

Grundfos Prefabricated Pumping Station (PPS) and submersible pump installed in Chongqing, China

In November 2011, Grundfos provided one prefabricated pumping station for sewage system reconstruction project in Fengzhong Road in Chongqing, China. This proved to be the perfect solution for difficult sewage system reconstruction in the old city.



The Fengzhong Road sewage system reconstruction project had to meet the demands of 4320m³/d inflow in a 2m tank diameter with 8.3m depth that had to be put into a concrete well. Sewage reconstruction in the old city with high population density and complicated site conditions was a challenge – and the prefabricated pumping station proved to be perfect.

Chongqing is one of the largest cities in China and also the political, economic and cultural center in the southwest of China. Fengzhong Road is one of the avenues west of Chongqing city and is 10km long, along which there are many offices, schools, residential areas and

logistic centres. Due to lack of maintenance, the facilities on this road were in serious disrepair, which caused disruption to local residents. In order to improve people's living conditions, the reconstruction of Fengzhong Road was regarded as one of the key projects of 2011 of which the sewage network is the most important and difficult part, with a total investment of 30 million RMB, including 1593m of pipelines, 48 units of check wells and one pumping station, to be finished within 90 days of signing the contract.

Faced with this opportunity, Grundfos accepted the challenge

For the reconstruction project in Chongqing old city, the solution needed to meet even stricter requirements, such as a smaller footprint, a smaller construction site, less disruption to local residents and transportation, and be visually unobtrusive. The local government needed to search for a new solution to make the project successful.

In Europe, Prefabricated Pumping Stations have a history of over 50 years of usage, and installations can be seen in many places. In 2009, the concept was imported from Europe to China, where the Grundfos Prefabricated Pumping Station quickly became popular, and focused attention on these solutions for the Chinese market. This is a brand new concept in China, and is seen as an innovation of pumping station design and application that is very much needed in old city reconstruction, with benefits that traditional pumping stations don't have.

The main issues for the Fengzhong Road project:

- Limited space: The pumping station is located at the gate of one large-scale logistic centre and close to a footbridge. If the construction area and the area the pumping station occupies are too big, it will impact heavily on people nearby and also threaten the foundations of the footbridge. So it was very important for the owner and designer that the pumping station be as small as possible.
- Construction time: The construction time is urgent, with less than 50 days from confirmation of the scheme by the owner to commissioning the pumping station. This is a 'mission impossible' with traditional concrete pumping.
- Local conditions: According to the geological survey report, it will cost a lot to build a traditional concrete pumping station in this area, especially for foundation supporting work.
- Impact on surrounding area: The pumping station is close to the footbridge. If a traditional concrete pumping station had been installed, it would be visually noticeable and impact the surrounding area.
- Control system: The owner wanted a pumping station with easy operation and maintenance. In addition, the budget is too limited to build an independent control center.



The main issues for the Fengzhong Road project:

Right from the first presentation of the Grundfos prefabricated pumping station concept, the project designers understood the possibilities of the solution, and could see that these would be the best solution for the very specific demands of their project.

Grundfos provided the following solutions, to the satisfaction of the designer and end-user:

- Limited space: Prefabricated Pumping Stations can be placed in very limited space. Once installed, the area the Prefabricated Pumping Station occupied was just 10 m², which was very attractive to the owner and construction team.
- Construction time: The Prefabricated Pumping Station was produced in the Grundfos factory and sent to the site as a complete package. It took only three days for installation and a total of 45 days for the whole project.
- Local conditions: To meet local site conditions, a concrete well surrounding the Prefabricated Pumping Station was built with reverse construction method, which saved time and cost compared with the traditional open caisson method.

The outcome

The Grundfos Prefabricated Pumping Station solution solved typical problems in a typical old city reconstruction project. The project was completed on time and within budget. The owner and designer are all satisfied with this integrated, intelligent pumping station with stable operation and high efficiency.

“The integrated and intelligent Prefabricated Pumping Station from Grundfos is a new concept and provides easy pumping station design, selection and application. It is technologically advanced and complete, making it easy for the customer to accept”,

said Zhu Shengwei, Sales Engineer, Grundfos Sales Company

“Grundfos helped us find effective solutions to problems with site limitations condition and urban population centres in an old city area short of land. We are extremely satisfied with the solution Grundfos has supplied. We will definitely think about further cooperation with Grundfos in pumping station design”,

said Chen Xue, Chief Designer of Chongqing Design & Research Institute, China Local Technology & Engineering Group.

- Impact on surrounding area: The Grundfos Prefabricated Pumping Station is totally hidden underground and visually unobtrusive without any impact on the surrounding area.
- Control system: The Grundfos Prefabricated Pumping Station is easy to control with the advanced Grundfos Remote Management System no matter wherever you are in the world. It offers trouble free operation and is easy to service.



Grundfos pumping station solution:

Grundfos supplied one Prefabricated Pumping Station (PPS) meeting head and flow requirements as below:

- PPS:GRP tank 2000mm x 8300mm(H) Q=180m³/h H=14.5m P=12.5kw

PPS is equipped with:

- Submersible pump S1.80.100.125.4.50H.S
- 2 pump sets – one duty, one spare
- 1 set of internal pipe work and valves
- 2 sets auto-coupling, guide rail and lifting chain
- 1 set stainless basket screen
- 1 set pressure sensor
- 1 set control panel with Grundfos Dedicated Controls and GRM system