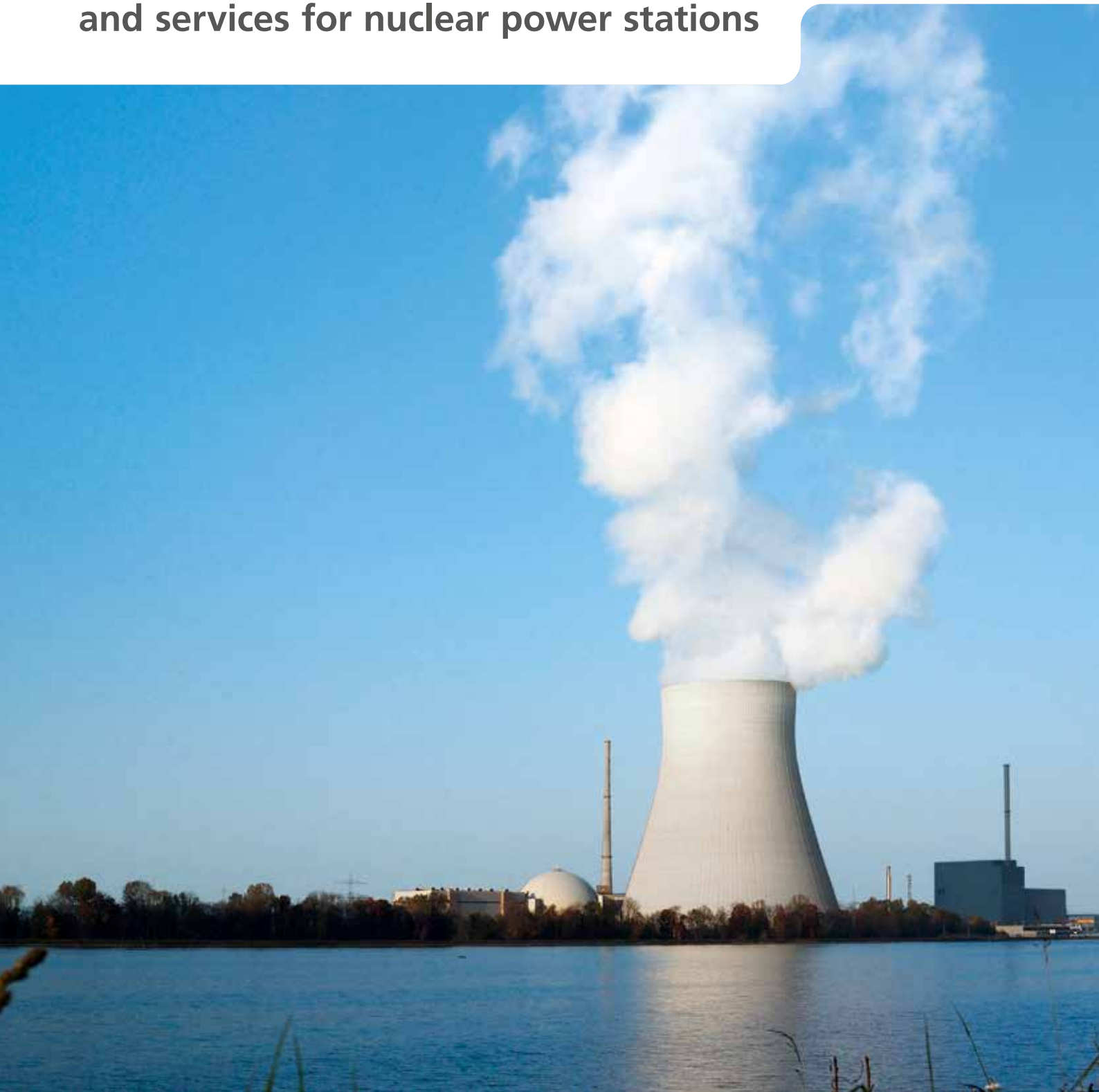


► Our technology. Your success.

Pumps • Valves • Service



Expertise you can trust: pumps, valves
and services for nuclear power stations



Reliability through expertise – all around the world

For 140 years, we have been offering our customers innovative, all-inclusive solutions in the field of pumps, valves and hydraulic systems. We have almost 80 years of experience in the development of products for fossil-fuelled power stations and have been developing pumps and valves for nuclear power stations for more than 40 years.

We have consistently brought our entire wealth of knowledge and experience to bear right from the very start in order to develop efficient, technically advanced solutions.

That makes us one of the world's market leaders – and an ideal partner for nuclear power plant operators, consultants, planners and engineering contractors. Our pumps, valves, drives, actuators and automation products are being used successfully around the globe.

When it comes to complex tasks in the field of power plant technology, we offer the complete range of engineering services from designing units and systems to providing support throughout the entire processing and commissioning phases. You receive everything from a single source: development, consulting, order processing and service.

We put all our strengths at your disposal: more than 15,000 highly qualified KSB employees, over 160 service centres and 29 production facilities around the world. Safe, economical and environmentally friendly.



x = Number of nuclear power stations equipped with KSB products





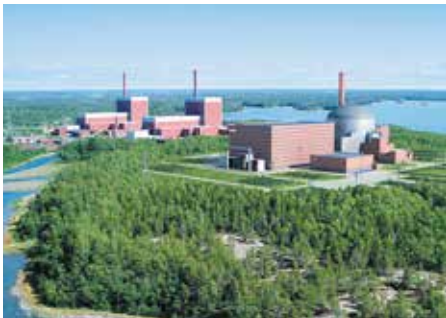
Exemplary solutions: **our reference projects**

KSB pumps and valves are in use in nuclear power plants around the world. Some key criteria for our customers include fulfilment of the very highest safety requirements, highly efficient operation and comprehensive on-site service.



Isar 2, Germany

In the ISAR 2 power plant, a pressurised water reactor produces, with the help of one of the biggest generators in the world, a net output of 1,410 MW. KSB supplied the complete pump package, i.e. reactor coolant pumps, feed water pumps, condensate pumps, high-pressure injection pumps and safety injection pump, as well as numerous valves, among them gate and bellows-type valves in the feed water and live steam systems. All maintenance inspection work is planned and carried out by our experienced service specialists. This guarantees reliability, safety and quality.



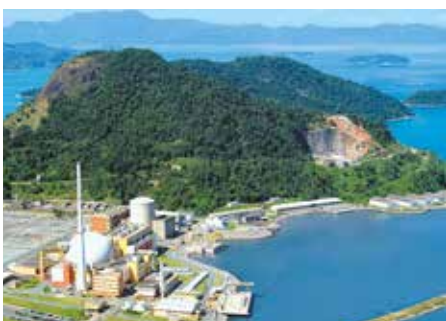
Olkiluoto 3, Finland

The first third-generation European pressurised water reactor in unit 3 supplies a net output of 1,600 MW. KSB feed water pumps with booster pumps contribute to the new safety concept with their vibration-damping properties, high levels of availability and particularly long service lives. KSB valves, including feed water heater safety valves (DN 650, DN 700) and damped non-return valves, are employed in the feed water and condensate systems. 20 pumps and more than 1,000 valves are in use. After positive experiences with units 1 and 2, KSB was chosen again for the expansion.



Palo Verde, USA

Currently the most powerful nuclear power plant in the United States, Palo Verde, has three pressurised water reactors generating an electric output of 3,700 MW. 12 reactor coolant pumps and 24 shut-off valves from KSB play a major role in the power plant's efficient operations. During acceptance testing in KSB's in-house facility, the agreed efficiency levels were achieved and even exceeded. Extraordinary expertise as well as sophisticated, reliable products were key factors in the decision to award the contract to KSB.



