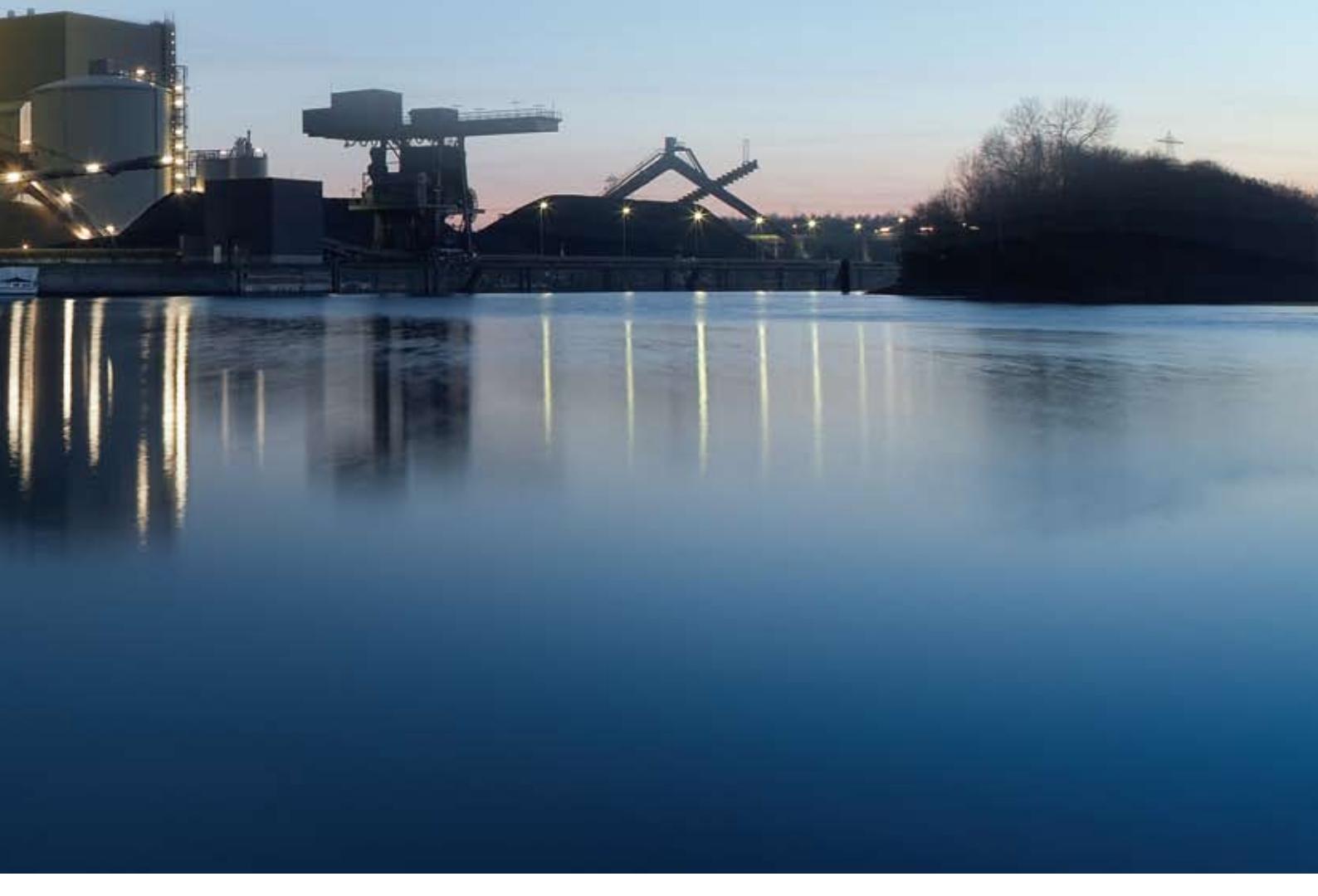


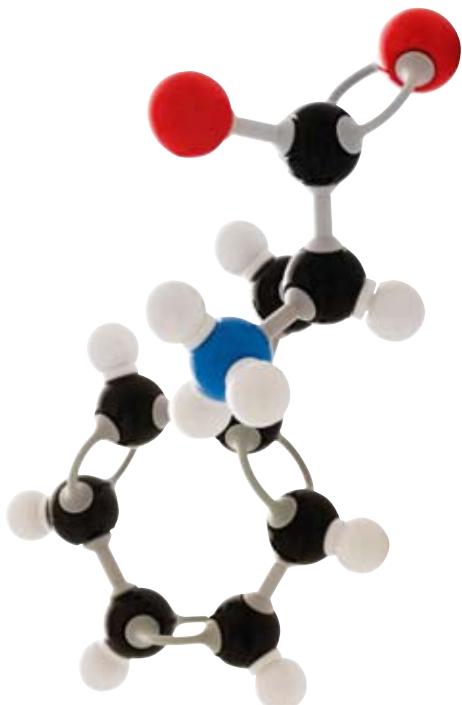


# The safe solution for chemical fluids. And for people and the environment.

As a pioneer in our industry, we have taken innovative and holistic thinking as a matter of course for more than 130 years. Our customers enjoy the particular advantage that we can offer a one-stop shop for all-in solutions – from pumps through valves and systems to specific services. Manufacturing top-quality pumps and valves is just one of the goals we have set ourselves. For us, taking an active part in helping to ensure safety and progress in chemical engineering and to protect the cycle of life is just as important. We have over 12,000 KSB employees around the world working to provide you with economically efficient, safe and environmentally sound solutions for your tasks. We also have over 2,500 service specialists on hand around the clock all over the world for a wide range of service jobs: from product installation and commissioning to servicing and repair.

Whether the chemicals are aggressive, corrosive or explosive, the safety of people and the environment takes top priority at KSB.





## Unique materials – for an optimum product.

KSB's success is based on our extensive know-how, many years' experience and our mission to develop products that fully match the ever increasing demands in terms of safety and stability. Backed up by our own foundry centres, state-of-the-art research laboratories and comprehensive quality assurance, we are continuously extending our materials expertise, which, we believe, is unparalleled throughout the world. And when existing materials are simply not up to your tasks, we develop new ones. Such as our innovative NORI® materials, which offer above-average service life in the metals sector.

