Digging Deeper With HOBAS®

Cooling water and protective pipes for copper ore mine in Rudna, PL

The village Rudna in southwestern Poland is rather small. The local copper ore mine, however, is the largest one of its kind in Europe and one of the largest in the world. Operated by KGHM Polska Miedź (Kombinat Górniczo-Hutniczy Miedzi Polish Copper), it produces 12 million tons of ore per year and employs 4,580 people. The mine has 11 wells with a depth of approx. 1 km each. The constant progress of work in the Rudna Mine involves digging depper and deeper into the earth with temperatures steadily increasing. This is why an efficient and durable central cooling system was indispensable for making the work in the mine possible – HOBAS had the right solution.

The planned cooling system of the mine consisted of a control station, surface pipelines installed at 2-3 m depth, vertical pipelines in the boreholes reaching down almost 1 km from the surface, and air conditioning pipelines in the mining sidewalks deep inside the mine. For the surface pipeline, KGHM first considered using steel pipes DN 355 or HDPE Pipes DN 450. The final decision to use HOBAS Pipes instead was based on the high-performance pipe material, hydraulic performance, the possibility to install the pipeline regardless of weather and soil conditions, as well as the long and low-maintenance lifetime.

HOBAS Poland supplied 3,650 m CC-GRP pipes and fittings DN 350, PN 25, which were installed in four lines. Two of them were designed as inlet channels to transport cooling water with 1.5°C from the control station to the vertical connection points with the underground mine, and another two as outlet channels for transporting the warmed-up water from the mine back up to the control station, where it is cooled down again. To protect the cooled water from warming over the transport distance of 900 m, it was necessary to supply the inlet pipes with a 50 mm polyurethane foam insulation.

The four pipelines were installed next to each other in 2-3 m depth. The major part was realized in open trench, but due to some obstacles (roads, other pipelines) on the pipeline route, some parts had to be installed by trenchless methods. And HOBAS also provided the right solution for this challenge: HOBAS CC-GRP Protective Pipes D_e 550 and D_e 752 were jacked underneath the obstacles and the cooling water pipes DN 350 inserted afterwards. The two different diameters were necessary due to the actual size difference of the pipelines – the inlet pipes with 50 mm foam insulation naturally required more space.

The entire installation was realized between September 2014 and May 2015. In the end, the pipes have been successfully tested and the cooling system is operating smoothly now.

Fmd: hobas.poland@hobas.com

Tweet

Year of Construction
2014/2015
Construction Time
9 months
Total length of the pipe
3650 m
Diameter
DN 350 (in-/outlet pipes)
D_e 550 and D_e 752 (protective pipes)
Pressure Class
PN 1 (in-/outlet pipes)
PN 25 (protective pipes)
Stiffness Class
SN 10000, 80000, 10000
Application
Cooling/industrial water circulation
Client
„KGHM Polska Miedź" S.A. Oddział Zakłady Górnicze Rudna
Contractor
Przedsiębiorstwo Budowy Kopalń PeBeKa S.A.
Advantages
Hydraulic performance, long lifetime, possibility to install the pipeline regardless of weather and soil conditions, large product range