TSURUMI PUMP

Application Reports in 2007

Reykjavik Opera, Iceland

The Project:

Construction of new opera house in Reykjavik, Iceland

Executing companies:
Company IAV

The Problem:

The new opera house is situated directly on the seashore. During works on the foundations and underground garage it was necessary to pump out large volumes of groundwater.

The Solution:

Multiple KRS822, each with 22kW power were installed. The KRS822 type can pump large volumes of water at relatively low pressure.

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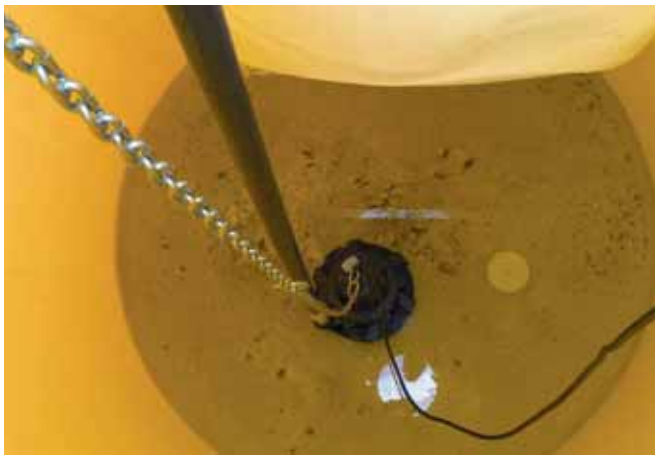
Sewage treatment, apartment building, Croatia

The Project:

Construction of a new apartment building, Croatia

Executing companies:
ISEA d.o.o., Rijeka, Croatia
VIS-Trgovina d.o.o.



The Problem:

The building is situated close to the beach; there is no possibility of connecting to the public sewer network. However, wastewater treatment must be ensured.

The Solution:

Connection to a small modular sewage works in polyethylene tanks. A Tsurumi submersible aerator with a power of 0.75 kW was fitted in the biological stage of the waste water treatment. The system operates very quietly, with no noise disturbance for the residents.

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Sewage treatment, hotel complex, Croatia

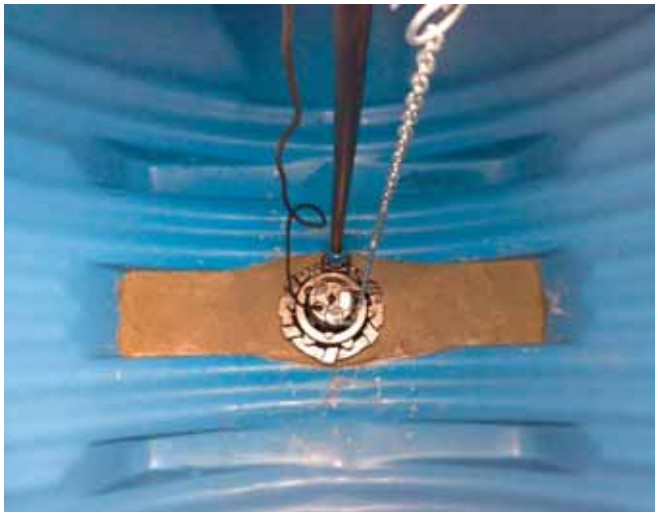
The Problem:

Hotel complex not connected to public sewage system; sewage disposal was formerly via a waste-water pipe direct and untreated into the Adriatic.
Complex is used seasonally, especially in tourism season; otherwise it is little used.
Previously there were problems with compressed aeration systems, since polyethyline pipes melted (due to high temperature of air under pressure), plus noise (systems situated directly by house and hotel, with noise-generating compressors).

The Project:

Treatment of waste water from a hotel complex with a total capacity of 600 persons, Dubrovnik, Croatia

Executing companies:
ISEA d.o.o., Rijeka, Croatia
VIS-Trgovina d.o.o.



The Solution:

Connection to a small modular sewage works in polyethylene tanks (no connection to mains sewage necessary). A total of 6 Tsurumi submersible aerators, 0.75 kW each, were fitted in the biological water treatment section.
Seasonal use possible without problems; when out of use, the aerators simply remain in the tanks. No more melted pipes, because the self-drawn air is at the ambient temperature. No noise problem any more; the system operates very quietly.

Construction of Naples Metro, Italy

The Project:

Extension of metro line 1 from Piazza Dante to Centro Direzionale: 5.3 km with 5 new stations

Executing companies:
Boviar srl
Dragflow srl

The Problem:

The construction sites lie at a depth of 35m below the city centre. High pump pressure is required for drainage.

The Solution:

Multiple Tsurumi type LH422 pumps, 22kW each, to expel water from the construction shafts..

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NoordZuidLijn, Amsterdam, Netherlands

The Project:

Expansion of underground network in Amsterdam; construction of north-south line

Executing companies:
Bilfinger&Berger
Max Bögl
ARGE Saturn (DuraVermeer and Züblin)
Distrimex b.v.

The Problem:

The NordZuidLijn will be a new underground rail line crossing Amsterdam from north to south. Amsterdam is situated at sea level, with many canals running through the city and historic sites that require protection. For these reasons, the lowering of the ground water during construction work must be carefully planned; this applies in particular during the building of the Rokin, Vijzelgracht and Ceintuurbaan stations in the city centre. Completion is expected to be in 2013.

