When things get hot:
Fire-fighting pump packages from KSB

There's more to fire protection than flame and fortune

In Germany alone, a fire breaks out every three minutes. In the course of each year, fires injure 600,000 people. But as well as physical harm, a blaze also causes many other forms of damage. That is particularly true of industrial fires. Buildings, investments and the environment all suffer. Jobs are lost and livelihoods – literally – go up in smoke. Further knock-on damage emerges over time. The earlier a fire is fought and contained, the less damage it causes. Which is why engineers often equip modern industrial plants, office buildings and shopping malls with automatic fire-fighting systems. Insurance companies know how much damage this equipment can prevent: premiums on properly fitted buildings can fall by as much as 60 per cent.

Customers put high demands on fire protection systems: On the one hand, they hope that they will never actually need them. On the other hand, they expect everything to work perfectly if fire does strike. Fire-fighting pumps naturally face the same high demands. All components must be constructed to be ready at any time, despite the very limited period of use. And “ready”

means able to operate at full capacity immediately. The range of fire-fighting techniques makes the situation even more complicated. Water spray and water mist systems, for example, require extra high pressure. Foam systems need pumps in materials impervious to the medium.

When things get hot, we're on hand

KSB has been making pumps and valves for over 130 years. Our products are everywhere. And with KSB, the whole range of pump expertise comes from one company. We run our own foundries, state-of-the-art research labs and comprehensive quality assurance. We believe this is unique, anywhere you look. KSB works closely with consultants, engineers and end users to find the ideal solution for every project. Which in fire protection means a lot more than just pumps. We also provide all the other equipment you need for a fixed installation. Our pressure boosting units, for instance, ensure hydrants do their job properly. If you want, KSB will also set up entire systems including control cabinets and diesel pump sets.

Fire protection is a question of experience

KSB leads the European sprinkler pump market – with good reason. Our experience in fire protection stretches back more than 40 years. And KSB makes its products on every continent. That international presence is a major advantage in fire protection – we know our way through all the standards, certifications and regulations and are represented by fire protection experts in over 100 countries. We have the right pumps and components to match central Europe's VdS standard, the UK's LPC BS 5306-2, Spain and Portugal's CEPREVEN, European standard EN 12845, NFPA20/FM/UL in the USA, and a host of other national standards.

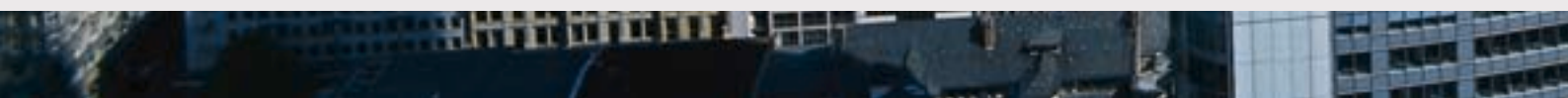
For us, quality includes delivering ideal technology. But that is just part of our first-class service. More than 1,600 KSB specialists in over 100 service centres provide skilled help, fast. Whether your building is just being planned or older than all its occupants, KSB stops fires before they really get started. Water relief!

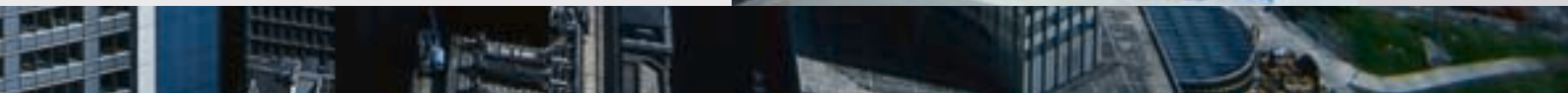
Commerzbank Tower, Frankfurt, Germany

The Commerzbank is one of Germany's best-known retail banks. For its headquarters in Frankfurt's impressive financial district, the Commerzbank signed up the prominent British architect Sir Norman Foster. He designed a tower that soars 259 meters, with a 40-metre aerial on top. Finished in 1997, the office block was Europe's tallest building for several years.

It provides a total of 120,000 m² floor space. The Commerzbank built its headquarters with ecological principles in mind, and even added nine four-storey gardens between floor 7 and 39. KSB pumps and valves keep everything flowing smoothly in the eye-catching triangular tower – as well as protecting it in the event of fire.

- **Customer:** Commerzbank AG
- **Applications:** Fire-fighting systems, heating, cooling and air-conditioning, water supply and drainage
- **Scope of supply:** More than 294 pumps and some 2,000 valves
- **Pumps:** Ama-Drainer, CPK, Compacta, Etanorm, Eta-R, Etaline, Hyamat with Movitec, Hyatronic, Rio and Riotec
- **Valves:** BOA-Control IMS, BOA-Compact, BOA-Compact EKB, BOA-H, BOA-S, SISTO, BOAX
- **Fire protection products:** Ten CPK-SX 100-315 and Etanorm-MX 80-250 horizontal volute casing pumps
- **Technical data:** Q = 180 to 220 m³/h
H = 80 to 120 m
- **Standard:** VdS
- **Commissioned:** May 1997





Kogan Creek Power Station, Chinchilla, Queensland, Australia

Australia is putting major efforts into its Clean Energy Programme. They include construction of one of the continent's most environmentally friendly large-scale power stations. The 750 megawatt coal-fired power station in the state of Queensland is a 1.2-billion-dollar project funded by the state government.

