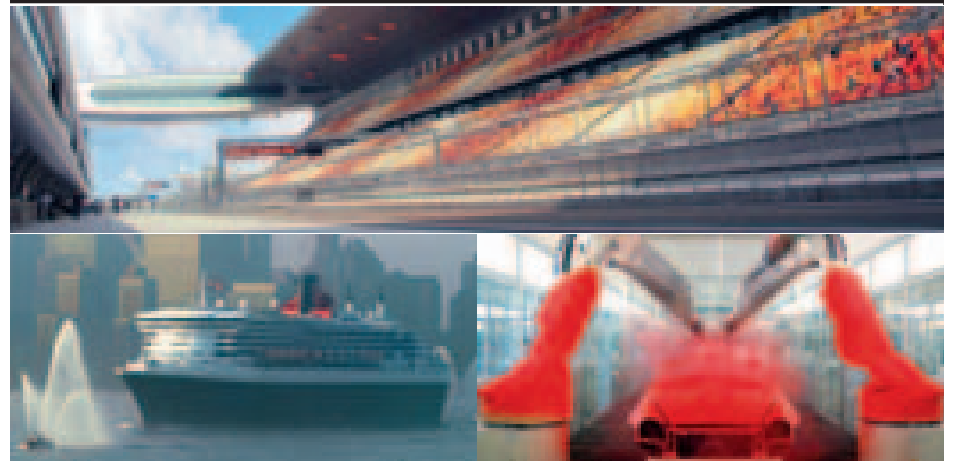


TECHNOLOGY THAT FASCINATES



Boundless ideas for real fascination

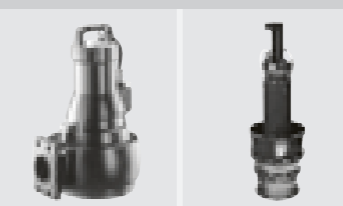
Delightfully, a new oasis is no longer a mirage. Majestically, an ocean liner keeps thousands of people warm and watered. Impressively, a new Airbus flies through its tests. Here and in countless other settings, fascinating developments from KSB put the motion into emotion. Which makes us one of the world's leading suppliers of pumps, valves and systems. We transport virtually every type of fluid. Like fresh water, viscous and solids-laden liquids, or highly explosive liquefied gas. We do so for customers in the energy sector, in industry, water and waste water utilities, building services and mining. Making what they do safer, and how they do it more economical. Come and experience the fascination of KSB. Come and discover how innovation and experience keep the world flowing round.



Driving fast needs drying first

It's as true in sport as it is in business: China is shooting towards pole position. Take Formula 1, for example. The gigantic motodrome for the Chinese Grand Prix was built in the record time of 18 months – including 200,000 grandstand seats. Most of them are under cover. But like everywhere else, the 5.45 km track itself is out of doors. Fortunately, modern technology is on hand to stop downpours flooding the tarmac.

KSB right on track:
KRT (l.) and Amacan (r.)
submersible motor pumps
for surface drainage



It's a race between weather and equipment. If the heavens open on Formula 1, the water has to disappear at top speed. It can't drain through the road surface – but KSB knows what's needed. 20 submersible motor pumps, each with a capacity of 1000 litres per second and 60 kilowatt drives can clear the track in next to no time. So safety stays in the lead. And the world's fastest cars don't start aquaplaning.

Luxury liner Queen Mary 2

A real lady floats on more than just water

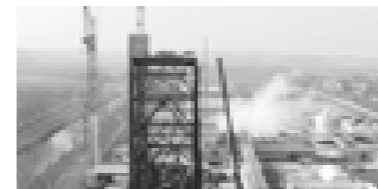


KSB afloat: Multitec high-pressure pumps (l.), HPK hot water circulating pumps, sewage lifting units and Isoria butterfly valves (r.)



The Queen Mary 2 is a very special ship indeed. Built in Saint-Nazaire (France) by ALSTOM Marine – Chantiers de l'Atlantique, this ocean-going giant is 45 metres longer than the Eiffel Tower laid flat, and nine metres wider than the Panama Canal. The QM2 also has her own power station, capable of producing enough electricity for a city of 200,000 people. Getting a lady of such dimensions down the slipway requires not only knowledge and skill, but also a lot of time. Over eight million working hours later, though, the dockyards knew it had all been worthwhile.

