



Fresh water for people in a desert city

The water transmission system for Riyadh, the capital of the Kingdom of Saudi Arabia, is one of the largest of its kind. With a new major pipeline, the people of the desert city will receive another means of reliable freshwater supply. Sulzer provides custom-built pumps to transport the water to its destination.

Skyscrapers tower under a deep blue sky. In the heart of the buzzing city, you'd never think you're in the middle of a desert. Riyadh, home to seven million people, is the thriving capital of the Kingdom of Saudi Arabia. Few cities have developed as rapidly as Riyadh, from a small isolated desert village into the innovative metropolis it is today.

The challenge of all great cities

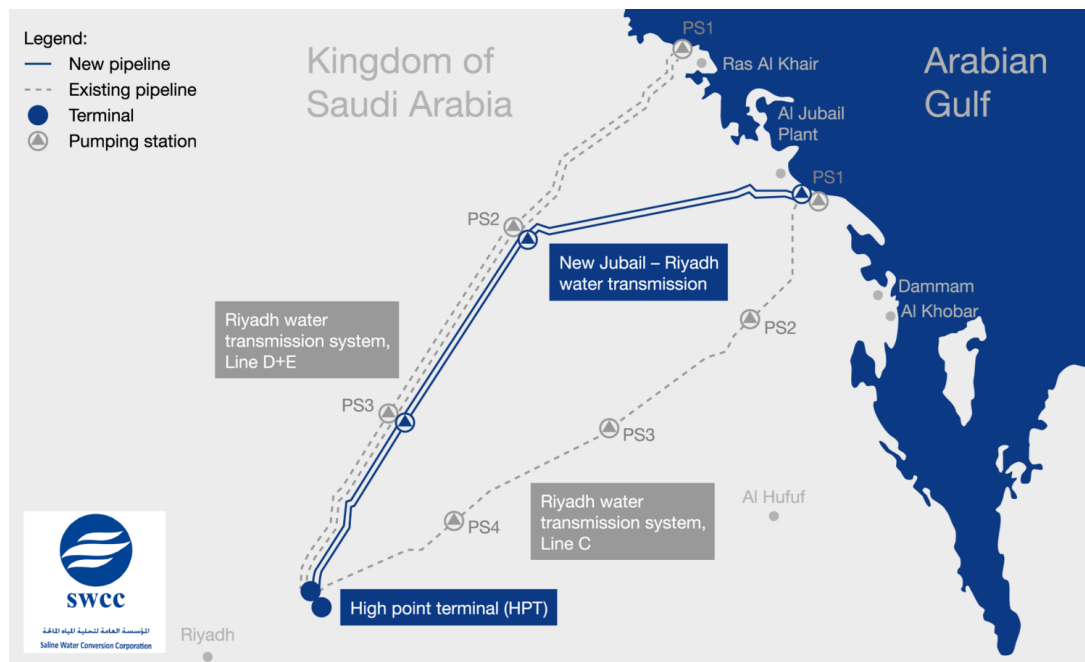
As the city of Riyadh develops further and becomes a home for more international and faster-growing communities, it becomes faced with the challenge of all great cities. Rapid population growth and urbanization place pressure on the infrastructure, energy demands and water needs.

Its location in the desert brings about an even greater challenge for their vision, facing obstacles in logistics and infrastructure. Imagine leveraging water sources that are hundreds of kilometers away from the destination!

A journey of hundreds of kilometers

A functioning water supply is the key element of a flourishing city. Saudi Arabia is home to one of the world's largest water transmission systems in the world.

Water is extracted from the Arabian Gulf that stretches across a vast area of 1'000 km (620 miles) in the eastern province of the Kingdom of Saudi Arabia. The water is treated in desalination plants. After treatment, hundreds of kilometers of pipelines lead the valuable fresh water to Riyadh, moved forward tirelessly by highly efficient pumps.



The new Jubail-Riyadh water pipeline will supply the people of Riyadh with potable water, pumped through the desert all the way from the Arabian Gulf.

A foresighted customer

Saline Water Conversion Corporation (SWCC), a major desalination company in Saudi Arabia, understands the challenges that come with a thriving city and its growing population. To enhance the water supply for future demands, the foresighted customer planned to build a new major pipeline to add to the existing giant water transmission system.

Sulzer was brought in early on in the project phase and provided its fluid engineering expertise to transport the water efficiently within the 412-km-long twin pipeline from the city of Jubail to Riyadh. With the help of its high-efficiency and easy-to-operate pumps, the new pipelines will deliver 1.2 million m³ of potable water per day for the population and for industrial usage.

Enabling communities to thrive, grow and expand

A project as ambitious as the Jubail-Riyadh water transmission system requires careful planning to navigate and overcome potential challenges. With planning and execution well underway, Sulzer is proud to be able to play a key role in supplying water that enables communities to thrive, grow and expand for the future.

