Efficient storm water protection and ecological balance

Sulzer delivers large axial propeller pumps with a total motor power of more than 4 MW for the Integrated Rhine Program (IRP) at Polder Rheinschanzinsel in Germany for flood protection. As part of the IRP, the regional authority of Baden-Wuerttemberg in Karlsruhe is building a retention area for flood control near Philippsburg in Germany. The retention area will provide an additional volume of 6.2 million cubic meters to the existing 100 million cubic meters in order to cover a one-hundred-year flood. The whole polder area is protected by a circular flood dam that will be flooded in case of extremely high water. The existing pump station will be rebuilt and enlarged in two steps. The Sulzer pumps will be used for flood protection and for preventing the city of Philippsburg from damage by high groundwater levels.

> *We appreciated the smooth cooperation between the parties during the building phase and are convinced that we can manage future floods with these energy-efficient Sulzer pumps.*
>
> **Barbara Lampert, member of the Regional Council of Karlsruhe**

The Sulzer difference

- Sulzer developed nearly cost-neutral solutions for the extended scope of the given application.
- The availability of a pump range with a capacity of 6,670 l/s for the specific project requirements differentiates Sulzer from the other suppliers.
- Outstanding engineering expertise provided reliable support to the tendering engineering company.
- Reliable and proven standard product provides the highest possible safety level for the end user.
- Ability to adapt a standard product to local needs (duty point, available space, noise protection).

Watch Integrated Rhine Program movie

(German, French, English)

The challenge

For flood protection, the new submersible pump arrangement needs to provide the same capacity of 20 cubic meters/s as the existing dry-installed pumps. The Sulzer submersible propeller pumps type VUP are the only ones on the market that fulfill the requirements.

During the first construction phase, the physical structure of the building was partly renewed, some of the existing dry-installed pumps were removed and the remaining old pumps secured full flood protection. We were limited to use only three new pumps in this first phase, and with them we have to secure flood protection during the second construction phase. In a second phase, three additional pumps of the same type will be added.

The solution

In close cooperation with the consulting engineers and the end customer we came to the conclusion that the required applications and a total capacity of 20 cubic meters/s would be fulfilled with three large Sulzer vertical submersible propeller pumps type ABS VUPX1200. Adjustable propeller blades, a customized special gear box and a 690 V / 60 Hz motor for the German 50 Hz power grid connected to variable frequency drives turned out to be the only solution to meet all requested duty points.

A full monitoring system with thermistor sensors, three moisture sensors inside the pump, and shielded cables to ensure electromagnetic compatibility are further unique features of the provided solution.

Customer benefit

For the end customer:

- Reliable flood protection
- Compact and energy-efficient pump station with submersible pumps
- Better cooling and noise protection due to submerged design
- Long-term reliability

For the consultants/contractors:

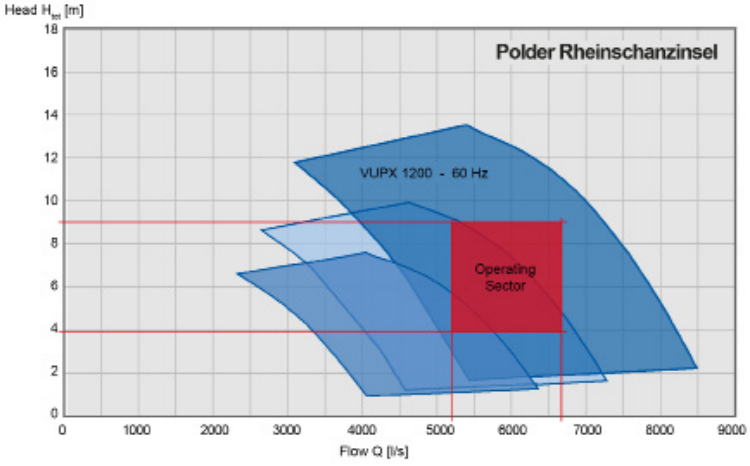
- Sulzer's engineering expertise to prepare multiple complex offers to several contractors during the tendering phase.
- Sulzer VUP reaches all duty points, unlike the corresponding equipment of our main competitors.
- Sulzer fulfilled the requirements of the project more or less without contradictions.
- The feedback provided by different contractors during tendering proves that the Sulzer VUP pumps are the most price competitive pumps on the market for this purpose.

Product data

The order consists of three VUPX1201 M7000/4-95.60 G3.0 and three VUPX1202 M6500/4-95 G3.25. The 700 kW pumps are used for the first construction phase with 6,670 l/s each and approximately 20 cubic meters/s in total, and the 650 kW pumps for the second phase with 5,200 l/s each.

For the second construction phase, the 700 kW pumps will be reduced in flow by variable frequency drives to 5,200 l/s as well. The tender requests a discharge head of 3.92 up to 9.0 meter. Combined with a service contract the end customer was granted a warranty period of five years for the new pumps.

Installation of a vertical submersible propeller pump from Sulzer in a steel riser pipe in size DN 1600



Performance fields of the delivered VUPs

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