Angra 2, Brazil

Unit 2 of Brazil's largest nuclear power plant is equipped with a pressurised water reactor with an electric output of 1,350 MW. In addition to four reactor coolant pumps, other KSB pumps operate in almost all of the safety and auxiliary systems. More than 5,000 KSB valves are employed in these systems, as well as in the primary cooling circuits and the secondary water and steam circuits. KSB service engineers supervised the commissioning of the plant and perform regular maintenance work to help ensure its safe operation. KSB has its own office on-site.



Qinshan 1, 2-3, 2-4, China

Three pressurised water reactors generate an electric output of 1,610 MW. KSB reactor coolant pumps ensure safety and reliability with a specially developed seal concept. Working in conjunction with booster pumps, KSB feed water pumps provide efficient, non-cavitating operation. Other pumps are in use in the safety and auxiliary systems. Numerous KSB gate, globe and non-return valves are in place in the secondary circuits. Sophisticated, high-quality products were key factors in the decision to award the contract to KSB.



Ulchin, South Korea

KSB delivered products to ASME Code standards for four power plant units with pressurised water reactors. These generate a total electric output of nearly 3,900 MW. 16 reactor coolant pumps are in use, including hydraulic systems, mechanical seals, 14 pumps for safety and auxiliary systems, and bellows-type valves with hand wheels and electric actuators. The customer awarded the contract to KSB on the basis of its references in South Korea. KSB products are also in demand in APR 1,400 power plants in South Korea.

Innovation through research and development at KSB

Innovative products and business ideas are the result of global research and development by the KSB Group. KSB's technological strengths lie in hydraulic engineering, materials technology and automation. Every year, we invest more than €40 million in research and development, the latest simulation software, in-house test bays and other testing facilities. On request, our developers

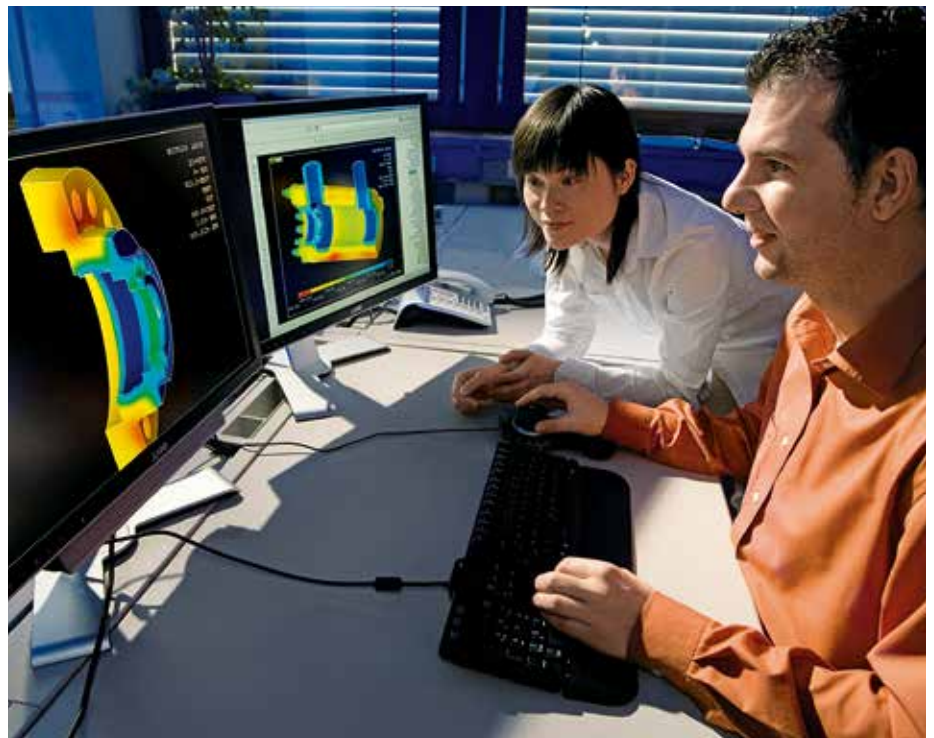
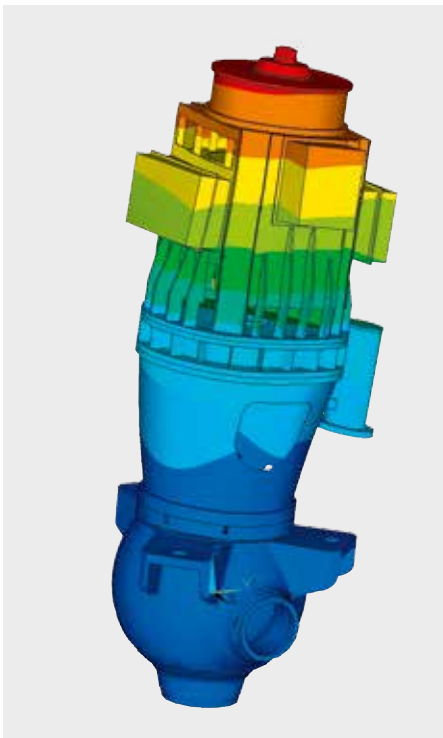
will gladly draw on these resources to perform preliminary calculations on mechanics, seismic calculations or sound emission and frequency analyses to help our customers meet the requirements posed by highly challenging, safety-relevant applications such as those for nuclear power plants.

Energy efficiency and reliability for our customers

Modern pumps and valves have to be energy efficient above all else. With this in mind, KSB not only optimises individual components but also entire hydraulic systems with the greatest precision. By designing all components according to the customer's specifications, KSB provides highly efficient hydraulic systems with highly efficient drives. This enables customers to minimise life cycle costs and maximise performance. We work closely with scientific facilities to research new materials and technologies in order to create state-of-the-art equipment offering the highest component reliability. Antimony-free KSB mechanical seals for reactor coolant pumps, for instance, improve the operating reliability of power plants thanks to the following features:

- Redundant sealing systems make for a high level of plant availability
- Standardised components help minimise spare parts stocks
- Longer operating periods help reduce waste volumes

In order to reduce radiation inside nuclear power plants, KSB uses cobalt-free hard-facing materials for its valves, which we have been researching, developing and optimising in collaboration with Siemens KWU for about 20 years.



Certified excellence: our quality standards

KSB's integrated management system for quality, the environment, and occupational health and safety has been certified according to ISO 9001, ISO 14001 and OHSAS 18001. Challenging, safety-relevant applications demand highly effective concepts. The certified high quality of our products and solutions is a must. Throughout our global production network and wherever we perform our services, we always work in accordance with the latest quality standards, as confirmed by our numerous approvals and certificates.

For pumps and valves in nuclear power stations, we are certified according to the German KTA and AVS nuclear engineering codes and the US ASME Code. Wherever we deliver our products, we have all the approvals needed to ensure that we can meet the various requirements of our customers.



Just a few of our certificates and qualifications:

- ISO 9001
- ISO 14001
- OHSAS 18001
- IAEA 50-C-Q
- KTA 1401, 1408.3, 3201.3
- AVS D 100/50
- Gost-R
- ASME Section III (Classes 1, 2 and 3; N, NPT and NS stamps)
- ASME Material Organization
- DIN 18800-7/ASME Section IX
- RCC-M
- EN473/SNT-TC 1A
- AD-HP0, HP100R
- Pressure Equipment Directive
- TRD 201, TRR 100
- HAF 604





