



Press release.

October 19<sup>th</sup>, 2007  
Page 1 of 2

## **World premiere for Herrenknecht Direct Pipe: culvert underneath the Rhine River near Worms (Germany) realized in only 13 days.**

Herrenknecht has developed a new method called Direct Pipe, which combines the advantages of the established Microtunnelling method and Horizontal Directional Drilling technology. A string of prefab pipes is pulled in with only one step. SONNTAG Baugesellschaft mbH & Co. KG used the new Direct Pipe method to lay a 464m long steel casing for a water pipeline as well as power and telecommunication cables beneath the Rhine River near Worms (Germany). Breakthrough occurred only 13 days after the beginning of the construction work.

**October 19<sup>th</sup>, 2007.** The new Direct Pipe method allows the trenchless jacking of a prefab pipe in one step with concurrent excavation of the drill hole. Similar to Pipe Jacking, the excavation of the soil is carried out with a Herrenknecht Micromachine. The navigable Micromachine conveys the excavated material via a slurry circuit above ground. The prefab pipe is pushed forward by the Herrenknecht Pipe Thruster. The pipe transmits the thrust force, required for drilling, to the cutterhead.

SONNTAG Baugesellschaft mbH & Co. KG, based in Dörth in the Hunsrück region, is the first company worldwide using this technology. The engineering firm „de la Motte & Partner GmbH“ based in Reinbek near Hamburg (Germany) was in charge of engineering and technical assistance of the construction project in Worms; contracted by the Worms-based “EWR Netz GmbH”. A 464m long culvert was laid underneath the Rhine River. Before the culvert construction, one of three mains for the supply of drinking water of Worms, owned by “EWR Netz GmbH”, had been located on the old Nibelungen Bridge. For the sake of architectural appearance, an installation of pipes on the new Rhine Bridge should be avoided this time. This is why the construction of the culvert underneath the Rhine River became necessary.

The jobsite was set up on the Hessian side of the Rhine River between the flood protection dam and the riverbank. The Herrenknecht Utility Tunnelling Machine M-215M (AVN1000XC; Ø 1,326mm, max. torque 150kNm), christened “Kriemhild”, bored its way through the Rhine riverbed at a maximum depth of 10m. Geological formations consisting of silt, sand and gravel were crossed at a maximum pressure of 1.5bar. The Herrenknecht Pipe Thruster “Siegfried” (HK250/500PT) provided the required push force. The Pipe Thruster pushed the 464m long steel pipe (48” / Ø 1.20m) with a maximum force of 500t. The steel casing, consisting of 11m long pipe sections, was welded together on the jobsite.

After the beginning of the construction work on September 28<sup>th</sup>, 2007, breakthrough already occurred on October 11<sup>th</sup> on the other side of the Rhine River in the Federal State of Rhineland-Palatinate. The Project Manager of SONNTAG Baugesellschaft mbH & Co. KG Klaus Borniger is very satisfied with the evolution of the project, “This drilling method is not only cheaper than established methods, it also saves time. The increase in know-how will allow us to continue our role as competence bearer and trendsetter in the trenchless construction market and enable us to offer our customers even more efficient and environment-friendly solutions.”

The 48" pipe laid near Worms will serve as casing pipe for a water pipeline (Ø 60cm) and twelve ducts for power and telecommunication cables. At the end of November, the entire construction project is scheduled to be completed and the first water could flow through the new transport pipeline to Worms already in December.