The Solution:

KTZ and KTV series pumps lower the groundwater during construction work on the underground stations and tunnels. Multiple pumps are kept on standby or are in mobile use.

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Statentunnel, Netherlands

The Project:

Expansion of the Erasmus railway line between Rotterdam and Den Haag.

Executing companies:
Ed. Züblin AG
DuraVermeer Groep NV

The Problem:

Using a hydroshield, two 2.3km tunnels with diameter 6.78m will be constructed.
During building works the lowering of the ground water level must be assured.

The Solution:

Multiple submersible pumps from the KTV and KTZ series. The special characteristics of Tsurumi pumps, such as an internal mechanical seal, upstream shaft sleeve with gasket and a patented oil lifter allow them to be used in on-snore-mode over an extended period.

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Lainz Tunnel, contract section LT31, Austria

The Project:

Construction of a 4km two-track railway tunnel in Vienna

Executing companies:
ARGE LT31 bestehend aus:
Hochtief Construction AG
Alpine Bau GmbH
Beton- und Monierbau GmbH

The Problem:

Water removal from both tunnel tubes during tunnelling works (through loose rock).
5 emergency exit shafts, 30 to 55m deep.
Quarrying areas 132 and 145 m^2, 6 to 20m beneath existing buildings.

The Solution:

Multiple submersible pumps from the KTV, KTZ and LH series.
The special characteristics of Tsurumi pumps, such as an internal mechanical seal, upstream shaft sleeve with gasket and a patented oil lifter allow them to be used in on-snore- mode over an extended period.

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Waste water channel, Belgrade, Serbia

The Project:

Construction of a waste-water channel in Belgrade with 1500mm diameter

Executing companies:
Ferbild d.o.o., Belgrad
Vedir-Impex d.o.o.

The Problem:

Laying of pipes with 1500mm diameter at a depth of 8m. Proximity to the Danube means that groundwater occurs at only 3m depth. Accordingly, the construction site was 5m below the groundwater level along its entire length. Since the ground contains a high proportion of grit, difficulties were encountered in lowering the groundwater.

The Solution:

12 wells sunk to depths of up to 25m were drilled parallel to the new canal.
At this depth the ground consists of shingle and groundwater could be pumped with ease.
15 Tsurumi pumps were used, of types KTZ611, KTZ35.5, KTZ22.2, KTVE35.5 and LH615.

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Fountain for retirement home, Wangen, Switzerland

The Project:

Construction of a fountain

Executing companies:
RL Pumpenanlagen GmbH, Wollerau

The Problem:

To install a pump for continuous operation for the fountain in front of the retirement home in Wangen.

The Solution:

Solution with multiple submersible pumps of type KTV2-22. The special characteristics of Tsurumi pumps, such as an internal mechanical seal, upstream shaft sleeve with gasket and a patented oil lifter allow them to be used in continuous operation.

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Road tunnel, Prague, Czech Republic

The Project:

Construction of a road tunnel for the Prague bypass, Czech Republic

Executing companies:
Hochtief Construction AG

The Problem:

Water removal via sump drainage during downward-moving tunnel mining.

The Solution:

Multiple pumps from the KTZ series: 11 x KTZ611 and 6 x KTZ67.5. The special characteristics of Tsurumi pumps, such as an internal mechanical seal, upstream protection sleeve with gasket and a patented oil lifter allow them to be used in 24-hour on-snore- mode.

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Treatment of abbatoir wastewater, Hungary

The Project:

Treatment of discharge water from an abbatoir, Hungary

Executing companies:
Firma Bacs und Söhne GbR, 82131 Gauting

The Problem:

Discharge water from an abbatoir in Hungary is heavily laden with organic substances (blood, excrement).
Treatment of the discharge water is necessary before it enters the receiving water course.

The Solution:

Treatment using 14 pcs. 55-TRN3 submersible aerator units (5.5kW each). Replacement of the former aeration systems in an existing clarifier.

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Feldhofe mud dump site, Germany

The Project:

To treat the surface discharge water before it enters the receiving water course.

Executing companies:
Company PLA Pumpen und Anlagenbau GmbH, 22844 Norderstedt

The Problem:

The discharge water of the Feldhofe mud dump site is heavily laden with Fe ions.
Treatment of the surface discharge water is necessary before it enters the receiving water course.

The Solution:

Treatment via oxidation and iron oxide precipitation, assisted by a 2.2kW submersible aerator.
Since the bottom of the natural water body is uneven and muddy, a base plate was welded on and the aerator sunk using a crane.
Oxygen measurements made after installation (using DO electrodes) were highly satisfactory.

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Construction of a new culvert, Kleuterbach, Germany

The Problem:

At km 42.431 N the Dortmund-Ems Canal passes over the upper Kleuterbach culvert. The planned channel widening of the Lüdinghausen–Senden section requires that the existing culvert be replaced. This will be built using the immersed-tube method throughout its length. Submersible pumps will be necessary for floating the steel pipe culverts into place and sinking them.

The Project:

Replacement construction of the Kleuterbach culvert

Executing companies:
Johann Bunte GmbH&Co. KG
Bad Bentheim branch

The Solution:

Pumps of types KTZ47.5 and KRS2-69 were used to control the flooding of the steel pipes and to sink them accurately.

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