Wherever this queen of the seas happens to be cruising, KSB is on board as well. 2600 passengers and 1250 crew want to stay warm - and they always can. KSB high-pressure pumps feed the boilers, where circulating pumps keep the water churning round. And whether it's the pools, cabins or restaurants, KSB building services pumps and sewage lifting units get the water there and remove it after use.



Harvesting cleaner engines can really grow on you

The German state of Sachsen-Anhalt is home to a refinery turning crops into bioethanol that is unparalleled in Europe. Every year, it produces 260 million litres of this ecologically friendly additive for petrol. The bioethanol improves motor performance, and markedly reduces CO₂ output. So both drivers and the environment benefit.

KSB and cleaner air: CPK (l.), KWP, Etanorm and Tyachem industrial pumps plus Isoria and Danaïs (r.) butterfly valves



The bioethanol conversion project is a spectacular step into the future. And KSB is with it all the way. 110 different pumps and more than 1000 valves ensure that the various intermediates in the distillation process keep flowing smoothly. A useful by-product of all these efforts is a dried protein feed for animals. Local farmers can buy about 260,000 tonnes of this high-quality product per year.



Extracting oil from sand



It's oil looking good in the land of maple leaves



KSB in mining:
LSA slurry pumps



For the Canadian Indians, it was no secret: the 60-odd metre layer of sand, water, clay and bitumen beneath the topsoil had all sorts of uses, like sealing leaks. Since 1967, this land has also been a source of oil. But turning exploration into profitable extraction took a long time. However, rapid technological progress around the turn of the century has made today's oil from sand financially on par with conventional oil reserves.

Mechanical diggers mine the entire sandy layer. This is a complicated and expensive undertaking. Here, helping to reduce costs is GIW Industries, an international KSB subsidiary based in the USA. Their extremely robust slurry pumps are in action round the clock, moving the muddy mixture of oil sand, sodium bicarbonate and water along pipelines straight into the plant's separation vessels. So the days of tricky transport on temperamental conveyor belts are thankfully over.

A lift for little swimmers at the Yacyretá Dam



Fish can spawn some uplifting ideas

If you're a fish, and happen to swim along Argentina's Rio Paraná near Yacyretá, you'll find you have a problem. Upstream are your spawning grounds. But suddenly the country's second-largest dam is in the way. As fish can't really fly, that looks like "dam" bad news. But thanks to KSB, you can take the lift. Now that's what most fish would call technology in the swim of things.

KSB gets you there:
Amacan submersible motor pumps



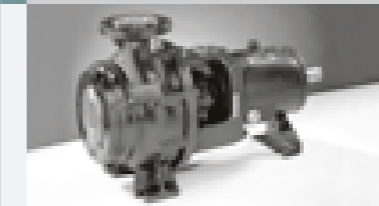
Swimming upstream is a natural instinct. So getting fish to take the lift requires a clever trick. Seven large KSB submersible motor pumps simulate a river current. The fish swim on board, ride to the top, and then get another "lift" from a water jet that sends them safely on their way to procreation.

Automated paint shop in Maranello

Luxury is a red-letter word



KSB really shines:
Etaline, Etanorm and KWP
(photo) industrial pumps



For any car enthusiast, “Maranello” spells excitement. This little town in the middle of Italy has produced more famous names than some of the world’s great cities – Ferrari or Maserati for example, just to name two. Like any VIP, these cars need to look their very best. So Maranello is home to one of the world’s most modern paint shops. It devotes its particular attention to the “Granturismo” models from the two luxury brands.

Cars are just one of the top designs on display in Maranello. The painting plant is the work of star architect Marco Visconti. And like the cars it serves, it sets top standards. With 20,000 m² operating space, ecologically friendly spraying, and ideal working conditions. Because top car makers choose the latest water-based paint technology – and pumps from KSB.



Isn't it good the desert's full of water?