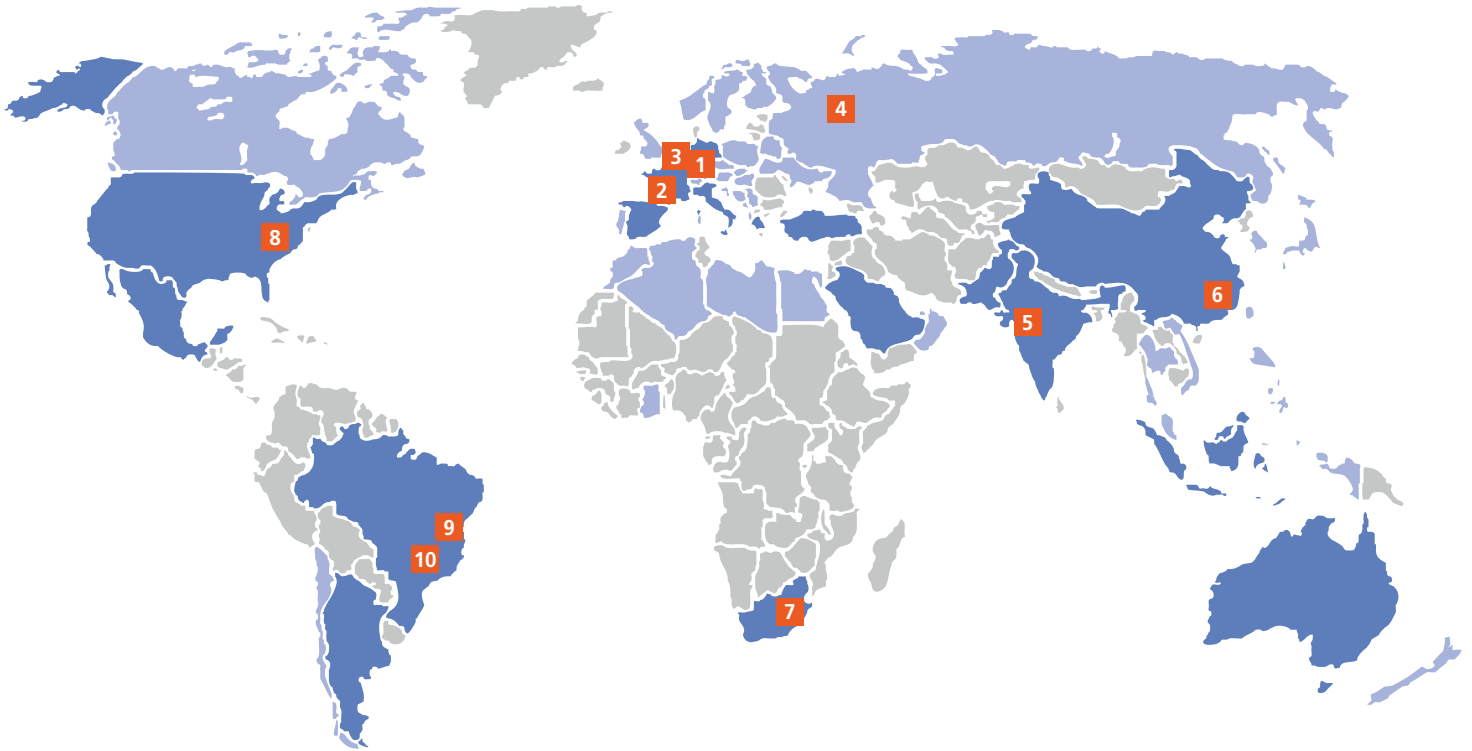
Production and test facility for large pumps in Frankenthal

Solutions put to the test

At our state-of-the-art test facilities, such as those at the KSB headquarters in Frankenthal and in Shanghai, we offer testing in accordance with a variety of requirements. We ensure compliance with all contractually guaranteed data through standard and special inspections and tests. A performance test of the pump at full load in our test facility or a string test of the entire pump and valve set provides a solid basis for success. The speed, pressure and temperature used for testing are equivalent to those found under real conditions.

State-of-the-art technology: KSB production facilities

We use state-of-the-art production facilities to further strengthen our position as a leading manufacturer of pumps and valves for nuclear power plants. Our production capacities for large pumps, which include an integrated pump test bed with a 20 MW motor, ensure perfectly coordinated processes: from welding technology and mechanical production to the assembly of complete pump and valve sets, testing and shipment.



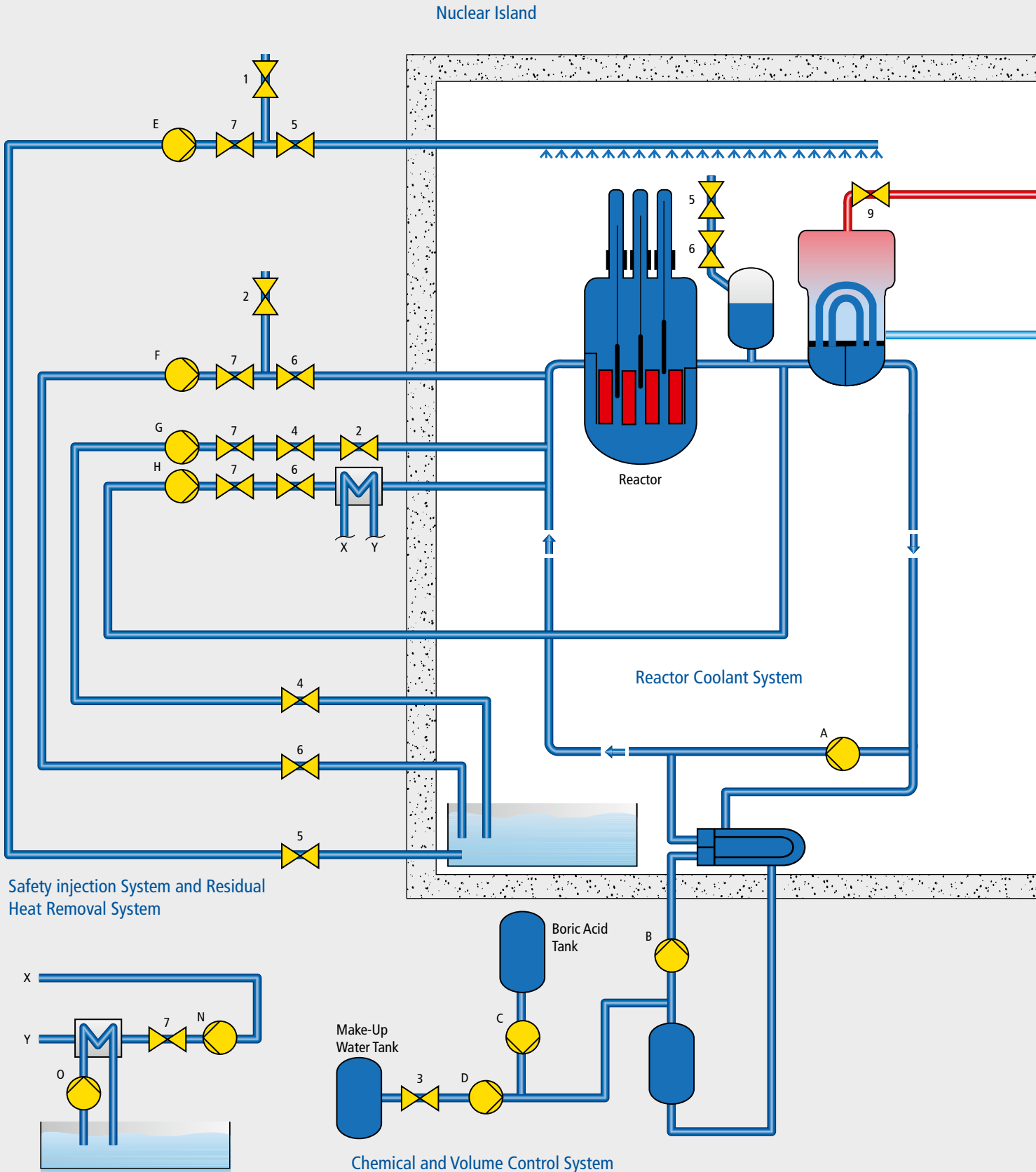
KSB expertise for nuclear power stations

- | | | | |
|--|-----------------------------------|-------------------------------------|----------------------------------|
| 1 Frankenthal, Pegnitz, Germany | 2 La Roche-Chalais, France | 3 Echternach, Luxembourg | 4 Moscow, Russia |
| 5 Pune, India | 6 Shanghai, China | 7 Johannesburg, South Africa | 8 Richmond, Virginia, USA |
| 9 Angra, Brazil | 10 São Paulo, Brazil | ■ KSB production sites | ■ KSB sales/service sites |