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Stable power supply for Indonesia

Power plant operators need reliable plants that always deliver full power and never stand still. If a turbine is damaged, it needs to be repaired quickly. What normally takes up to a year, Sulzer Indonesia's service center can do with a mobile workshop on-site in just three months.

Countries of the Association of Southeast Asian Nations will account for almost two-thirds of global energy demand growth between now and 2040, according to the International Energy Agency. To keep up with the increasing demand, power plant operators depend on reliable plants.

Corrosive steam wearing out the equipment

Steam turbines, converting heat into mechanical torque which in turn drives a generator, process variable and corrosive steam that degrades equipment over time. Under these conditions, damage can occur fast.

Frequently the blades need to be heavily repaired or replaced. In some cases, the rotor sees damage to seals and other diameters; in more severe cases, the rotor shaft can even separate in two.

Losing valuable time and money

When a rotor shaft is damaged, it usually needs to be shipped to a service center for welding.

Steam turbines are large machines. They cost a lot of time and money to transport and customers lose valuable production time in the process. As if matters were not complicated enough, some power plants are located in areas that are difficult to access.



Sulzer Indonesia's mobile workshop allows the teams to repair large steam turbines directly at the customer's site.

Boosting customers' reputation

The fast repair of critical rotating components is the main specialty of Sulzer's Rotating Equipment Services division. Its Indonesia workshop is unique in its ability to propose a mobile rotor welding process that allows it to repair rotor shafts entirely at the customer's site.

This reduces downtime, saves on transport costs and reduces potential rotor damage risk, which means insurance costs are also minimized. Overall, it helps customers to ensure a stable power supply for the population and to improve their reputation and profitability through shorter downtimes.

Mobilizing equipment efficiently

The mobile workshop consists of a complete set of portable tools including lathes, welding equipment and balancing machines, which are packed into sea containers ready to be shipped to the customer's site.

The service engineers assemble the equipment in the turbine hall right beside the damaged turbine. They remove the rotor and place it on the lathe where all repairs are performed under observation from the customer.

Keeping power plants running

Sulzer deals with all types of heavy damage to turbine equipment. Either in the company's own service centers or, wherever possible, directly at the customer's site with the mobile workshop.

Thanks to the innovative minds and skill set of the Indonesian team, our customers keep their power plants running and save millions of dollars.

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Turning plastic waste into fuel

All around the world, people are researching new approaches to deal with plastics in a more sustainable manner. For the project of building a revolutionary plant converting plastics into fuel, the Norwegian start-up Quantafuel chose Sulzer as a partner.

Most plastics last forever. They are not biodegradable and take up to 1'000 years to decompose. While longevity of materials is usually a good property, these durable plastics are used to manufacture short-lived, disposable products.

According to a recent study, mankind had produced 8.3 billion tons of plastics by 2015. Of these, roughly 80% ended up as waste, with only 9% that could be recycled.

Today, around 8 million tons of plastic waste end up in the sea every year. All around the world, people are researching solutions that can help reduce the volume of plastic waste.

A promising alternative

Quantafuel, a Norwegian start-up, has recently developed a promising alternative; their mission is to turn non-recyclable waste into fuel. The company's chemicals recycling process converts plastic polymers back into hydrocarbons, which can then be used by different downstream industrial processes that currently rely on fossil fuels.

By integrating chemicals recycling with waste treatment, Quantafuel enables the use of recycled hydrocarbons to produce fuels and other petroleum-based products including new plastic materials. Thereby, they decrease waste whilst reducing the carbon footprint of natural oil and gas resources.



Quantafuel's processing plant, equipped with Sulzer's fractionation units, recycles plastic waste and turns it into valuable resources such as fuel for cars and other petroleum-based products.

The right fractionation process and equipment

After successfully piloting its technology, Quantafuel decided to set up its first full-scale plant for continuous processing in Skive, Denmark.

Quantafuel's process effectiveness was contingent on incorporating an efficient and scalable fractionation technology. Sulzer's leading position in separation and mixing technology coupled with our extensive experience in the design and fabrication of skid-mounted plants, made us the ideal partner for Quantafuel.

Success in under ten months

Speed to market was particularly crucial in this project. Sulzer needed to ensure responsiveness and efficiency despite the long manufacturing lead times for these complex pieces of separation equipment.

Thanks to its expertise, Sulzer was able to design, fabricate and complete the installation of flexible fractionation units in record time – less than ten months.

The dawn of a new plastics industry

The resulting plant culminated in a unique, fully integrated solution that will be able to recycle 66 metric tons of plastic every day to generate 53 metric tons of hydrocarbon feed that can be used as fuel or to produce a wide range of chemicals.