Material	Designation	Material No.	Description	Application
ERN	GGL-NiMo7-7	–	Highly wear-resistant bainitic nickel-alloyed cast iron	Municipal sewage, sinter water, water containing granulated material, milk of lime, industrial effluent
Norihard®	GX250CrMo15-3	–	Highly wear-resistant white iron	Bauxite and sinter slurries, milk of lime and limestone suspensions, wash water and effluent with a high sand content, bauxite and aluminium oxide suspensions
Noriloy®	GX170CrMo25-2	–	Wear- and corrosion-resistant CrMo-alloyed white iron	Products of semi-dry processes in waste incineration plants, milk of lime and limestone suspensions, aggressive pit water containing ore, coal or mine tailings, acidic heavily solids-laden waste water and slurries
Noridur® DAS	GX3CrNiMoCuN 24-6-2-3 specially heat treated	–	Wear-resistant duplex stainless steel	For pump components subject to hydraulic loads and in contact with gypsum suspensions and lime stone slurries in flue gas desulphurisation systems
Noricrom®	GX150CrNiMo-CuN41-6-2	1.4475	Corrosion- and wear resistant triplex stainless steel	Highly acidic, chloride-containing fluids with very high solids content
Norinox®	GX3CrNiMo 19-11-2	(1.4408)	Austenitic stainless steel	Wide application spectrum in industry, process engineering, marine and offshore applications, environmental engineering and waste water management
Norilium®	GX3NiCrMoCu 25-20-5	(1.4539)	Austenitic stainless steel	Chloride-containing fluids of all kinds, reducing acids and acidic process water
Noricid®	GX3CrNiSiN 20-13-5	9.4306	High-alloyed special austenitic stainless steel	Highly oxidising acids such as concentrated nitric, chromic and sulphuric acids
Noridur®	GX3CrNiMoCuN 24-6-2-3	1.4593	Duplex stainless steel	Chloride-containing fluids of all kinds, reducing acids and acidic process water, scrubber suspensions
Noriclor®	GX3CrNiMoCuN 24-6-5	1.4573	Super duplex stainless steel	Aggressive fluids in chemical processes, waste water transport and environmental engineering

### Ceramics help you keep your cool, even at 300 °C

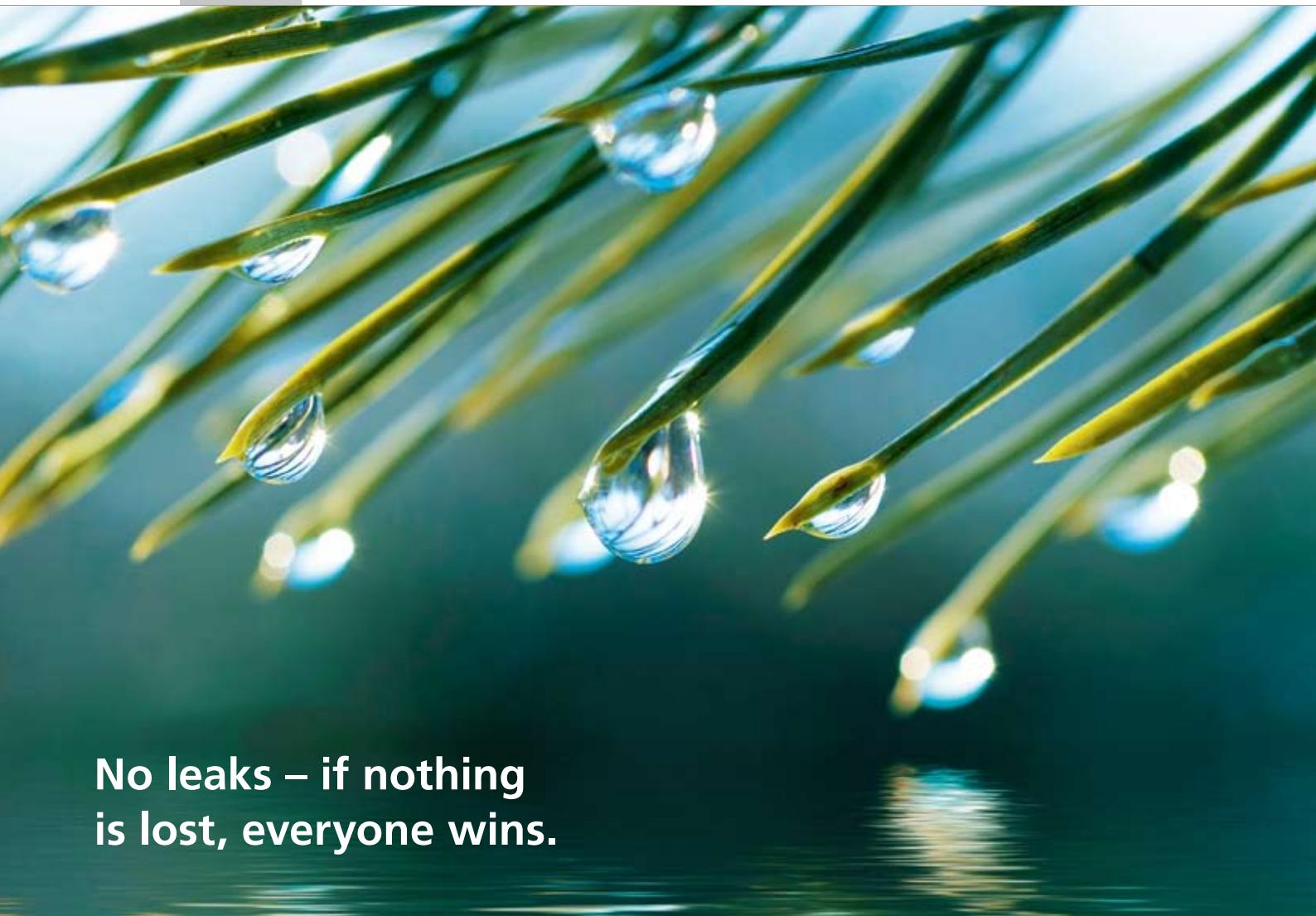
In cooperation with ESK (Elektro Schmelzwerk Kempten) we have developed an innovative plain bearing for sealless pumps which can handle even the most aggressive liquids up to 300 °C. This bearing material is so hard that not even entrained solids can abrade it. Even hot water up to 240 °C cannot damage this plain bearing made of high-quality silicon carbide. Our SICADUR® plain bearing copes with all kinds of liquid – whether acid, basic, corrosive, abrasive or hot.