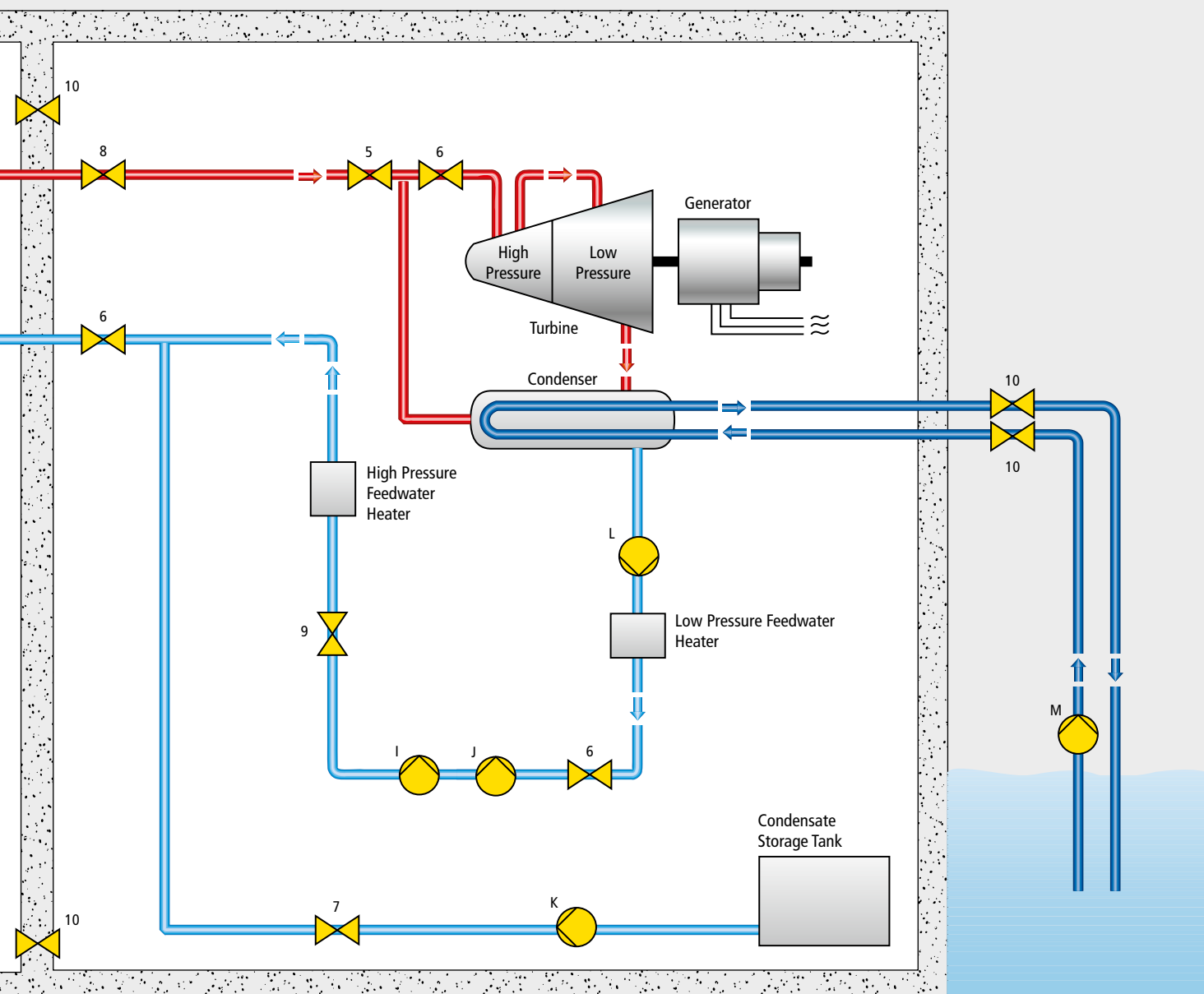
Test facility for reactor coolant pumps in Shanghai



KSB technology in operation: pressurised-water reactor circuit



Turbine Island

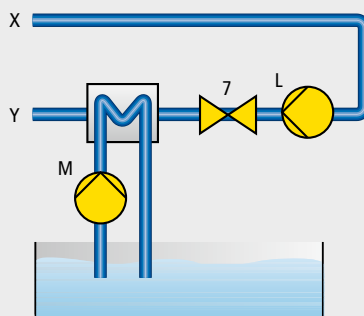
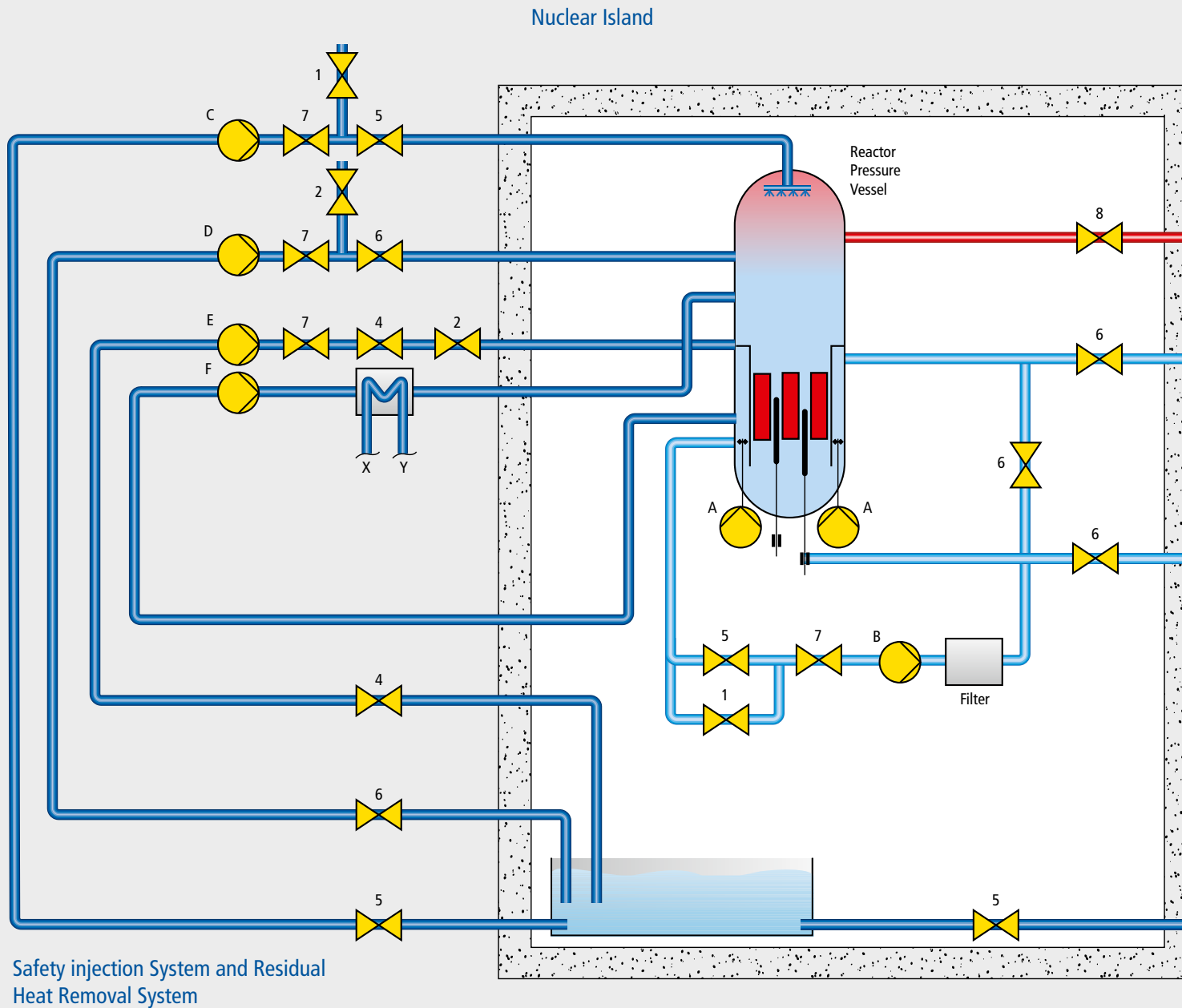