Kogan Creek, near Chinchilla, Queensland, is Australia's largest single-block power station. Its air-cooling system saves up to 90 percent of conventional stations' water requirements. Kogan Creek dispenses with a wet cooling tower and releases surplus heat via a dry tower. The project is a model for new power stations across arid regions of the world.

- **Customer:** CS Energy
- **Scope of supply:** B14 deep-well turbine pumps with diesel engine/electric motor
- **Technical data:** Q = 126 l/s
  H = 102 m
- **Standards:** AS2941 and NFPA-20
- **Commissioned:** September 2007

Termopernambuco Natural Gas Power Station, Ipojuca, Brazil

Ipojuca lies a few kilometres south of Recife, capital of the Brazilian state of Pernambuco. It is now home to the Termopernambuco natural gas power station, built as part of the national Thermoelectric Priority Programme. Construction started in 2001, and the station opened two years later. The US$ 400-million-project was funded by the Inter-American Development Bank (IADB) and Brazil's National Bank for Economic and Social Development (BNDES).

The power station uses natural gas to drive one steam and two gas turbines in a combined cycle. Termopernambuco can provide up to 532 MW. 27 km of piping connect it to the national power supply network.

- **Customer:** Termopernambuco S/A
- **Scope of supply:** Container with Megachem 125-400 with electric motor and diesel engine and Megachem 32-250 as jockey pump, including control cabinets, valves, piping, sprinklers, flue gas scrubber system, venting systems, sound insulation and the complete measurement technology.
- **Technical data:** Q = 290 m³/h
H = 70 m
- **Standard:** NFPA-20
- **Commissioned:** December 2003

Petroquímica Cuyo Polypropylene Plant, Mendoza, Argentina

Plastics manufacturers in Argentina have been enjoying a period of strong growth. Rising demand has come, in particular, from the packaging industry, automotive suppliers and the booming construction sector. The Petrocuyo polypropylene plant in eastern Argentina's Mendoza province is situated near one of the major oil extraction sites.

Oil provides the raw material for polypropylene production. Following an extension in 2006, Petrocuyo is the largest such unit in the country. KSB Argentina supplied the plant's fire protection equipment. This includes one of the biggest diesel-driven fire-fighting pumps nationwide. A microprocessor runs the 1062 CV engine, which has its own fitted fuel tank.

- **Customer:** Petroquímica Cuyo
- **Scope of supply:** RDL 400-480 A horizontal split case fire-fighting pumps with diesel engine
- **Technical data:** Q = 1,700 to 2,550 m³/h
  H = 65 to 90 m
- **Standard:** NFPA-20
- **Commissioned:** December 2005

Repsol YPF Gas Compression Plants, Argentina

Argentina's 2.78 million square kilometres make it the second-largest country in South America. Extensive natural resources include rich oil and gas fields. National petrochemicals leader Repsol YPF is one of the world's ten biggest private oil companies. The company comprises a total of 9 refineries, 3 of which are located in Argentina, with a capacity of 1.2 million barrels per day. Repsol YPF employs over 30,000 people worldwide.

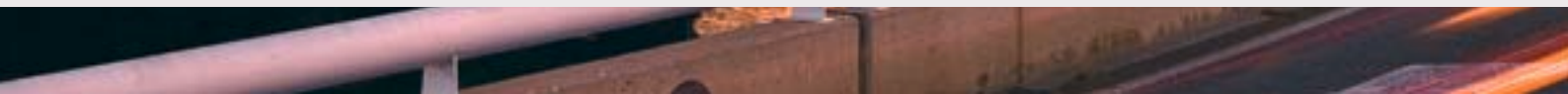
Ensuring fire protection for all its Argentinian gas compression plants is a major task for the company. In October 2006 KSB Argentina supplied six skid structures with a total of 15 diesel-driven fire-fighting units in the provinces of Entre Ríos, Tucumán, Buenos Aires and Neuquén. These were the largest skid-mounted units ever delivered by a pump manufacturer in Argentina.

- **Customer:** Repsol YPF
- **Scope of supply:** Six complete units, with a total of 15 RDL 150-500 horizontal split case fire-fighting pumps with diesel engine, control systems, jockey pumps, valves, wiring and piping.
- **Technical data:** Q = 100 m³/h
  H = 140 m
- **Standards:** NFPA-20, FM, UL
- **Commissioned:** December 2006

Torre Agbar, Barcelona

At 142 metres, the Torre Agbar's 32 storeys make it one of Spain's tallest buildings. The tower houses a 39,000 m² office complex. Its glass and aluminium exterior makes the building look like a fountain of water. The resemblance is no accident: the tower's owner is the municipal water company, Aguas de Barcelona. French architect Jean Nouvel designed the Torre Agbar in homage to a member of his own profession: Catalonia's Antoni Gaudí, who died in 1926. Construction of the Torre Agbar started in February 2001, with completion in the first half of 2004.