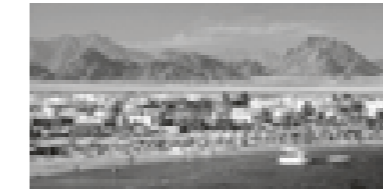


KSB in the desert:
20 RDLO pipeline pumps,
driven by electric motors
with ratings up to 3000 kW



Deserts cover more than 80 percent of Libya. So when oil prospectors in the early 1960s stumbled on extensive reserves of fresh water there, the discovery was a sensation. At last, farmers would have enough water to feed the country. Getting the transparent lifeblood to coastal regions, however, meant building the world's largest artificial conduit, the Great Man-Made River.

Phase Three of the project connected the towns of Assdada and Algardabiya via a four metre wide pipeline running for over 190 kilometres. Ensuring that everything flows to plan are pump units designed for massive volumes: 20 volute casing pumps transport up to 5800 m³ per hour. KSB has been involved in this extensive project since 1995, supplying both engineering services and entire pumping stations.



Blue and salty? Red and drinkable!

Turning salty water into the drinkable variety opens whole new vistas. Plants can suddenly thrive in coastal regions long plagued by drought. And tourism can take off, as it has in the Egyptian resort of Sharm El Sheik on the Red Sea. Desalination there uses reverse osmosis, which requires high pressures.

KSB for the faultless saltless:
SalTec energy recovery system
with pressure exchanger, high-
pressure pump and controls

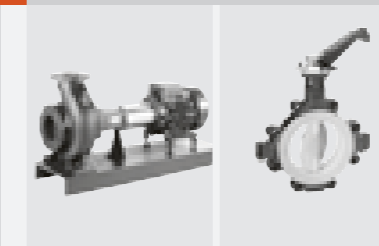


KSB has recently developed a system to re-use energy from the pressure when desalination is completed. A pressure exchanger transfers the energy from the concentrated brine straight to the fresh water, with no mechanical steps on the way. That saves operators up to 30 percent of the electricity bill for conventional turbine systems. And modern KSB pump technology also keeps the pressure on for the water fed into the Sharm El Sheik plant.

When Saxons conduct their Silicon Valley

Something like one in five PC processors sold worldwide comes from around Dresden, Saxony. That share is soon set to rise, when a new 300mm disc semiconductor work kicks in. This enormous facility represents one of Germany's largest industrial investments of recent years. The order of the day is Quality, Quality, Quality. So, not surprisingly, KSB will be contributing in several different ways.

KSB chips in all round:
HVAC and waste water
pumps (l.: Etanorm), shut-off
butterfly and globe valves
(r.: KE butterfly valve)



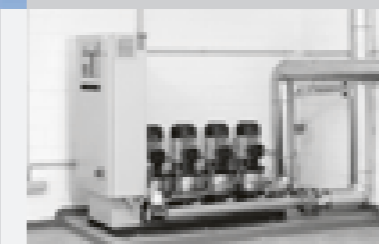
KSB products will help treat water at the site, and remove waste water. Pumps and valves are also crucial elements in process water, heating and cooling circuits, as well as energy supply. Special KSB butterfly valves in the ventilation system will help the clean rooms stay exactly as they should be. Which means with fewer than 300 dust particles per cubic metre of air – as opposed to more than 100 million in a natural environment.

Luxury flats in London's Harris Wharf

Water great view

Take a walk round Harris Wharf in North London, and you'll see an interesting sight. A block of flats appears to rise from the water. 57 luxury apartments with glass exteriors provide a wonderful view for the lucky inhabitants. Making life on the Wharf a pleasure.

KSB very much at home:
Hyamat VP pressure boosting
system with intelligent pump
control



The architects may have wrapped the flats in glass. But they've kept some of their most sophisticated ideas discreetly hidden away. Like the Hyamat VP pressure boosting system from KSB – compactly built with continuously variable speed adjustment. Quietly and economically, four vertical pumps maintain constant water pressure for all the flats, regardless of how many showers are running, or baths filling up.



Coasting an eye on the joys from Brazil



The first Europeans got here in 1502 – and the bay of Rio de Janeiro has been a hit ever since. Quite apart from the locals, some five million tourists enjoy the beach and sea every year. That's great for foreign exchange earnings, but quite a challenge for water quality. A clean bay is crucial for the whole Rio area. Fortunately, Alegria is on hand to help: one of the largest sewage works in Latin America.