A Reactor Coolant Pump
 B Charging Pump
 C Boric Acid Pump
 D Make-up Pump
 E Containment Spray Pump
 F High Pressure Injection Pump
 G Low Pressure Injection Pump
 H Residual Heat Removal Pump
 I Main Feedwater Pump
 J Booster Pump

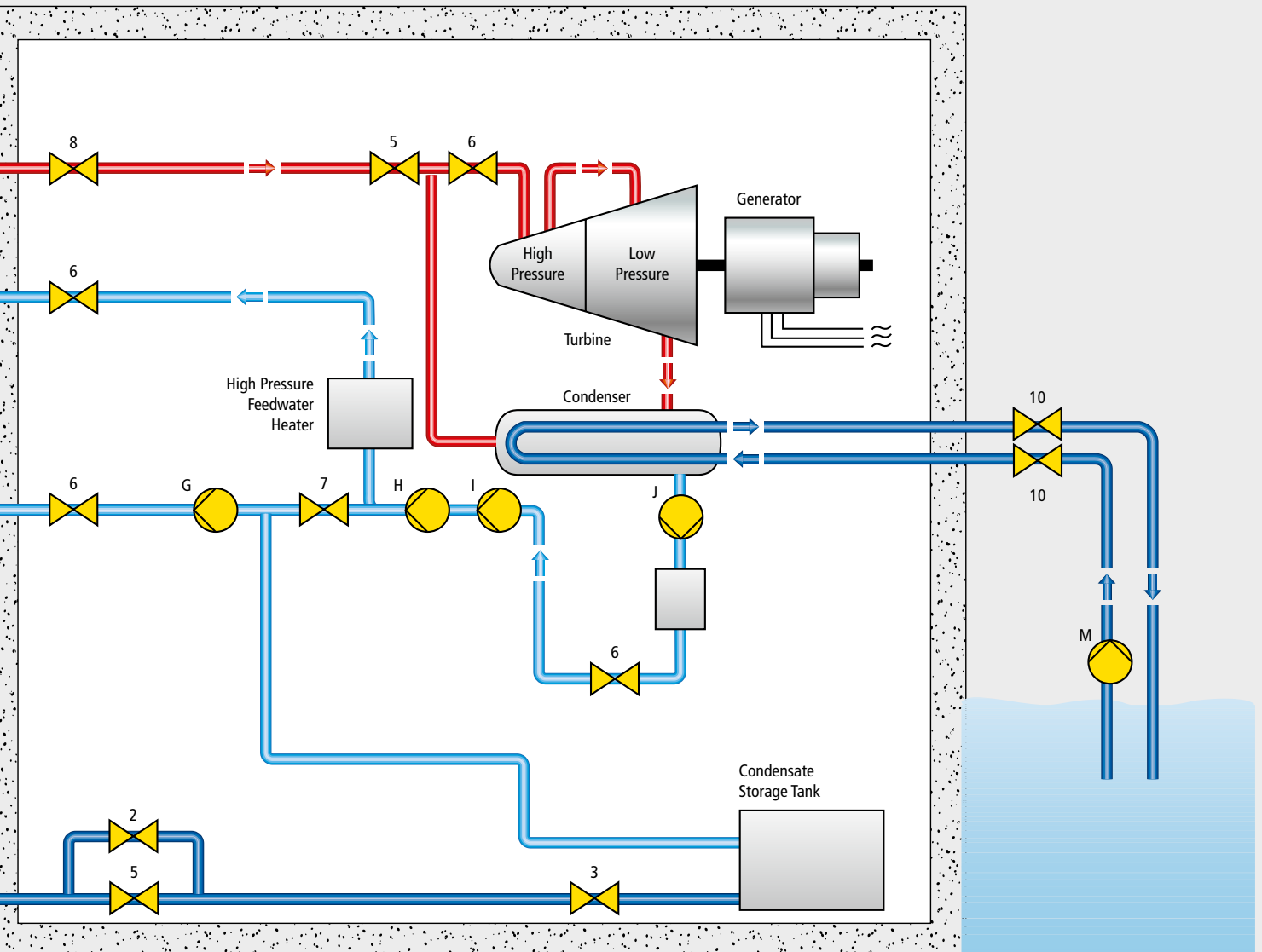
K Emergency Feedwater Pump
 L Condensate Extraction Pump
 M Cooling Water Pump
 N Component Cooling Water Pump
 O Essential Service Water Pump

1 Instrument valve
 2 Small Globe valve with and without bellow seal (NUCA)
 3 Diaphragm valve
 4 NUCA-S valve
 5 Globe valve with and without bellow seal
 6 Gate valve
 7 Swing check valve
 8 MSIV
 9 Non-return valve, damped
 10 Butterfly valve

KSB technology in operation: boiling-water reactor circuit



Turbine Island



- | | | | |
|---|--------------------------------|---|---|
| A | Reactor Internal Pump | 3 | Diaphragm valve |
| B | Reactor Water Clean-up Pump | 2 | Small Globe valve with and without bellow seal (NUCA) |
| C | Reactor Core Isolation Cooling | 4 | NUCA-S valve |
| D | High Pressure Core Spray Pump | 5 | Globe valve with and without bellow seal |
| E | Low Pressure Core Spray Pump | 6 | Gate valve |
| F | Residual Heat Removal Pump | 7 | Swing check valve |
| G | Control Rod Drive Pump | 8 | MSIV |
| H | Main Feedwater Pump | | |
| I | Booster Pump | | |
| J | Condensate Extraction Pump | | |
| K | Cooling Water Pump | | |
| L | Component Cooling Water Pump | | |
| M | Essential Service Water Pump | | |

Pumps for nuclear islands

RER Reactor coolant pump



Design:

Vertical, single-stage reactor coolant pump with forged annular casing plated on the inside, with diffuser, either with own pump thrust bearing or supported by motor bearing.

Applications:

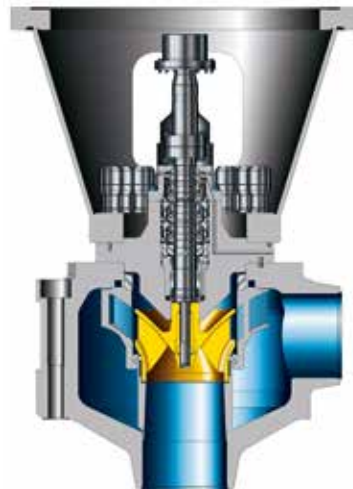
Reactor coolant recirculation in nuclear power stations (PWR).

Technical data:

DN	max. 800
Q [m ³ /h]	max. 40,000
H [m]	max. 140
p [bar]	max. 175
T [°C]	max. +310
n [min ⁻¹]	max. 1,800

Higher values available upon request.
Available in 50 and 60 Hz.

RSR Reactor coolant pump



Design:

Vertical, single-stage reactor coolant pump, with cast double-volute casing, supported by motor bearing.

Applications:

Reactor coolant recirculation in nuclear power stations (PWR, PHWR).

Technical data:

DN	max. 750
Q [m ³ /h]	max. 24,000
H [m]	max. 215
p [bar]	max. 175
T [°C]	max. +310
n [min ⁻¹]	max. 1,800

Higher values available upon request.
Available in 50 and 60 Hz.

RUV Reactor coolant pump



Design:

Vertical, single-stage reactor coolant pump. Seal-less design with integrated wet winding motor and integrated flywheel. Product-lubricated bearings, no oil supply systems required.