- **Customer:** Aguas de Barcelona, S.A. (Barcelona Water Utilities)
- **Applications:** Fire-fighting systems, heating, air-conditioning, water supply
- **Scope of supply:** 38 IN series pumps, 20 Movitec pumps, 1 EPI pressure boosting unit, 6 EPV pressure boosting units with frequency inverter
- **Fire protection products:** 4 complete fire-fighting systems with Movitec and IN electric motor units, including jockey pumps, control cabinets, control equipment and accessories
- **Technical data:** Q = 14 to 131 m³/h
H = 85 to 200 m
- **Standards:** UNE-23500, CEPREVEN
- **Commissioned:** 1st half of 2004



Akropolis Shopping Centre, Klaipeda, Lithuania

The city and port of Klaipeda form one of Lithuania's main business hubs. 200,000 people live in Klaipeda. Just five minutes' drive from the heart of the city is the huge Akropolis shopping centre, offering more than 190 stores and businesses spread across almost 500,000 m². They include "Europvaistine", the country's largest pharmacy, and the 14 hectare "hyper-Maxima", its biggest supermarket. Among the further highlights are a six-screen, 1,200-seat multiplex cinema, plus restaurants and snack bars for more than 2000 guests. On the sporting side, the Akropolis also houses a 1,450 m² ice-rink and a 20-alley bowling hall. In 2006 alone, the centre attracted some nine million visitors from across Lithuania and neighbouring countries.

- **Customer:** VP Market
- **Scope of supply:** Etanorm MX 80-200 with electric motors
- **Technical data:** Q = 160 m³/h, H = 50 m
- **Standard:** VdS
- **Commissioned:** September 2005