## Safely cast in a quality role.



As a company with global expertise we provide for the high quality of our products with our own foundries in Germany, the USA, Brazil, Mexico, India, China, Indonesia and Pakistan. We shape more than 40 cast materials into first-rate valve and pump components every day. Our design, manufacturing and materials development departments make maximum use of synergies to give you bespoke solutions for every application. And our state-of-the-art KSB materials laboratories keep a check on compliance with our strict quality standards.



## No leaks – if nothing is lost, everyone wins.

In the living, closed system of the Earth, every drop lost is a drop too much – especially when we are talking about chemical or toxic liquids. Our sealless pumps guarantee zero leakage and utmost reliability with low life cycle costs. And backed up by the high-grade SICADUR® plain bearing, our pumps and valves can cope with even the most aggressive fluids. Further unbeatable advantages of our products in practical use are the low maintenance and service costs and the wide selection of materials available.



# Fast and efficient – service that does the job.

As one of the global market leaders, KSB offers more than a broad range of pumps and valves. KSB Service GmbH – a fully owned subsidiary of KSB AG – has a global network of service centres. With a complete service spectrum ranging from new

installations and commissioning through inspections and repairs to technical consulting and bespoke service solutions. And this includes products of other manufacturers as well.

## Facts and figures at a glance:

- A complete service spectrum for valves, pumps, motors and other "rotating equipment"
- Over 2,500 qualified and experienced service specialists in more than 120 service centres worldwide
- Safety and reliability through comprehensive certification such as SCC\*\* and also through state accreditation of service personnel with regard to testing and repair of explosion-proof units
- Service throughout the life cycle
- Use of special techniques on site, e.g. electric-discharge machining and bolt handling
- Total Pump Management for bespoke service solutions
- System Efficiency Service – increase in the profitability of pumping systems through comprehensive systems analysis (comparison of actual performance with rated performance)
- More than 350,000 assignments worldwide every year

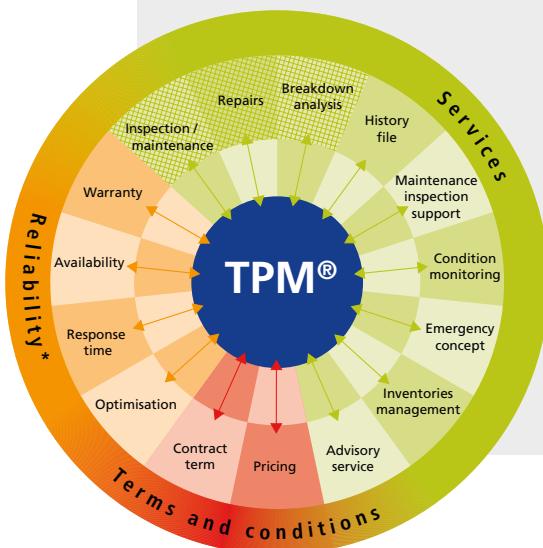
\*\* Safety Certificate Contractors

## Total Pump Management – for your individual requirements.

Total Pump Management is our approach to offering you service solutions for pumps, valves and other rotating systems. The modular nature of the service concepts enables us to put together individual service packages – tailored to your needs and your system.

### Your benefits:

- System optimisation through improved system availability
- Reduction in energy input
- Maintenance cost reduction



\* Only in conjunction with inspection/maintenance, commissioning and damage analysis

## Mag-drive pumps – sealless design

### Magnochem Standardised chemical pump



**Description:** Standardised chemical pump to EN 22858/ISO 2858/ ISO 5199 and Directive 94/9/EC (ATEX100) – sealless, with magnetic drive.

**Applications:** Our Magnochem pump, also available in close-coupled design as Magnochem-Bloc, is suitable for a whole spread of applications, with options for individual situations, e.g. a heatable model. Having only two static seals, the pump provides top safety. A heating facility integrated in the rotor space makes for high energy savings.

## Canned motor pumps – sealless design

### Secochem Ex Standardised chemical pump



**Description:** Standardised chemical pump to EN 22858/ISO 2858 and Directive 94/9/EC (ATEX100) – sealless, with canned motor.

**Applications:** Zero-maintenance Secochem Ex is developed for installation in potentially explosive atmospheres and has an excellent efficiency. Its hydraulics/motor combination has been optimised to save energy. Highly reliable operation thanks to direct monitoring of the fluid temperature.

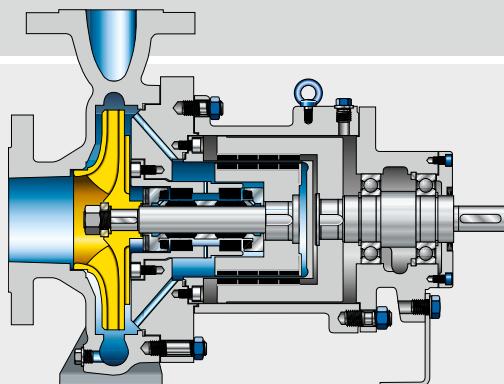
### Secochem Ex K Standardised chemical pump



**Description:** Standardised chemical pump to EN 22858/ISO 2858 and Directive 94/9/EC (ATEX100) – sealless, with canned motor.

**Applications:** Developed for installation in potentially explosive atmospheres, Secochem Ex K reliably transports solids-laden and hot fluids. Its novel and unique design enables full separation of pump space from drive. Excellent efficiency due to low temperatures in the rotor space.