Applications:

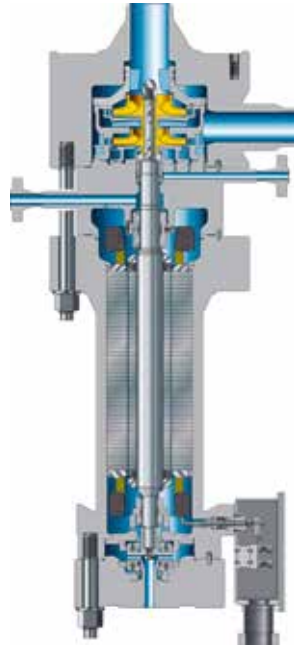
Main coolant circulation in third-generation nuclear power stations.

Technical data:

DN	max. 650
Q [m ³ /h]	max. 22,000
H [m]	max. 111
p [bar]	max. 155
T [°C]	max. +350
n [min ⁻¹]	max. 1,800

Higher values available upon request.
Available in 50 and 60 Hz.

LUV®-Nuclear Reactor coolant/reactor water clean-up pump



Design:

Vertical pump with integrated motor, single entry, one to three stages. Suitable for very high inlet pressures and temperatures. Integrated wet rotor motor to VDE. Product-lubricated bearings – no need for oil supply systems. Design according to ASME Section 3, KTA, etc.

Applications:

As reactor water clean-up pump in boiling-water reactors, reactor coolant pump in boiling-water and pressurised-water reactors, and as recirculation pump in test facilities.

Technical data:

DN	40–600
Q [m ³ /h]	max. 7,000
H [m]	max. 300
p [bar]	max. 320
T [°C]	max. +430

Higher values available upon request.
Available in 50 and 60 Hz.

PSR Reactor internal pump



Design:

Vertical pump set integrated in the reactor pressure vessel, gland-less pump with leak-free, low-maintenance wet rotor motor.

Applications:

Reactor coolant recirculation in boiling-water reactors (BWR/ABWR).

Technical data:

DN	max. 600
Q [m ³ /h]	max. 9,000
H [m]	max. 45
p [bar]	max. 75
T [°C]	max. +300
n [min ⁻¹]	max. 2,000

Higher values available upon request.
Available in 50 and 60 Hz.

RHM Pump for safety-related and auxiliary systems



Design:

Horizontal, multistage barrel pull-out pump.

Applications:

Core flooding, emergency-cooling and residual-heat-removal systems, volume control systems, high-pressure charging, control-rod drive systems, high- and medium-pressure safety injection systems, auxiliary feed-water systems, start-up and shutdown feed-water systems.

Technical data:

DN	max. 150
Q [m ³ /h]	max. 300
H [m]	max. 2,100
p [bar]	max. 220
T [°C]	max. +180
n [min ⁻¹]	max. 8,000

Higher values available upon request. Available in 50 and 60 Hz.

RVM Pump for safety-related and auxiliary systems



Design:

Vertical, multistage barrel pull-out pump.

Applications:

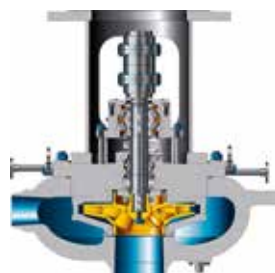
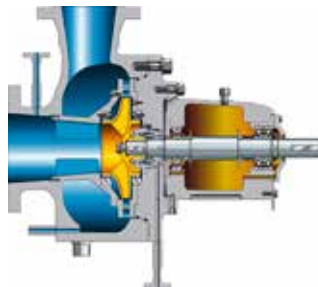
Core flooding, emergency-cooling and residual-heat-removal systems, volume control systems, high-pressure safety injection systems.

Technical data:

DN	max. 85
Q [m ³ /h]	max. 50
H [m]	max. 2,000
p [bar]	max. 200
T [°C]	max. +100
n [min ⁻¹]	max. 6,000

Higher values available upon request. Available in 50 and 60 Hz.

RHR / RVR Pump for safety-related and auxiliary systems



Design:

Horizontal or vertical annular casing pump with forged pressure boundary and diffuser.

Applications:

Core flooding, emergency-cooling and residual-heat-removal systems, ancillary systems, acid feed systems and low-pressure feed systems.

Technical data:

DN	max. 500
Q [m ³ /h]	max. 6,000
H [m]	max. 190
p [bar]	max. 63
T [°C]	max. +200
n [min ⁻¹]	max. 3,600

Higher values available upon request. Available in 50 and 60 Hz.

Pumps for turbine islands

RHD Main feed-water pump



Design:

Horizontal, single-stage, double-entry feed water pump, cast and forged variant.

Applications:

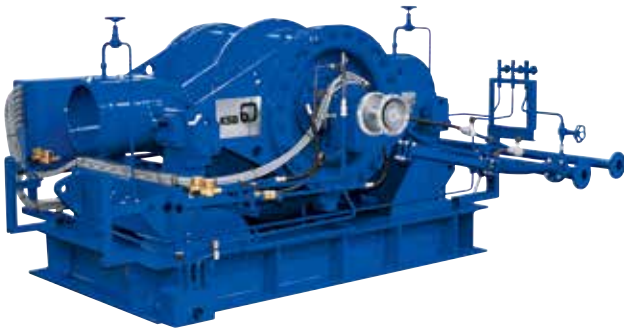
Handling of feed water in steam generation systems of nuclear power stations.

Technical data:

DN	125–500
Q [m ³ /h]	max. 6,500
H [m]	max. 1,000
p [bar]	max. 150
T [°C]	max. +210
n [min ⁻¹]	max. 6,500

Higher values available upon request. Also available in 60 Hz.

YNK Feed-water booster pump



Design:

Horizontal, radially split, single-stage, double-entry boiler feed booster pump (booster system) with single or double cast-steel volute casing.

Applications:

Handling of feed water in power stations and industrial facilities.

Technical data:

DN	125–600
Q [m ³ /h]	max. 3,700
H [m]	max. 280
p [bar]	max. 40
T [°C]	max. +210
n [min ⁻¹]	max. 1,800

Higher values available upon request. Also available in 60 Hz.

CHTC Start-up feed-water pump



Design:

Horizontal, high-pressure barrel-type pump with radial impellers, single and double entry, multi-stage, with flanges/weld-end nozzles according to DIN and ANSI.

Applications:

Handling of feed water and condensate in power stations and industrial facilities, generation of pressurised water for bark-peeling machines and descaling equipment.

Technical data:

DN	125–300
Q [m ³ /h]	max. 1,450
H [m]	max. 4,200
p [bar]	max. 420
T [°C]	max. +200
n [min ⁻¹]	max. 7,000

Higher values available upon request. Also available in 60 Hz.

HGC® Feed-water pump



Design:

Horizontal, radially split, multistage ring-section pump with radial impellers, single or double entry.

Applications:

Handling of feed water and condensate in power stations and industrial facilities, generation of pressurised water for bark-peeling machines, descaling equipment, snow guns, etc.

Technical data:

DN	40–300
Q [m³/h]	max. 1,450
H [m]	max. 4,200
p [bar]	max. 420
T [°C]	max. +200
n [min⁻¹]	max. 7,000

Higher values available upon request. Also available in 60 Hz.

WKTA / WKTB Condensate pump



Design:

Vertical, multistage, can-type ring-section pump with radial and mixed-flow impellers. Single- and double-entry suction impellers, flanges according to DIN or ANSI. The can is arranged in a pit below the installation floor. The pump is connected with the structure by means of a baseplate.

Applications:

Handling of condensate in power stations and energy systems.

Technical data:

DN	150–300
Q [m³/h]	max. 1,800
H [m]	max. 370
p [bar]	max. 40
T [°C]	max. +100
n [min⁻¹]	max. 1,800

Higher values available upon request. Also available in 60 Hz.