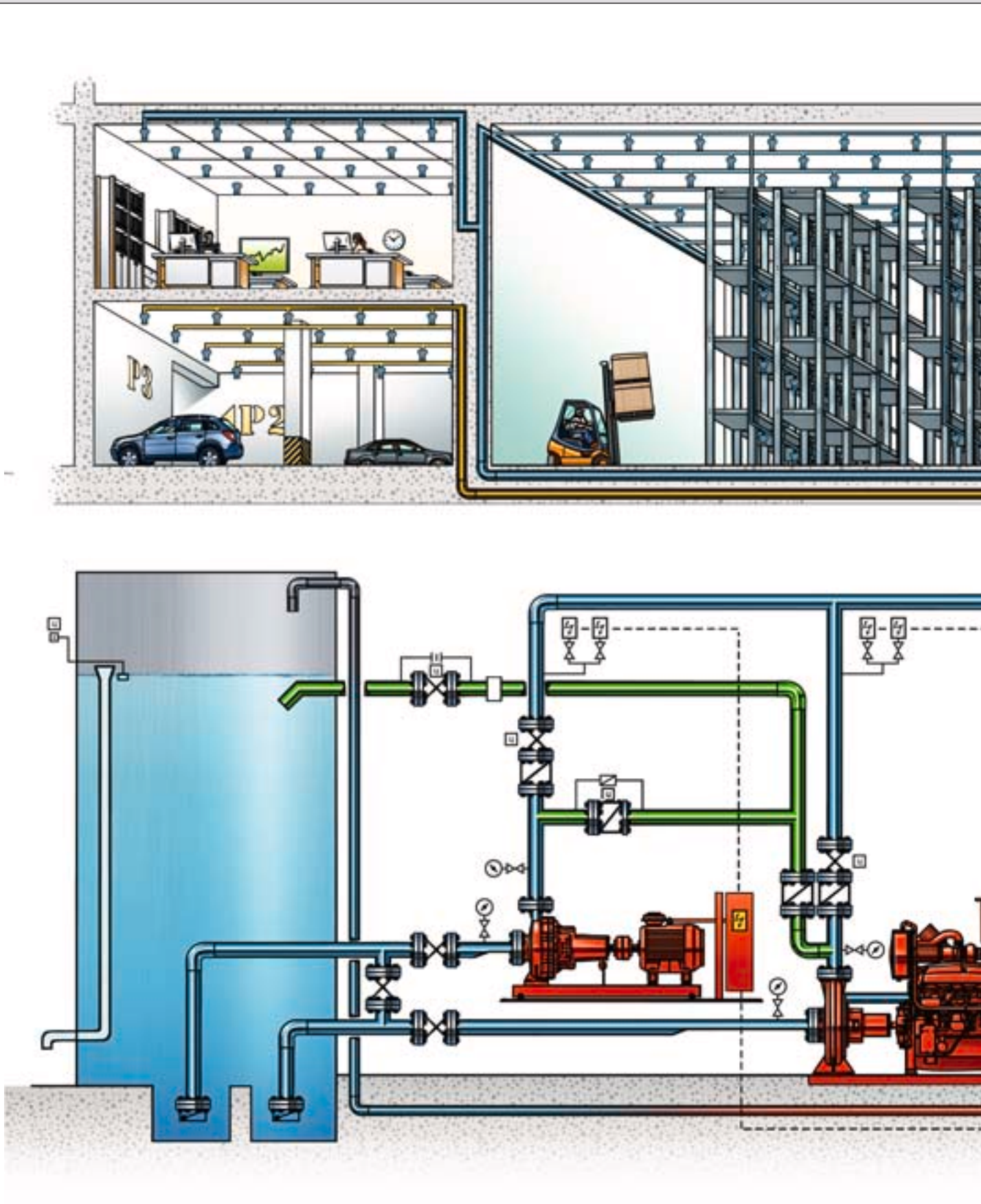
Daimler Plant, Vitoria, Spain

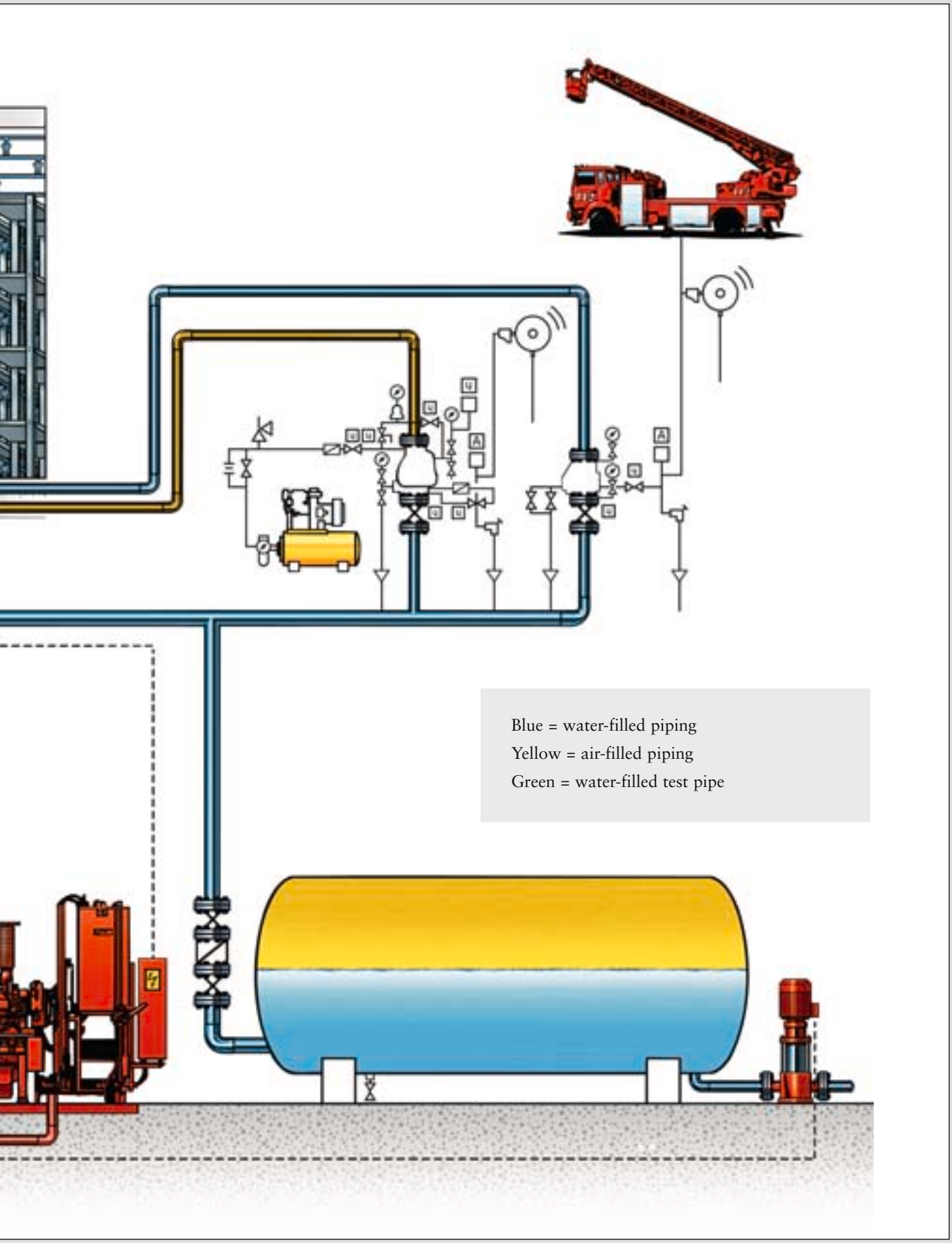
Vitoria lies about 40 kilometres south of Bilbao. Until the 1980s it was a quiet Basque backwater. Today, it is home to one of the world's most modern automotive plants. Some 3,500 employees assemble the Mercedes Vito there. This van's extensive range of models represents a major logistics challenge. To meet it, Daimler has extended the manufacturing area to more than 245,000 m^2 and insists on state-of-the-art technology. Annual plant capacity is between 80,000 and 100,000 vehicles.

- **Customer:** Daimler AG
- **Scope of supply:** BEV deep-well turbine pumps with electric motor
- **Technical data:** Q = 225 m^3/h
  H = 114 m
- **Standard:** UNE
- **Commissioned:** February 2006

