

### Tsurumi is market leader in Switzerland

The tunnel construction industry in Switzerland is fast becoming synonymous with a single brand of pump manufacturer: Tsurumi. Many attribute the global pump company's popularity with its high build quality, immense reliability and multiple applications. The most current Swiss project to use Tsurumi's equipment is the €426m Weinberg Tunnel project in Zurich.



Richard Lechner, managing director of RL Pumpenanlagen GmbH, general distributor for Tsurumi in Switzerland, comments: "Tunnel construction, particularly when beneath water, is a dangerous sector of construction. The safety of those working on site is paramount. All equipment must be efficient and reliable. The use of Tsurumi's pumps in 140 projects is a great testament to the precision and care with which we manufacture and design our pumps to be as effective and dependable as possible."

#### Reliability

The reliability of Tsurumi's pumps is attributed, among other things, to a unique and elaborate method of sealing, which is used in every Tsurumi pump from 0.4kW to over 200kW. A double-mechanical seal, the result of many years testing, is positioned within the pump's oil chamber and significantly reduces day-to-day wear on the pump.

#### Weinberg Tunnel

A total of 56 Tsurumi pumps are working at the €426m Weinberg Tunnel project in Zurich. The 4.8km bored tunnel will pass beneath the river Limmat to connect the main train station, Zurich Hauptbahnhof (ZHB), with Oerlikon in the north of the city. Tsurumi's LH and LHW series pumps are being used to keep the site safe and to remove residual water that accumulates during construction.

From a safety perspective, the pumps protect against the ingress of water while tunnelling progresses under the river. Six sets of eight 45kW units are mounted in fixed positions and produce a maximum pumping capacity of 600 litres per second at a total head of 35m.

Mr Lechner adds: "Ensuring we have an efficient and reliable pumping solution in place is crucial. If water were to flood into the tunnel, we must have absolute confidence in the pumps to do their job and remove any danger of an incident".

The pumps are installed in parallel, via a frequency converter, which is dependant on the intake of water. This ready-to-use control system was designed and manufactured specifically for the project by Pumpen Lechner.

To remove residual water from the site, 18 Tsurumi pumps are in place at the entrance to the tunnel at ZHB where they pump out residual construction water via a long pressure line. The layout of the pressure line is a sophisticated design in the 'Central' underpass, again designed by the technical team of Pumpen Lechner.

The entire Weinberg tunnel pumping solution - including pumps, fittings and the tailor-made control system - was completed in just three weeks.

Due for completion in 2013, the Weinberg Tunnel is a core part of the €1 billion Diameter Line project in Zurich, which aims to reduce railway station congestion. Zurich has one of the highest concentrations of rail infrastructure in Europe. The main station alone, ZHB, handles close to 3,000 trains and 300,000 passengers every day. With passenger numbers on the rise, station congestion has become a major issue.

Tsurumi's LH and LHW series pumps are designed for rugged applications and high head use. Robust in design, they have a very high efficiency. The two-stage LHW pumps, for example, are able to reach static heads up to 120m with a power uptake of 22kW, which is unique in the water construction field. The LH series has a mechanical seal that increases endurance to allow it to withstand water pressures of up to 5 bar.

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Tsurumi is one of the world's most experienced pump manufacturers. From its modern facility in Kyoto, Tsurumi produces more submersible pumps globally per year than any other pump manufacturer. There are currently over 1800 different pump models in the Tsurumi range, including semi-vortex, vortex, non-clog, cutter, contractor & dewatering, sewage & wastewater, aerators & blowers, decanting units and scum skimmers. Tsurumi operates on a worldwide basis with an extensive dealer network in Europe, North and South America, Asia, Australia and parts of Africa.

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