SEZ / PHZ / PNZ Cooling-water pump



Design:

Vertical tubular casing pump with open mixed-flow impeller (SEZ), mixed-flow propeller (PHZ) or axial propeller (PNZ). Pump inlet with bell mouth or suction elbow, pull-out design available, discharge nozzle arranged above or below the floor, flanges according to DIN or ANSI standards available.

Applications:

Handling of raw, pure, service and cooling water in industry, water supply systems, power stations and seawater desalination plants.

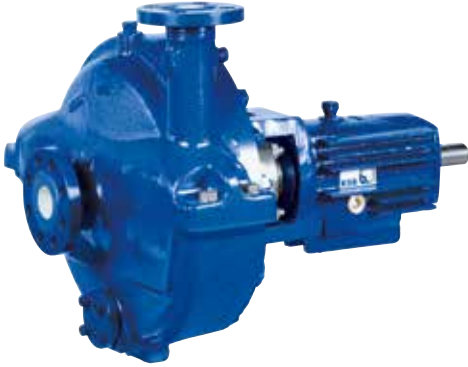
Technical data:

Q [m³/h]	max. 80,000
H [m]	max. 120
T [°C]	max. +40
n [min⁻¹]	max. 980

Higher values available upon request. Also available in 60 Hz.

Auxiliary pumps

RPH® OH2 process pump to API 610


Design:

Horizontal, radially split volute casing pump in back pull-out design according to API 610, ISO 13709 (heavy duty), with radial impeller, single stage, single entry, centre-line pump feet; with inducer, if required. ATEX-compliant version available.

Applications:

Refineries, petrochemical and chemical industries, power stations.

Technical data:

DN	25–400
Q [m³/h]	max. 4,150
H [m]	max. 270
p [bar]	max. 51
T [°C]	max. +450

Also available in 60 Hz.

MegaCPK Standardised chemical pump with two bearing-bracket variants


Design:

Horizontal, radially split volute casing pump in back pull-out design according to EN 22 858/ISO 2858/ISO 5199, single stage, single entry, with radial impeller. Also available as variant with 'wet' shaft. ATEX-compliant version available.

Applications:

Handling of aggressive liquids in the chemical and petrochemical industries as well as in refinery.

Technical data:

DN	25–250
Q [m³/h]	max. 1,160
H [m]	max. 162
p [bar]	max. 25
T [°C]	max. +400

Also available in 60 Hz.

Secochem® Ex Standardised chemical pump with canned motor and explosion protection


Design:

Horizontal, seal-less volute casing pump in back pull-out design with fully enclosed canned motor, low noise emission, with radial impeller, single stage, single entry, casing connecting dimensions according to EN 22 858/ISO 2858. Design to ATEX.

Applications:

Handling of aggressive, flammable, explosive, toxic, volatile or valuable liquids in the chemical and petrochemical industry, environmental engineering and general industry.

Technical data:

DN	25–100
Q [m³/h]	max. 300
H [m]	max. 150
p [bar]	max. 25
T [°C]	max. +130

Also available in 60 Hz.

KWP® / KWP®-Bloc Non-clogging impeller centrifugal pump / close-coupled unit



Design:

Horizontal, radially split volute casing pump in back pull-out or close-coupled design, single stage, single entry, available with various impeller types: non-clogging impeller, open multi-vane impeller, free-flow impeller. ATEX-compliant version available.

Applications:

Handling of pretreated sewage, waste water, and all types of slurries without stringy substances and pulps up to 5 % bone dry.

Technical data:

DN	40–900 (max. 1,000)
Q [m ³ /h]	max. 1,500 (max. 1,800)
H [m]	max. 100
p [bar]	max. 10
T [°C]	max. +280
n [min ⁻¹]	max. 2,900

Also available in 60 Hz.

Amarex® KRT® Submersible motor pump DN 40 to DN 700



Design:

Vertical, single-stage submersible motor pump in close-coupled design, various impeller types, for wet or dry installations, stationary and transportable versions. ATEX-compliant version available.

Applications:

Handling of all types of abrasive or aggressive waste water in the areas of water and waste water engineering as well as industry; especially good for untreated sewage containing long fibres and solid substances, fluids containing gases or air as well as raw, activated and digested sludge; sea water desalination.

Technical data:

DN	40–700
Q [m ³ /h]	max. 10,080
H [m]	max. 100
T [°C]	max. +60
n [min ⁻¹]	max. 2,900

Also available in 60 Hz.

Valves for nuclear islands

ZTN Gate valves


Design:

Weld-end gate valve with bolted or pressure seal bonnet, forged or welded body, non-rotating stem, wedge-type or with parallel discs, made of carbon steel or stainless steel.

Technical data:

p [bar]	max. 320
DN	80–700
T [°C]	max. +400

Actuators:

Hand wheel, electric, pneumatic.

Applications:

Reactor cooling, safety feed, feed water, live steam, cleaning and condensate systems.

Staal AKDN / AKDSN Gate valves


Design:

Weld-end gate valve with bolted bonnet, low-weight die-forged or forged, welded body, non-rotating stem, wedge-type or with parallel discs, made of carbon steel or stainless steel.

Technical data:

p [bar]	max. 40
DN	80–1,000
T [°C]	max. +200

Higher values upon request.

Actuators:

Hand wheel, electric.

Applications:

Auxiliary systems, safety feed, feed water, live steam, cleaning and condensate systems.

ZXNB Bellows-type globe valves


Design:

Weld-end bellows-type globe valve designed to meet safety-related requirements, straight-way/angle/two-way pattern, made of carbon steel or stainless steel.

Technical data:

p [bar]	max. 210
DN	65–300
T [°C]	max. +365

Higher values upon request.

Actuators:

Hand wheel, electric, pneumatic.

Applications:

Reactor cooling, moderator, safety feed, feed water, live steam and cleaning systems.

ZXNVB Small globe and instrumentation valves



Design:
Butt-weld/socket-weld end globe valve with gland packing or bellows, straight-way pattern, made of carbon steel or stainless steel.

Technical data:
p [bar] max. 210
DN 4–25
T [°C] max. +365

Applications:
Reactor cooling, moderator, safety feed, feed water, live steam and cleaning systems.

NUCA /-A, types I, II, IV Globe and lift-check valves



Design:
Butt-weld/socket-weld end globe valve with gland packing or bellows, straight-way pattern, made of carbon steel, stainless steel or nickel.

Technical data:
p [bar] max. 320
DN 10–50
T [°C] max. +400

Actuators:
Hand wheel, electric, pneumatic.

Applications:
Reactor cooling, moderator, safety feed, feed water, live steam and cleaning systems.

NUCA-F (safety-related) Globe valves



Design:
Butt-weld/socket-weld end bellows-type globe valve designed to meet safety-related requirements, straight-way pattern, made of carbon steel or stainless steel; integrity maintained after limit switch failure of actuator.

Technical data:
p [bar] max. 210
DN 10–50
T [°C] max. +365

Actuators:
Hand wheel, electric, pneumatic.

Applications:
Reactor cooling, moderator, safety feed, feed water, live steam and cleaning systems.

NUCA-S (safety-related) Globe valves



Design:
Weld-end bellows-type globe valve designed to meet safety-related requirements, straight-way pattern, made of carbon steel or stainless steel; operability maintained after limit switch failure of actuator.

Technical data:
p [bar] max. 210
DN 10–50
T [°C] max. +365

Actuators:
Electric.

Applications:
Reactor cooling, moderator, safety feed, feed water, live steam and cleaning systems.

ZYNB / ZYN Globe valves with slanted seat


Design:

Weld-end globe valve with gland packing or bellows designed to meet safety-related requirements, Y-type valve, made of cast or stainless steel.

Actuators:

Electric.

Applications:

Residual-heat removal systems in nuclear applications.

Technical data:

p [bar]	max. 62
DN	300–400
T [°C]	max. +365

MXN Diaphragm valves


Design:

EPDM rubber soft-seated flanged or weld-end diaphragm valve made of carbon steel, stainless steel or rubber-lined modular cast iron.