The fire protection that’s right for you

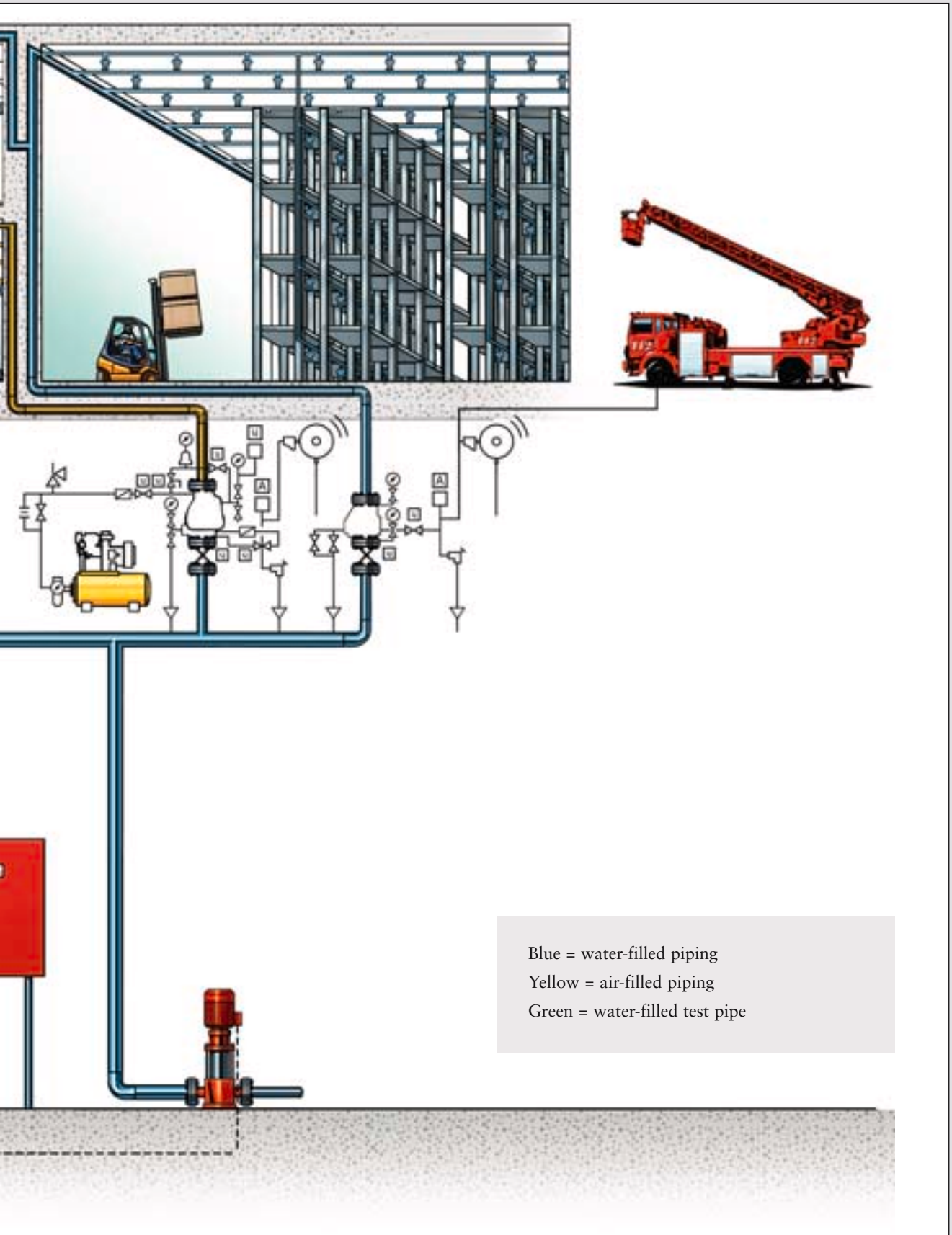
VdS sprinkler system





Blue = water-filled piping
Yellow = air-filled piping
Green = water-filled test pipe

Every fire protection system is different. Which is another good reason to choose KSB. Whatever the set-up, we provide the full choice of pumps for every location. Like volute casing, multistage, deep-well turbine or submersible pumps.



Blue = water-filled piping
Yellow = air-filled piping
Green = water-filled test pipe

Certification

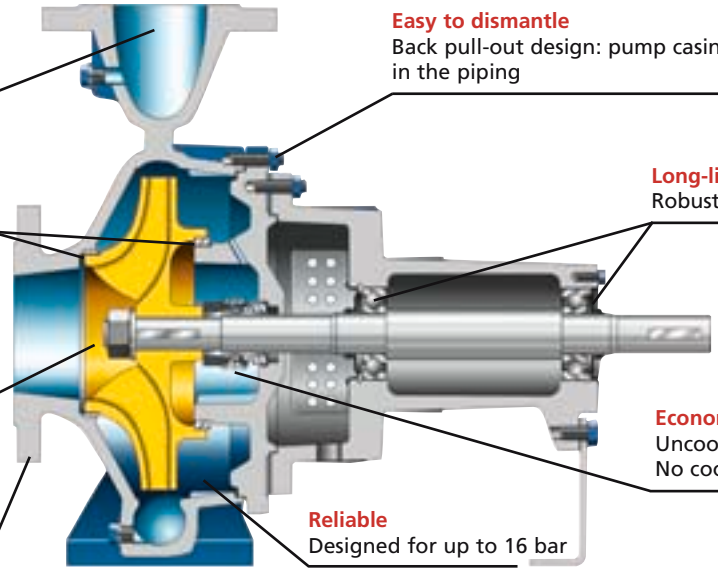
Every fire-fighting pump has to meet specific demands. On one side, there are the various fire-fighting methods. They include sprinklers, deluge, water spray, water mist and foam systems. Parallel to application differences, the pumps also have to match numerous different national and international test or approval regulations. KSB's comprehensive programme always has the right solution for your needs. Our experienced fire protection experts are present in more than 100 countries. They know all the local standards, certificates and regulations.