Quantafuel was extremely impressed with the skid-mounted system. Both companies look forward to developing the next plastic-to-fuel plants that are being planned around the world.

Sulzer supports customers in a number of sustainable projects that are revolutionizing the way we recycle and reduce emissions. This could be the dawn of a new, more sustainable plastics industry.

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Helping dentists work more safely and precisely

Dentists have a complex and highly demanding job – so making treatment faster and safer benefits them and patients alike. Sulzer developed a special syringe solution that allows oral surgeons to perform dental implant surgery intuitively, quickly and safely.

When replacing damaged or missing teeth with a dental implant, dentists often found they were lacking an all-in-one device to directly apply biomaterial into the bone. Approached by long-term partners and customers, we took on the challenge.

The art of replacing teeth

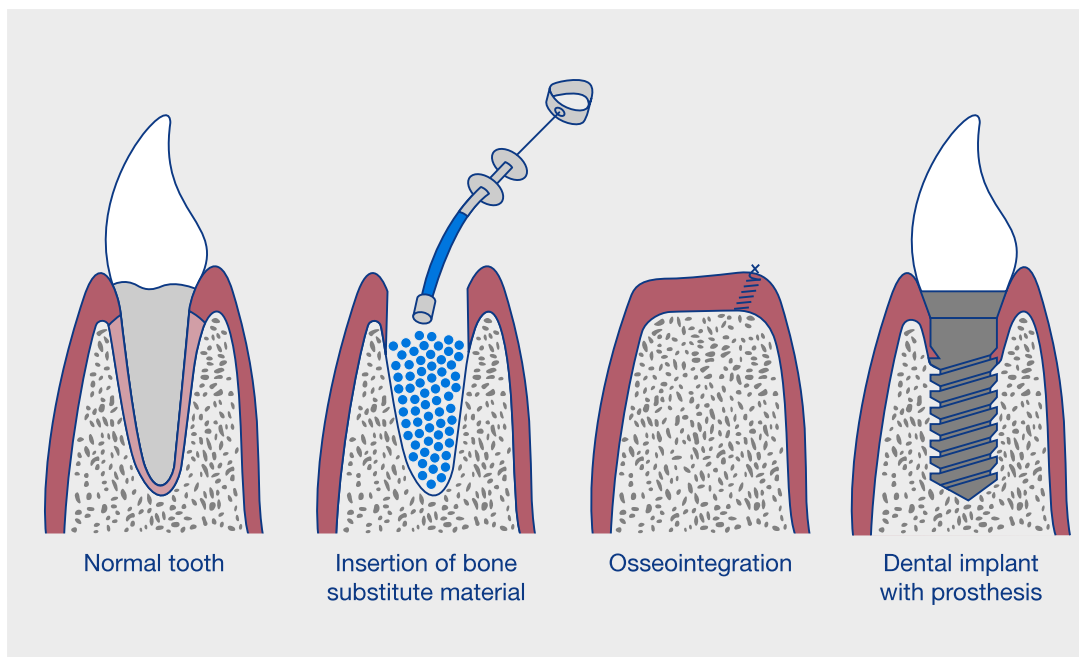
Using tooth implants is a state-of-the-art procedure for damaged or missing teeth. A dental implant is a component made of metal or ceramic material that is inserted into the jawbone. These implants take over the function of an artificial tooth root, to which various tooth prostheses – such as single teeth, bridges or crowns – can be fixed.

Often, the hole in a jawbone is too large for an implant to be fixed into. The solution is to fill in a bone substitute material – like any normal filler for walls. It takes about three to six months until it is fully integrated into and replaced by the natural bone. The implant can then be drilled into the newly grown bone and will be securely fixed for a strong and lasting solution.

No longer in a jar

Traditionally, the surgeon would prepare the material in a jar and apply it with a spatula. Given that this is time-consuming and leads to loss of material, the market was in need of innovative solutions.

Sulzer developed a dental syringe that can apply biomaterial directly into the bone during surgery. The novel solution makes the procedure easier for dentists, speeds up the treatment significantly, and reduces loss of material.



With Sulzer's dental syringe solution, dentists can apply biomaterial directly into the bone. This makes treatment of patients safer and easier.

Intuitive and hygienic

The unique curved design of the syringe allows dentists to operate it with one hand only and gives them a much better view of the bone defect they need to treat.

With the syringe, the bone replacement material can be stored in a sterile manner until it is needed. Whether the bone replacement material is in the form of granulate or paste, both can be inserted precisely and reliably.

Supporting players in the health sector

We work together with leading biomaterial producers and device manufacturers to make biomaterial delivery safer and more precise.

Our application systems help make surgeons' time in the operating rooms easier and more effective.

More stories about our products and services at www.sulzer.com/stories.