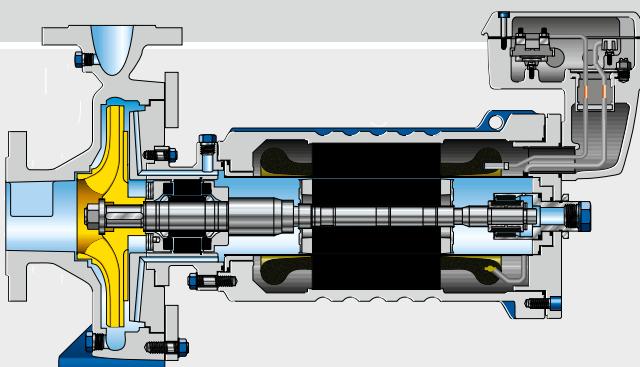
Zero leakage. Compact and low noise. Can made of Hastelloy C4 (2.4610) ensures optimum corrosion resistance and minimum eddy current losses.



#### Technical data

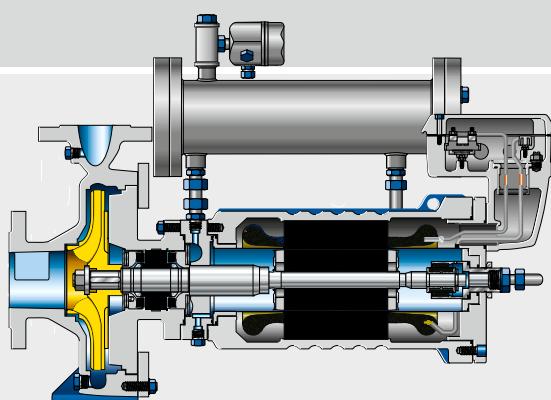
$Q \text{ m}^3/\text{h}$ :	up to 1,250
$H \text{ m}$ :	up to 153
$p \text{ bar}$ :	up to 25
$T \text{ }^\circ\text{C}$ :	-40 to +300
$P_2 \text{ kW}$ :	up to 160

Zero leakage. Compact and low noise. The well-proven hydraulic system of our CPKN standardised chemical pump, combined with a new-generation drive.



#### Technical data

$Q \text{ m}^3/\text{h}$ :	up to 300
$H \text{ m}$ :	up to 150
$p \text{ bar}$ :	up to 40
$T \text{ }^\circ\text{C}$ :	-40 to +130
$P_2 \text{ kW}$ :	1.1 to 70



#### Technical data

$Q \text{ m}^3/\text{h}$ :	up to 300
$H \text{ m}$ :	up to 150
$p \text{ bar}$ :	up to 40
$T \text{ }^\circ\text{C}$ :	-40 to +400
$P_2 \text{ kW}$ :	1.1 to 70

# Building our strengths together: the Nikkiso-KSB GmbH joint venture.

A partnership that offers a lot of prospects: With their joint venture Nikkiso-KSB, KSB and Nikkiso Co., Ltd., Tokyo, have optimally combined the strengths of the two partners. The canned motor pumps of Nikkiso-KSB are used where utmost safety must be guaranteed for people and the environment: in the chemical industry, in refineries, as well as in thermal oil and refrigeration (liquefied gas) applications.

Available in Europe, Russia, the Middle East and Africa.

## HN/BN/TN (Nikkiso-KSB) Chemical pump with canned motor, explosion-proof



**Description:** Horizontal (HN) or vertical (BN/TN) sealless single-stage pump with fully enclosed canned motor, uncooled, coolable or heatable, explosion-proof. ATEX-compliant. With ceramic winding (HX) up to 350 °C for drive ratings up to 55 kW.

**Applications:** For handling aggressive, flammable, explosive, toxic, volatile or valuable liquids and thermal oils in the chemical and petrochemical industry.

### Technical data

DN:	32-300
Q m³/h:	up to 800
H m:	up to 200
p bar:	up to 40
T °C:	-50 to +180 (+350)
P <sub>2</sub> kW:	up to 250

## HT/BT/TT (Nikkiso-KSB) Chemical pump with canned motor, explosion-proof



**Description:** Horizontal (HT) or vertical (BT/TT) sealless single-stage pump with fully enclosed canned motor, cooled, explosion-proof. ATEX-compliant. Hydraulic system separated from motor space.

**Applications:** For handling aggressive, solids-laden, polymerising, flammable, explosive, toxic, volatile or valuable liquids and thermal oils in the chemical and petrochemical industry.

### Technical data

DN:	32-300
Q m³/h:	up to 800
H m:	up to 200
p bar:	up to 40
T °C:	up to +400
P <sub>2</sub> kW:	up to 250

## Other canned motor pump variants:

- Liquefied gas model
- Self-priming pumps
- Multistage pumps
- Pumps to API 685

## E-Monitor (Nikkiso-KSB)



Diagnostic unit for reliable monitoring of bearings and direction of rotation on Nikkiso-KSB canned motor pumps. ATEX-compliant. With or without connection options to process control system.

## Pumps with shaft seal

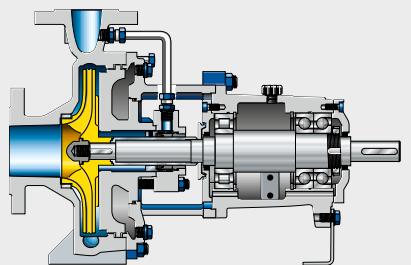


### CPKN – the mother of all pumps

**Description:** Standardised chemical pump to EN 22858/SO 2858/ISO 5199 and Directive 94/9/EC (ATEX 100)

**Applications:** The CPKN pump is available in numerous variants to provide customers with optimum solutions for virtually any application. Diverse hydraulic systems enable top efficiency levels and excellent NPSH values, which translates into energy savings. The modular design system from DN 25 to DN 400 reduces spare parts stocks and makes for straightforward maintenance.