We also build complete units to the following standards and specifications:

- VdS (worldwide)
- FM (worldwide)
- NFPA-20 (worldwide)
- AS 2941 (Australia)
- EN 12845 (Europe)
- CEPREVEN (Spain)
- UNE (Spain)
- UNI (Italy)

as well as to additional **local regulations**, **customer specifications** and the **product certificates** listed below.

	National product certification						
	Germany	France	UK	Hungary	Czech Republic	Poland	USA
	VdS	APSAD / CNPP	LPC	BMOKF	ZUS / Pavus	CNBOP	FM
Etanorm-MX	•			•	•	•	
Etanorm-MXN		•		•	•		
Etanorm-RX	•			•	•	•	
Etanorm-RXN		•		•	•		
Elite			•				
CPKN-SX	•			•	•	•	
Multitec-SX	•			•			
Omega / RDL				•			•
Omega-SX	•			•			
Movitec	•			•	•		
UPA	•			•	•	•	



To standard
Mating dimensions and ratings to EN 733

Easy to dismantle
Back pull-out design: pump casing remains in the piping

Service-friendly and resistant
Replaceable casing wear rings

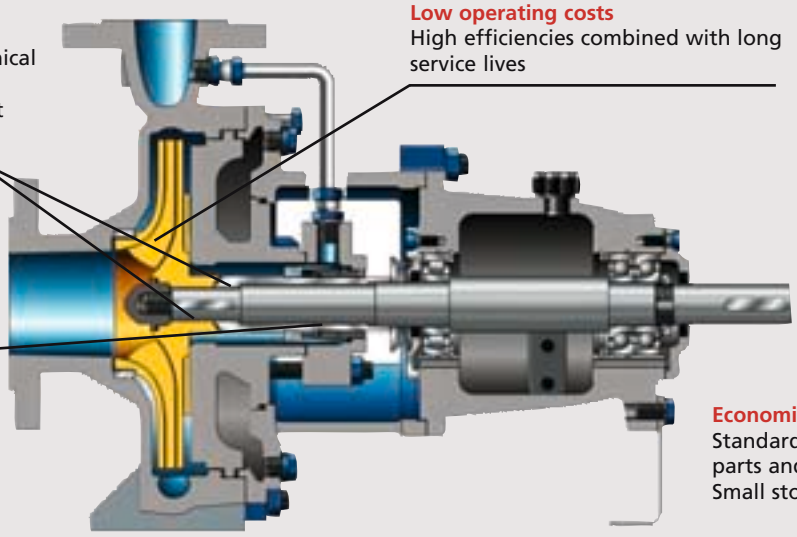
Long-life
Robust bearing

Low energy consumption
Optimized hydraulics with high efficiency

Economic and maintenance-free
Uncooled shaft seal
No cooling water required

Versatile
Large material selection for many applications

Reliable
Designed for up to 16 bar



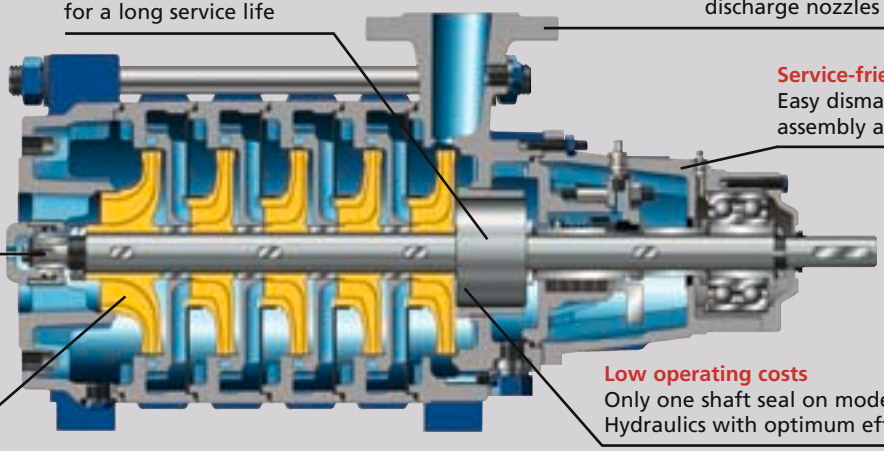
Maintenance-friendly
Long service life of the mechanical seal
Optimized impeller attachment with metal-to-metal contact

Low operating costs
High efficiencies combined with long service lives

Increased flexibility
Wide range of seal variants with dry and wet shaft
Large material selection

Economically efficient
Standardized by using CPK parts and dimensions
Small stock of spare parts

Dependable
Proven design, absolutely reliable



Versatile
Large variety of materials and design models

High availability
thanks to axial thrust balancing for a long service life

Flexible
Ideal adjustment of suction and discharge nozzles to the system

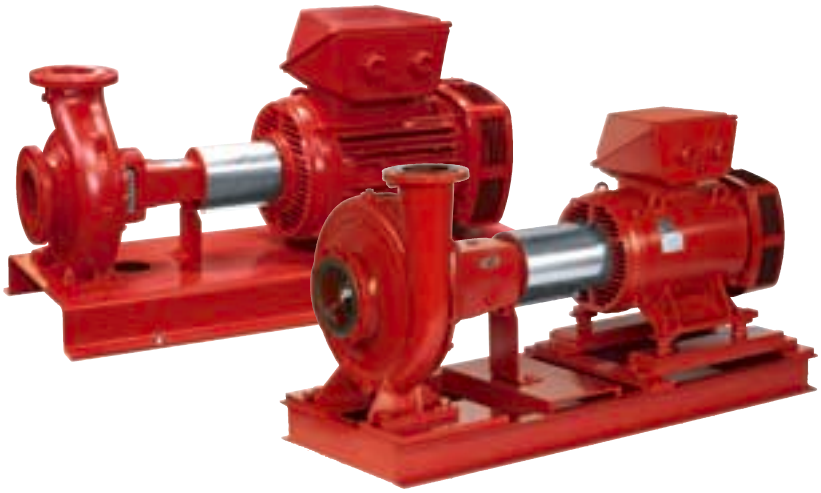
Service-friendly
Easy dismantling of bearing assembly and mechanical seal

