

Polyurea Coating Protects Sewage Tunnels in Mexico City

Two-Component Mixing System Successfully Used on Large-Scale Project

The Mexican government has undertaken a variety of construction projects in the Valley of Mexico in an attempt to overcome the area's drinking water and drainage problems. The structures being built include two sewage tunnels, which are being coated on the inside with polyurea to ensure a long service life. High-performance systems are being used to apply the protective coating.

The challenges faced by the government of Mexico date back to the Aztec period. Around 700 years ago, the Aztecs built their capital city Tenochtitlán on the site of what is now the centre of Mexico City in the Valley of Mexico, which is more than 2000 metres above sea level. The valley is surrounded on three sides by mountains and has no natural drainage. As a result, Mexico City has been plagued by flooding for centuries and, during the rainy season in particular, the sewage system becomes completely overwhelmed.

Built on unstable ground

In addition, Mexico City is constantly sinking. Because of this, its sewers lose their incline and waste water has to be pumped away at great expense and using large amounts of energy, in order to prevent backflow. The subsidence is likely to continue, because the problems with sewage disposal are mirrored by those of supplying drinking water to this city of 8 million people.

The last spring on the surface dried up long ago. The drinking water bore holes are now several hundred metres in depth. As the ground water is pumped out, the sandy subsoil collapses. The historic city centre is now almost nine metres lower than it was 100 years ago. The earth movements lead to leaks in sewers and water pipes and the risk that the drinking water supply will be contaminated with sewage.

The new tunnels being built by the national water authority Conagua as part of an extensive project to guarantee the safe supply and disposal of water have to overcome these unique challenges. As a result, the two sewage tunnels at Atotonilco de Tula are being coated with polyurea supplied by Dow Chemical.

Long-lasting and tough

The sprayable two-component polymer can be used for a variety of applications and provides a highly reliable solution where protection from water, abrasion or chemicals is needed. The material can

be applied seamlessly and has good flow properties, together with excellent tensile and shear forces. Polyurea's curing time of less than 30 seconds allows the coated objects, which include industrial installations, factory floors, parking decks, sewage pipes and sealing systems for waste water treatment plants, to be brought into operation quickly.

In the Tula project in Mexico, the tunnels are being coated using an efficient two-component mixing and dosing system (Duomix PU 460) supplied by machinery manufacturer Wiwa. The system allows coatings and linings to be applied seamlessly and efficiently to large areas. In the case of the two- and three-kilometre-long tunnels, around 110 tonnes of polyurea had been applied to an area of 40,000 m² by the summer of 2014.

Highly reliable system

The essential requirement for a system of this kind is the high level of reliability that results from phase control, differential pressure shut-off, overpressure shut-off and complete control of the mixing ratio, all of which are features offered by the Duomix PU 460 as standard.

The complex coating work in the tunnels has been carried out by the specialist Mexican company Aepsa with the support of the North American distributor Wiwa LP. ■



Around 110 tonnes of polyurea had been applied by the end of the project.

For more information:

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