**Technical data** DN: 25 to 400 Q m<sup>3</sup>/h: 4,150 H m: up to 185 p bar: up to 25 T °C: -40 to +400



The hydraulic system of our CPKN pump is the basis for an all-in modular system that is without equal. The numerous variants of this pump type never cease to convince users:

- Diverse impeller and casing designs
- Various shaft seal options
- Wide choice of materials

#### The basic variants

- CPKN with reinforced shaft for even greater safety
- CPKN-CHs with heatable or coolable casing
- CPKNO with open impeller

#### The modular design principle

The systematic design concept from DN 25 to DN 400 reduces spare parts inventories and maintenance to a minimum. Take the mechanical seal diameter, for example. It stays the same within each bearing bracket size, whether the rotor is dry or wet. So instead of storing several sizes, a single seal size will do. The modular design means KSB standardised chemical pumps with shaft seals are easily and economically converted to sealless pumps. Our wide range of materials is available both for pumps with shaft seal and for sealless pumps.

## Pumps with shaft seal

### Multitec High-pressure pump



**Description:** High-pressure pump in ring-section design, also available in compliance with Directive 94/9/EC (ATEX 100)

**Applications:** Multitec is an allrounder made by KSB. Its wide range of materials and models not only make it particularly versatile but also enable optimum adaptation to the pumped fluid. Its hydraulics variants make for optimum efficiencies. Special suction impellers result in low NPSH values. Balancing of axial thrust increases the service life of the rolling element bearings and the shaft seal.

### RPH Process pump



**Description:** Process pump to API 610, 10<sup>th</sup> edition, and DIN ISO 13709 as well as Directive 94/9/EC (ATEX 100)

**Applications:** On the RPH, all materials and design details such as bearings are selected to achieve the greatest possible robustness of the pump. RPH is characterised by its high efficiency and low NPSH. The steel bearing bracket with integrated cooling fins eliminates the need for a separate cooling circuit. Pump flanges according to all standards are available up to PN 100.

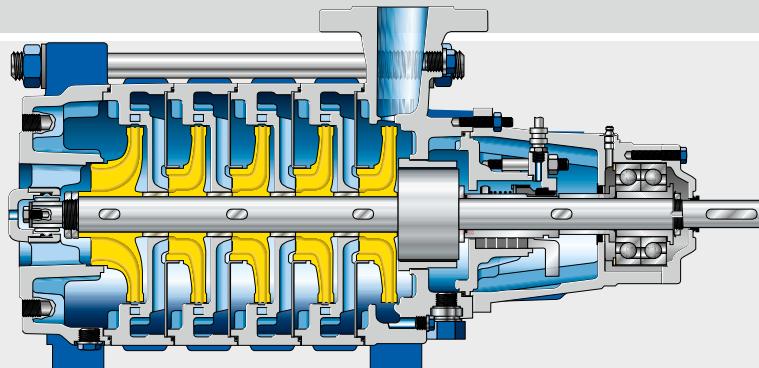
### KWP Centrifugal pump



**Description:** Centrifugal pump with channel impeller, in close-coupled or back pull-out design, also available in compliance with Directive 94/9/EC (ATEX 100)

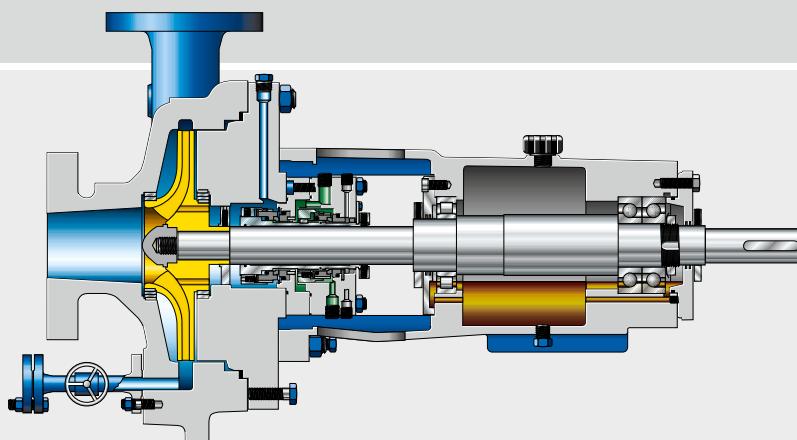
**Applications:** KWP is available with various impeller geometries: channel impeller, open multi-vane impeller, free-flow impeller. It handles corrosive and abrasive fluids with all types of slurries without substances liable to plait and pulps up to 5 % bone dry.

For decades, the run on the classic standardised chemical pump has continued unabated. More than 300,000 basic models or bespoke variants for wide-ranging applications have proved their worth in everyday chemical operations.



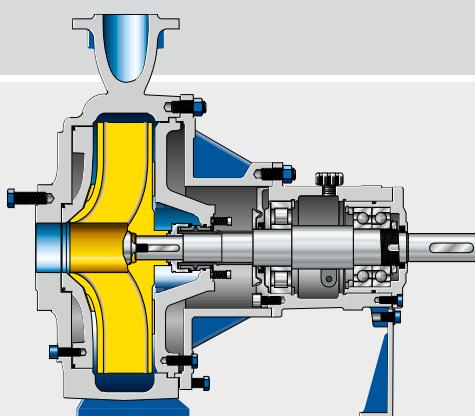
#### Technical data

DN:	32 to 150
Q m³/h:	up to 850
H m:	up to 630
p bar:	up to 63
T °C:	-10 to +200



#### Technical data

DN:	25 to 400
Q m³/h:	up to 4,150
H m:	up to 270
p bar:	up to 51
T °C:	-71 to +450



#### Technical data

DN:	40 to 900
Q m³/h:	up to 13,000
H m:	up to 100
p bar:	up to 10
T °C:	-40 to +280