Reliable
due to wear-resistant, self-aligning plain bearing made of silicon carbide

Low NPSH
Special suction impeller

Low operating costs
Only one shaft seal on model with axial inlet
Hydraulics with optimum efficiency

Etanorm, Etanorm-MX, Etanorm-MXN, Elite, IN, Etanorm-RX, Etanorm-RXN, Mega



Horizontal split case pump

Technical data*

Q m³/h: up to 2,280

H m: up to 160

CPKN, CPKN-SX

Horizontal split case pump

Technical data*

Q m³/h: up to 4,800

H m: up to 275

Multitec, Multitec-SX

Multistage, horizontal centrifugal pump in ring-section design

Technical data*

Q m³/h: up to 850

H m: up to 630

* Design data for the individual series on request

Omega / RDL

Horizontal split case pump

Technical data*

Q m³/h: up to 12,000

H m: up to 214

Complete pump sets with diesel engine

with Etanorm-MX

with Omega

BEV

Deep-well turbine pump

Technical data

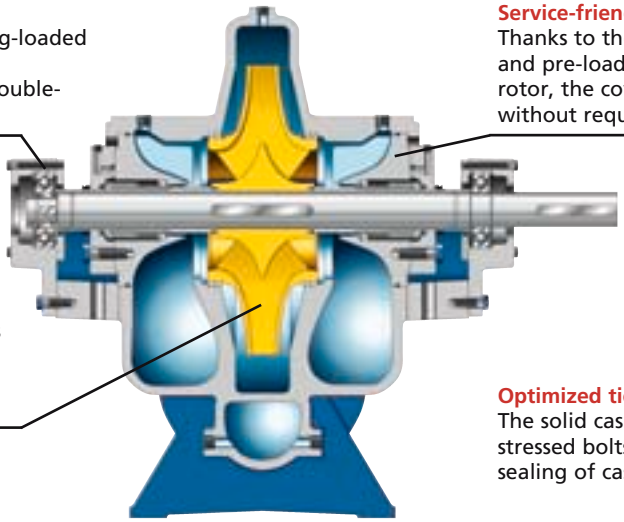
Q m³/h: up to 800

H m: up to 350

* Design data for the individual series on request

High operating reliability
Generously sized, maintenance-free, spring-loaded bearings
Minimal load on the bearings thanks to double-entry impeller (axial thrust balancing)

Service-friendly design
Thanks to the self-aligning upper casing part and pre-loaded spring arrangement at the rotor, the cover and rotor can be mounted without requiring any adjustments



High quality materials
Corrosion and abrasion resistant materials ensure maximum service life of shaft protecting sleeves, casing / impeller wear rings and impeller

Optimized tightness
The solid casing split flange with long pre-stressed bolts ensures reliable and trouble-free sealing of casing upper and lower halves

We manufacture and supply complete pump sets to VdS, FM, NFPA-20, EN 12845, CEPREVEN, UNE, UNI and to other local regulations and customer specifications.

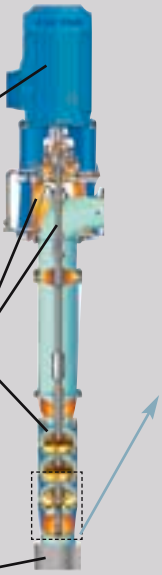
For the UNE, UNI and EN 12845 standards, complete packages can be supplied (electric motor, diesel engine and jockey pump on one baseplate, with control cabinets, tank, batteries, etc.). This also includes the complete piping with discharge collector, valves and pressure switch.

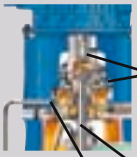
All pump sets can be equipped with any type of fire-fighting pump and driven by either electric motor or diesel engine. The scope of supply also includes a control cabinet, batteries and a fuel tank. Commissioning, service and maintenance can be carried out by our qualified Service staff as an option.