Actuators:

Hand wheel, electric, pneumatic.

Applications:

Cleaning systems, condensate and cooling water systems, auxiliary systems.

Technical data:

p [bar]	max. 12
DN	10–200
T [°C]	max. +100

RYN Lockable non-return valves


Design:

Weld-end non-return Y-type globe valve with gland packing or bellows, made of carbon steel or stainless steel.

Actuators:

Hand wheel, electric, pneumatic.

Applications:

Feed water and live steam systems.

Technical data:

p [bar]	max. 210
DN	65–300
T [°C]	max. +365

Higher values upon request.

RJN Non-return valves, damped


Design:

Weld-end non-return valve with individually selectable damping characteristic, made of carbon steel or stainless steel.

Applications:

Feed water and live steam systems.

Technical data:

p [bar]	max. 140
DN	80–600
T [°C]	max. +300

ZRN Swing check valves



Design:
Weld-end swing check valve with bolted cover, internal hinge pin, forged body, made of carbon steel or stainless steel.

Applications:
Safety feed, feed water, live steam and condensate systems.

Technical data:
p [bar] max. 320
DN 50–600
T [°C] max. +400

CLOSSIA Butterfly valve



Design:
Double-offset butterfly valve, metal/metal-seated, maintenance-free. Carbon-steel body with one flanged and one weld-end connection. Safety actuator with manual, pneumatic or electric actuation; quick closing time.

Applications:
Nuclear power stations, reactor containment, applications requiring a quick closing time.

Technical data:
p [bar] max. 10
DN 250/500/
750/1,000
T [°C] –20 to +170

DANAIS® MT II Butterfly valves



Design:
Double-offset butterfly valve with elastomer or metal seat ring (fire-safe design); without gland packing; maintenance-free. With lever or gearbox, pneumatic, electric or hydraulic actuator. Body made of cast steel, carbon steel or stainless steel. With wafer-type body (T1), full-lug-type body (T4) or single-piece double-flanged body (T7) with flat or raised faces. Body types T4 and T7 can be used for dead-end service. EN, ASME, JIS connections. Certification according to TA-Luft.

Applications:
Nuclear power stations, steam, vacuum service and all applications requiring offset-disc butterfly valves.

Technical data:
p [bar] max. 50
or class 300
DN 50–600
T [°C] –50 to +260

Mammoth Butterfly valves



Design:
Centred-disc butterfly valve with elastomer liner. With manual gearbox, electric, hydraulic actuator or counter weight. U-section/double-flanged body with flat faces (T5). EN, ASME, JIS connections possible.

Applications:
Nuclear power stations, water supply, water treatment, cooling circuits, firefighting systems.

Technical data:
p [bar] max. 25
DN 1,050 – 4,000
T [°C] 0 to +65

ISORIA Butterfly valves



Design:

Centred disc butterfly valve with elastomer liner. With lever, manual gearbox, pneumatic, electric or hydraulic actuator. Semi-lug-type body (T2) or U-section body with flat faces (T5). Body types T2 and T5 are suitable for downstream dismantling and dead-end service with counter-flange. EN, ANSI, JIS connections possible.

Applications:

Shut-off service for liquids only.

Technical data:

p [bar]	max. 10
DN	32–1,000
T [°C]	–10 to +130

Serie 2000 Check valves



Design:

Twin-plate check valve, single-piece body made of carbon steel or stainless steel, metal/elastomer or metal-seated; maintenance-free. EN, ASME, JIS connections possible.

Applications:

Shut-off service for liquids only; steam cycles.

Technical data:

p [bar]	max. 10/16
DN	20–500
T [°C]	–10 to +130

SISTO-20NA Diaphragm valves



Design:

Weld-end diaphragm valve, soft-seated shut-off valve; shut-off and sealing to atmosphere by diaphragm; manual, electrical or pneumatic operation; made of carbon steel or stainless steel.

Applications:

Cleaning systems, condensate and cooling-water systems, waste-water systems.

Technical data:

p [bar]	max. 20
DN	08–150
T [°C]	max. +100

SISTO-DrainNA Diaphragm valves



Design:

Soft-seated shut-off valve with weld ends or hose connection, shut-off and sealing to atmosphere by diaphragm, with operating key, made of stainless steel.

Applications:

Heating installation systems.

Technical data:

p [bar]	max. 16
DN	15 and 25
T [°C]	max. +100

SISTO-KRVNA Floating ball valves



Design:
Soft-seated floating ball valve with weld ends or flanges, made of stainless steel.

Applications:
Waste processing, system ventilation.

Technical data:
p [bar] max. 16
DN 25–100
T [°C] max. +100

SISTO-RSKNA Swing check valves



Design:
Swing check valve with or without lining, soft-seated, in straight-way pattern with slanted seat with internal hinge pin and soft rubber-coated disc, made of carbon steel or stainless steel.

Applications:
Waste-water systems.

Technical data:
p [bar] max. 16
DN 25–300
T [°C] max. +100

Valves for turbine islands

ZTS Gate valves



Design:
High-pressure weld-end gate valve with pressure-seal bonnet, forged body from carbon steel, non-rotating stem, wedge-type.

Actuators:
Hand-wheel, electric, pneumatic, hydraulic.

Applications:
Feed-water and live steam systems.

Technical data:
p [bar] max. 600
DN 50–550
T [°C] max. 650

ZJSVM/RJSVM 3-way valves






























Design:
High-pressure weld-end pre-heater 3-way valve with pressure-seal bonnet, quick-closing, system media operation, with blocking stem, forged body from carbon steel.

Applications:
Feed-water systems.



























Technical data:
p [bar] max. 600
DN 100–800
T [°C] max. 450

Shut-off valves

	Globe valves		Gate valves	
	DIN	ANSI	DIN	ANSI
Low-pressure applications PN 10–40 T up to 450 °C	 BOA H/HE	 SICCA 150-300 GLC	 STAAL 40 AKD/AKDS	 SICCA 150-300 GTC
	 NORI 40 ZXLF/ZXS	 NORI 40 ZXLF/ZXS	 SICCA 800 GLF	 SICCA 800 GTF
Medium-pressure applications PN 63–160 T up to 550 °C	 NORI 160 ZXLF/ZXS	 SICCA 600 GLC	 STAAL 100 AKD/AKDS	 SICCA 600 GTC
		 SICCA 900 GLC		 SICCA 900 GTC
	 NORI 160 ZXLF/ZXS	 SICCA 800 GLF	 AKGS-A	 SICCA 800 GTC
High-pressure applications PN 250–600 T up to 650 °C	 NORI 320 ZXSV	 NORI 500 ZXSV	 SICCA 900-2500 GLC	 ZTS
	 NORI 320 ZXLF/ZXS	 NORI 500 ZXLR/ZXSR	 SICCA 800-2500 GLF	 SICCA 1500 GTC
				 SICCA 1500 GTF

Non-return valves

Special valves

Diaphragm valves	Butterfly valves	Non-return valves		Feed-water bypass valves	Vent valve
DIN	DIN/ANSI	DIN	ANSI	DIN	DIN
 SISTO-10  SISTO-KB  SISTO-16  SISTO-20	 DANAIS  ISORIA  MAMMOUTH	 NORI 40 RXL/RXS  STAAL 40 AKK/AKKS  SERIE 2000	 SERIE 2000  SICCA 150-300 SCC		 SISTO-VentNA
		 NORI 160 RXL/RXS  STAAL 100 AKK/AKKS  AKR/AKRS	 SICCA 600 SCC  SICCA 900 SCC  SICCA 800 PCF		
		 NORI 320 RXL/RXS  NORI 500 RXLR/RXSR  RGS  ZRS	 SICCA 1500-2500 SCC  SICCA 1500-2500 PCF	 ZJSVM/RJSVM	



Technology that **drives success**

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