# It pays to make use of energy-saving potential.

## KSB's energy efficiency programme:

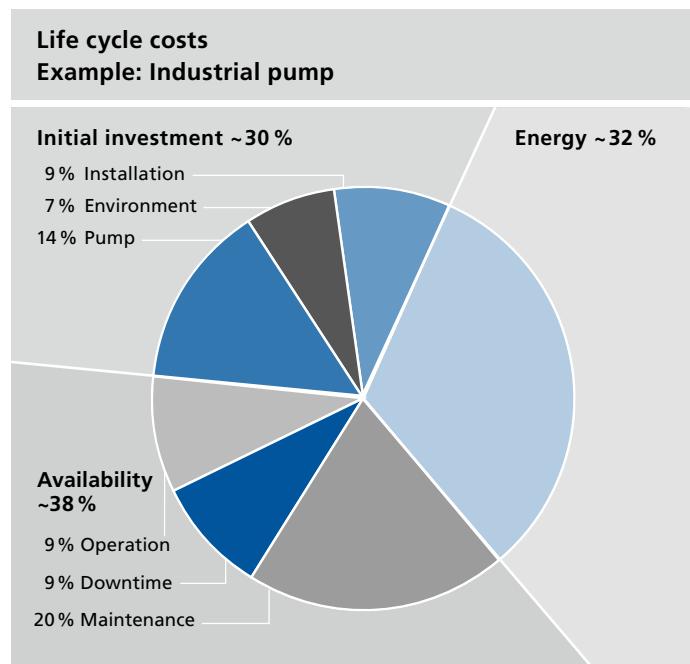
### Efficiency from the word go.

Pumping systems account for 20 % of energy costs in industrial plants. And at 32 %, energy costs make up the highest proportion of the life cycle costs of a medium-sized industrial pump.

### KSB can help you remain competitive.

To be successful in the market, operators should not only keep the initial investment costs of their plant at a minimum: they must also keep down the cost of operation. Maintenance and energy costs in particular need to be reduced. By choosing the right material for the application and ensuring a diversity of solutions down to the last detail, such as wear rings, the availability of the pump can be improved – and maintenance costs remain low.

But ultimately, it is mainly an increase in energy efficiency through system optimisation that is crucial to competitiveness.



**KSB optimises not just individual components  
but entire hydraulic systems.**



### Pump selection

The most important step towards saving energy costs: hydraulic optimisation of the system and selection of the best pump for the job.

**System Efficiency Service**  
Savings potential is identified and solutions are proposed on the basis of the precisely calculated pump load profile.



### Trimmed impellers

The impeller is adapted to match the actual operating point without any added costs.  
Energy saved: over **10 %** on average

### Speed control

PumpDrive adjusts the speed of the motor to match requirements.  
Energy saved: up to **60 %**



### EFF1 motor

Standard at KSB. Efficiency gain:  
up to **3.5 %**

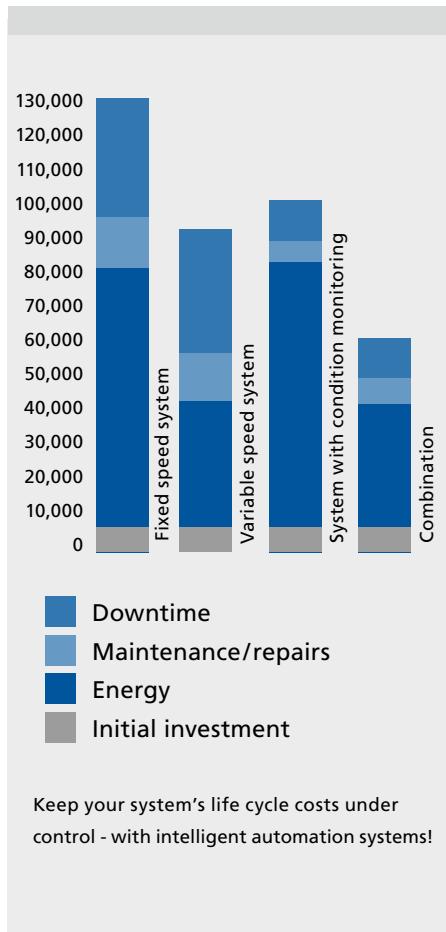


# Everything under control – with automation solutions from KSB.



Current developments on the industrial market are calling for important decisions from plant operators: Anyone who wants to keep quality and manufacturing costs under control has to ensure the processes within the system are efficient.

Automation technology from KSB is an important contribution to process and quality assurance – and thus has a responsible part to play.



## PumpDrive The intelligent speed control system

PumpDrive flexibly matches pump output to actual demand and allows energy savings of up to 60 %!

- Increased operating reliability through perfect match with the pump and monitoring of operating limits based on the H/Q curve (PumpDrive Advanced)
- Enhanced functionality for improved process control
- Motor-mounted up to 45 kW
  - Wall and control cabinet mounting also possible

## Hyamaster® The intelligent control system

Developed for open and closed loop control and monitoring of hydraulic systems, the Hyamaster multiple pump control system ensures reliable supply in open and closed cycles.

- Pump, hydraulic system, valve, open and closed-loop control system, frequency inverter, motor and sensor – all from a single source
- Operating and maintenance costs are reduced as operation in the optimum control range is ensured
- System is automatically adjusted to match changes in plant conditions
- Early detection of malfunctions is enabled by characteristic curve control function

### Technical data

Supply voltage:	3 ~ 380 V -10 % up to 480 V +10 %
Enclosure:	IP 55
Efficiency:	97 % (at a carrier frequency of 2 kHz)
Ambient temperature:	0°C.. +40°C
Output frequency:	0.. 70 Hz

### Technical data

Number of pumps:	1 to 4
Motor rating:	for all pump outputs
Number of frequency inverters:	1 to 4
Amb. temp.:	0 °C to 40 °C
Mains voltage:	3x 400 V ± 10 % 3x 500 V ± 10 % 3x 690 V ± 10 %
Mains frequency:	50 Hz/60 Hz



# The best solutions for maximum requirements.

In valve production, too, we can look back on decades of experience. Producing valves for the exacting demands of industry and process engineering has been our core competence from the start. We use high-quality components of exactly defined alloy composition – with digital data available from our documentation centre any time.

## Metal valves

### BOA-H



The cost-effective bellows-type globe valve classic. More than a million sold for pressures up to 40 bar. Extremely robust and reliable in continuous operation. Maintenance-free, metal-seated.

#### Technical data:

DN:	10 to 350
p bar:	16 to 40
T °C:	-10 to +450
Material:	Steel, nodular cast iron, grey cast iron

### NORI 40



The classic globe valve up to PN 40 provides utmost safety and reliability. It is available as bellows-type globe valve, globe valve with gland packing and horizontal or slanted seat, as well as non-return valve.