Drive variants
Electric motor with coupling or diesel engine with gearbox

Easy and safe assembly
Pipe columns with special flanges and shaft guides

Depth
Different sizes of column pipes for shallow applications (from 305 to 3,050 mm); Assembling pipe columns, maximum overall depth up to 90 metres

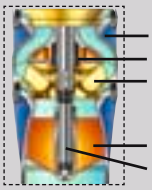




Non-positive connection
Semi-flexible coupling; anti-clockwise

Reliable
Sturdy bearing bracket and shaft

Increased bearing life
Cooling chamber for bearings

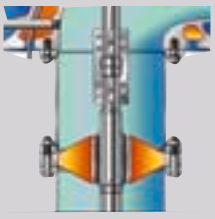


High efficiency
Multistage design
Special shaft bearings
Mixed flow impellers

Suction side
Hydraulically optimized
Long shaft bearing, self-lubricating

Torque transmission: non-positive or positive locking
Robust shaft with two possible coupling variants: split flange with shaft key or threaded shaft coupling

Intermediate bearing
– Column guide adapter
– Shaft sleeve
– Plain bearing made of special rubber, internally reinforced with steel

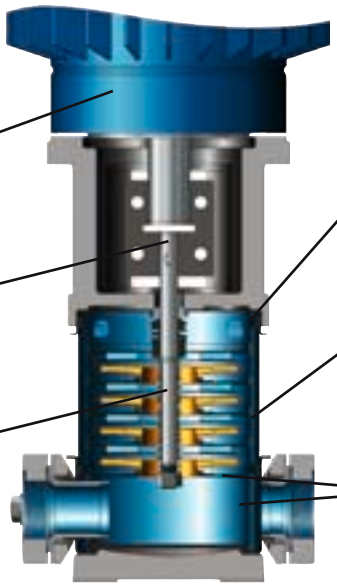


Reliable
Standardized motor with reinforced bearing

Reliable, service-friendly shaft seal
Standardized mechanical seal to EN 12756

Easy to assemble
Shaft with two flat faces for positive-locking shaft/impeller connection

Maintenance-free plain bearing
Made of tungsten carbide/ceramics
Product-lubricated and self-cleaning by forced flushing system



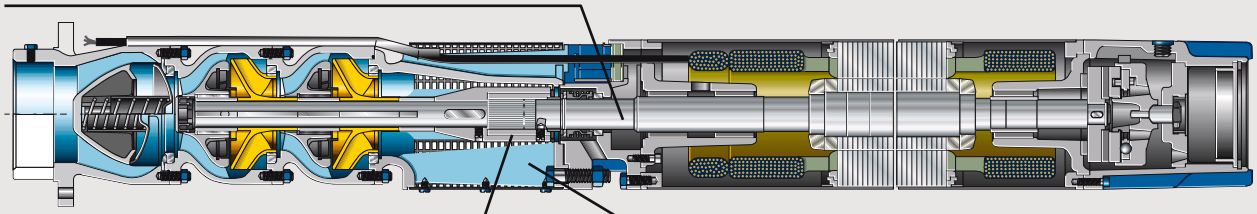
Leak-free and resistant to thermal shocks
due to pump shroud and confined O-rings

High operating reliability
Torsion-resistant pump shroud with no external seams
Only 2 sealing elements

Long service life
Corrosion-proof hydraulic components, pump shroud and casing made of high-alloy stainless steel

Trouble-free long-term operation
also under difficult operating conditions. Maintenance-free enclosed pump bearing protects shaft and bearing efficiently against solids intrusion.

High operating reliability and long service life
Check valve with anti-blockage valve disc closes quickly, quietly and reduces waterhammer. The water-lubricated axial bearing in the motor with self-adjusting tilting



Longer motor lives
Mechanical seal of carbon, ceramics or SiC/SiC prevents mixing of fluid handled and cooling liquid. Additional safety: Motor selected for maximum pump performance protects unit from overloads.

pads ensures maximum load-carrying capacity and appropriate reserves.

Ready to be plugged in
for quick installation

Easy adaptation
to operating conditions by setting the start-up pressure to values from 2 to 3.5 bar

Reliable
Corrosion-resistant hydraulic system

Low switching frequency
Reserve volume for low water withdrawal quantities, low switching frequency thanks to DVGW-approved direct-flow accumulator

Safe
due to integrated dry-running protection

Movitec

Vertical high-pressure pump

Technical data*

Q m³/h: up to 75

H m: up to 249

UPA

Submersible pump

Technical data*

Q m³/h: up to 840

H m: up to 480

Hya Solo D, Hyamat

Pressure-boosting unit

Technical data

Q m³/h: up to 360

H m: up to 160

* Design data for the individual series on request

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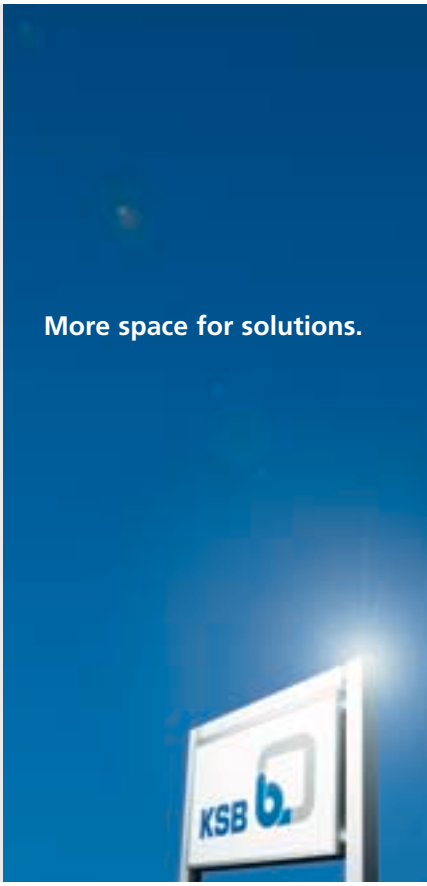

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