KSB for good clean seaside fun: Eight SPY waste water pumps



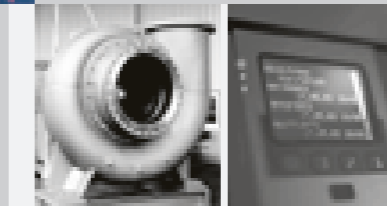
KSB teamed up with Germany's Kaiserslautern University to develop a special system for Alegria: waste water flows down a gravity discharge channel to eight pumps. They lift the water up 15 to 20 metres, and on to purification in the sewage plant.



Harbouring thoughts for the bottom line

Every year, suction dredgers clear about two million tonnes of sand and silt from the river Elbe in Hamburg. That's the only way the German port can keep the navigation channel free. Special barges transport the material to the shore for treatment and long-term deposit. KSB pumps get the thick sludge moving off the boats with powerful jets of water. Re-using the water makes good environmental sense, but poses a major challenge to the pumps. The recycled water is full of solids, so the dredgers need to keep a close eye on wear.

KSB causes quite a stir:
KWPK (l.) waste water units
with the PumpExpert (r.)
diagnostic system



Fortunately, there is an ideal way to monitor KSB pump units in this kind of setting. Fitting them with the diagnostic system PumpExpert lets operators identify possible problems in good time. The operating conditions may be tough, but this way the Port Authorities can avoid additional service costs or pumping station downtimes.

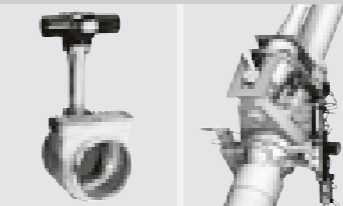




The prospects look great for moving gas

Natural gas has got a high-flying future. As oil reserves shrink, gas moves steadily up the energy league. However, customers rarely live nearby, and pipeline transport is not always a realistic option. The solution is to liquefy it at $-162\text{ }^{\circ}\text{C}$. Compressed to one-sixthousandth of normal volume, the liquefied gas can then head for the world's ports in specially designed tanks.

KSB takes the guesswork out of gas work: Danaïs cryogenic butterfly valves (l.), Connectis coupling system (r.)



Loading a tanker safely outside harbours is easier said than done. To solve the problem, KSB has developed a multifunctional coupling system. This sophisticated ship-to-ship docking unit can even cope with rough seas. With up to 100 cryogenic butterfly valves each, KSB is also a hard-working passenger on the LNG tankers themselves. 90 Japanese and Korean ships are already fitted with this special equipment.

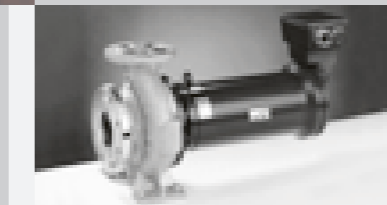
Airbus A380



A whole new dream takes wing

It sounds like a pilot's dream. But the Airbus A380 is making it happen. The world's largest and most efficient passenger aircraft can reach speeds of up to 900 kilometres per hour, and fly 15,000 kilometres non-stop. Meanwhile, 800 passengers on two decks can enjoy airborne comfort so far not seen in an aeroplane.

KSB on board:
Zero-leakage pumps type
Secochem



Long before anybody can settle back in the luxury of a new plane, specialists have to check every aspect of safety. 21 KSB Secochem pumps help put the big bird through her test flight paces. They shift the aircraft's centre of gravity to simulate a range of flying conditions. Which is quite a test for the pumps as well, as they must withstand horizontal acceleration twice – and vertical acceleration eight times – that of the acceleration of gravity.



Vietnam puts a spark into current affairs

Go to Ho Chi Minh City in Vietnam, and turn to the north-east. 70 kilometres later, you'll find Phu My Industrial Park, home of the country's largest combined cycle power station. At standard capacity, Phu My pumps 3800 megawatts into the state electricity grid. Fuel for the power station comes from two recently tapped gas fields in the South China Sea.

KSB puts the “power” into “station”: Boiler feed, condensate and cooling water pumps for efficient use of fuel



In a CC power station, gas turbine exhaust heats a steam boiler, which in turn drives a steam turbine. This method increases plant efficiency by about 30 percent. KSB pump technology ensures that the steam circulation runs powerfully and reliably.





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