- Double-walled bellows for utmost safety
- Tapered disc, self-cleaning due to angled seat/disc interface
- Two-piece stem simplifies actuator mounting

#### Technical data:

DN:	10 to 400
T °C:	-60 to +450
p bar:	25 to 40
Material:	Steel

### NORI 320/500



The forged NORI 320 and NORI 500 globe valves with gland packing are specially designed to offer optimum operation and function for higher pressure classes from PN 250.

- Service-friendly bayonet-type connection between body and yoke allows quick dismantling and reassembly
- The single-piece body without separate bonnet eliminates the need for re-tightening the bonnet bolting. Just one sealing point to atmosphere.
- One model for shut-off and throttling thanks to standard throttling valve plug. Inventories and spare parts stocks are reduced.

#### Technical data:

DN:	10 to 65
p bar:	250 to 500
T °C:	-10 to +650
Material:	Steel

## NORI 160

Well-proven valve design for safe shut-off of nominal pressure classes PN 63 to 160. Available as globe valve with gland packing with rotating or non-rotating stem, and as non-return valve. The confined gland packing and serrated bonnet gasket provide reliable sealing to atmosphere.

### Technical data:

DN:	10 to 200
p bar:	63 to 160
T °C:	-10 to +550
Material:	Steel



## AKG-A/AKGS-A

Wedge gate valve in pressure seal design for pressures from 63 to 160 bar. Except for the pressure seal design and the nominal pressure class, AKG-A/AKGS-A valves feature the same design as the AKD/AKDS valves of the STAAL type series. Also available as swing check valve.

### Technical data:

DN:	80 to 300
p bar:	63 to 160
T °C:	-10 to +550
Material:	Steel



## STAAL 40/100

The sturdy steel gate valve with bolted bonnet up to PN 40 (STAAL 40) and PN 100 (STAAL 100) can handle rough jobs. Its proven forged steel design with hard-faced seat/disc interface makes for a long service life – even under extreme conditions. Swing check valve models available.

### Technical data:

DN:	50 to 1,200
p bar:	10 to 100
T °C:	-10 to +550
Material:	Steel



## ISO F14A/F14D/VU\*

The ball valve series supplied by KSB in cooperation with KITZ is available with two-piece or three-piece body to DIN and ANSI standards.

- Reduced life cycle costs thanks to excellent ball finish
- O-ring for leak-free sealing of the stem passage towards the atmosphere
- Spiral-wound gasket ensures absolute integrity of the valve body
- Optimum reliability for large temperature differences (not applicable to ISO VU)
- Fire-safe model available (not for ISO VU)

### Technical data F14D:

DN:	15 to 300
p bar:	10 to 100
T °C:	-10 to +250
Material:	Steel, stainless steel



\* In selected countries only. Please contact your local KSB representative.

## Metal valves

### ZTS



The block-forged extremely robust wedge gate valve with pressure seal bonnet for stringent requirements provides top safety, even for high pressures up to 600 bar. Suitable for temperatures up to 650 °C thanks to a wide range of material variants. Swing check valve model available.

#### Technical data:

DN:	50 to 800
p bar:	up to 600
T °C:	-10 to +650
Material:	Forged steel grades

### DANAÏS 150 / DANAÏS MTII



Our AMRI butterfly valve types DANAIS 150 and MTII satisfy the most exacting demands in terms of safety, service life and tight shut-off in both flow directions. Space-saving and of low-weight design, they are easy to install and extremely service-friendly. And they are fire-safe! Equivalent swing check valve model (2000 series) is also available.

#### Technical data:

DN:	50 to 1,200
p bar:	10 to 40
T °C:	-50 to +260
Material:	Steel, stainless steel

### SICCA Forged steel valves



SICCA gate and globe valves, strainers and non-return valves are made of forged steel in compliance with API 602, ASME B16.34 and BS 5352. With socket weld or threaded ends, external thread rotating stem. Bolted (Class 800) or seal-welded (Class 1500 and 2500) bonnet/cover. Hard-faced seat/disc interface.

#### Technical data:

DN:	1/2 to 2
Class:	800 to 2,500
T °C:	0 to +593
Material:	Forged steel

### EcoLine ANSI Low-pressure valves



Gate and globe valves, strainers and non-return valves to API 600, ASME B16.34 and BS. High wear allowance on the sealing surfaces for high wear and corrosion resistance. The stainless steel/graphite gasket is fully confined to provide maximum sealing to atmosphere. The valve is available in a wide range of materials and variants.

#### Technical data:

DN	2 to 16
Class:	150, 300, 600
T °C:	-29 to +593
Material:	Var. steels and stainless steels

## SISTO-10/-16/-16S/-20

Top-quality materials and innovative production processes ensure these valves' high operating reliability and availability. The diaphragm is the only seal element and provides reliable shut-off and sealing to atmosphere while also hermetically sealing all functional parts against the fluid handled.

### Technical data

DN:	15 to 300
T °C:	-10 to +160
DIN PN	10,16
Material:	Gunmetal, grey cast iron, nodular cast iron, stainless steel



## Lined valves

Regardless of which of our lined valves you opt for – all of them cope well with particularly aggressive, corrosive and abrasive fluids. Whenever the service life of metals is too short or when metals do not make economic sense, our lined valves spell safe and reliable operation. Resistant to wear, chemicals and temperatures, these specially developed systems are a match for even the toughest opponent ... and they are easy to service into the bargain!

Our valves factory in La Roche Chalais, France, has its own production facilities for elastomer and plastomer liners. So we safeguard our high quality right from the start.

## ISORIA 10

The butterfly valve available in an extensive range of materials:

- Perfectly matched to the fluid handled thanks to a large number of disc materials and elastomer liners
- Spherical interface between liner and disc
- Actuator types: Manual, pneumatic, hydraulic and electric

### Technical data

DN:	40 to 1,000
p bar:	up to 10
T °C:	-10 to +200
Body material:	Grey cast iron, nodular cast iron



## SISTO-KB

Its straight-line flow path makes the SISTO-KB valve particularly suitable for abrasive fluids. The body liner ensures a long service life. The diaphragm valve for suspensions and crystallising acids with both aggressive and abrasive properties.

### Technical data

DN:	15 to 200
p bar:	up to 10
T °C:	-10 to +140
Material:	Grey cast iron, nodular cast iron



## SISTO-10/-16/-16S/-20

High-grade body liners and coatings are intended for demanding applications in all areas of the chemical industry. Thanks to the special design of the SISTO valves and the use of a spiral steel spring-supported diaphragm, the valves can also be used in large sizes at high pressures – and the diaphragms have a substantially longer service life than conventional designs.

### Technical data

DN:	15 to 300
T °C:	-10 to +160
PN	10/16
ISO PN	20
Material:	Gunmetal, grey cast iron, nodular cast iron, stainless steel



## SISTO-RSK

On this maintenance-free, soft-seated swing check valve, fully elastic internal mounting of the valve disc ensures a long service life and versatility of application. The soft rubber-coated disc provides reliable shut-off.

### Technical data

DN:	25 to 300
p bar:	up to 16
T °C:	-10 to +120
Material:	Nodular cast iron



## KE

KE is a butterfly valve with a Teflon® or elastomer liner for toxic and highly corrosive fluids. When fitted with a PFA (Teflon®) liner and a PFA-lined disc, it provides excellent resistance to aggressive liquids and gases. Double safety is achieved by means of the primary and secondary seals at the stem passage and reliable sealing to atmosphere. KE butterfly valves are fully maintenance-free.

### Technical data

DN:	40 to 600
p bar:	up to 10
T °C:	-20 to +200
Body material:	Nodular cast iron (GGG40.3)



# Process optimisation thanks to KSB high tech automation.

AMRI's technologically advanced and well-proven automation systems can supply control systems with important and detailed information. Routes include state-of-the-art field bus technology. So customers can benefit from smooth processes. Intelligent technology automatically regulates fluid flow or prevents pressure surges, so that the entire process is continuously optimised.

## AMTROBOX M

**Description:** Specially developed for manual actuation. For open/closed position signalling on on/off valves via mechanical limit switches or proximity sensors. AMTROBOX M is mounted directly on the S series of quarter-turn levers (R1020) and manual reducer types MA 12 and MA 25 (R1021).

**Applications:** All applications in water, building services and energy engineering

**Technical data:** T °C: -20 to +80 Enclosure IP65



## AMTROBOX/AMTROBOX EEx-ia

**Description:** Multi-functional control unit for open/closed position signalling on on/off valves via mechanical limit switches or proximity sensors. AMTROBOX (R1149) is mounted directly on reducer type MR, the pneumatic actuators of the ACTAIR series and the hydraulic actuators of the ACTO series. AMTROBOX EEx-ia (R1172): intrinsically safe version for potentially explosive atmospheres. AMTROBOX ATEX (X1140, X1149): ATEX version for potentially explosive dust atmospheres (Zone 22).

**Applications:** All applications in water, building services and energy engineering

**Technical data:** T °C: -10 to +50 Enclosure IP67



## AMTRONIC EEx-ia

**Description:** AMTROBOX EEx-ia and AMTRONIC EEx-ia (R 1172) are intrinsically safe control units particularly suitable for operation in potentially explosive atmospheres. They comply with ATEX directive 94/9/EC and CE 0081 Ex II 1 G. They are certified to EEx-ia IIC T6 as per EN 50014 and EN 50020 standards. EC type test certificate: LCIE 03 ATEX 6435X. The max. surface temperature of the housing must not exceed 85°C.

**Applications:** All applications in water, energy and industrial engineering

**Technical data:** T °C : -10 to +50 Enclosure IP67



## SMARTRONIC MA

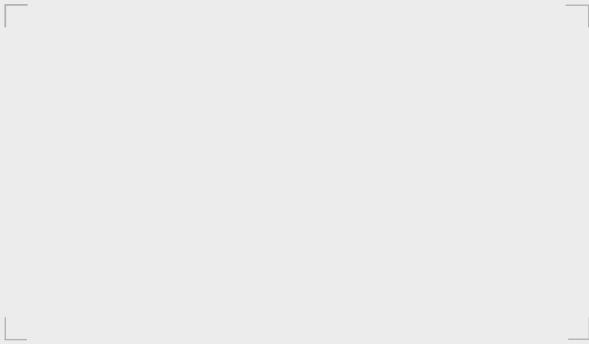
**Description:** SMARTRONIC provides position control for pneumatic quarter-turn actuators as well as open/closed detection and actual-position feedback. The unit attaches directly to an ACTAIR or DYNACTAIR actuator with no need for a bracket or external piping, providing a rugged, compact and integrated solution. SMARTRONIC PC (Process Control): monitors process variables using an integrated programmable microprocessor and provides accurate actuation time monitoring (surge pressure control). SMARTRONIC PC is PC programmable and compatible with Profibus DP systems.

**Applications:** All applications in water, energy and industrial engineering

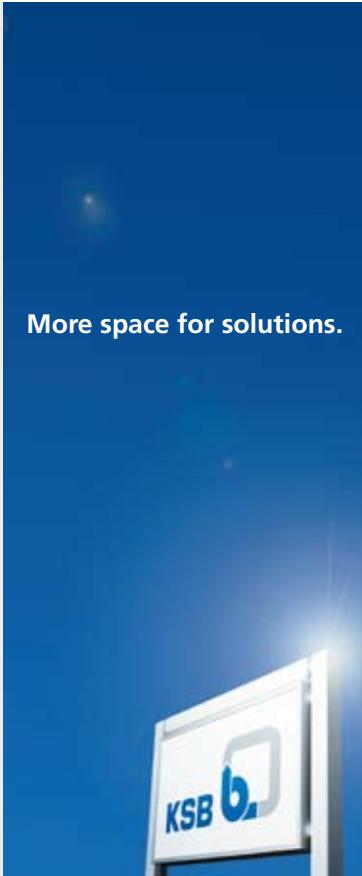
**Technical data:** T °C: -20 to +70 Enclosures IP65 + IP67



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