

ICE high-speed train line from Stuttgart to Ulm

FAST TRENCHING IN LIMESTONE

ARGE STUTZ/BUNTE relies on KEMROC chain cutters

KEMROC chain cutters prove their worth while trenching along the future ICE high-speed train line between Stuttgart and Ulm (Germany). They are excavating trenches to the required width and depth with a high degree of accuracy in the hard limestone of the Alb plateau. The method and costs associated with the trenching operation had been a concern for the contractors Stutz and JOHANN BUNTE as well as for the construction equipment rental company BS Baumaschinen Service GmbH.

When the high-speed rail line between Wendlingen and Ulm will be completed at the end of 2022, trains will be crossing the Alb Plateau at speeds of up to 250 km/h. A consortium led by the construction companies Stutz GmbH Tief- und Strassenbau (Kirchheim) and JOHANN BUNTE Bauunternehmung GmbH & Co. KG (Papenburg) was formed to carry out the underground excavation work and build the substructures and all the ancillary facilities required for the railway line. This involved laying cables in a trench in hard, homogenous limestone running alongside the planned route of the railway tracks. Under normal circumstances, this would have been done using a trencher, but the proximity of an embankment made this impossible. There was not enough level ground on one side of the trench to support the track of the trencher. The solution to the problem was to use two EK 140 chain cutters manufactured by KEMROC. They were supplied by their local dealer BS Baumaschinen Service GmbH and mounted on two large hydraulic excavators owned by Stutz and BUNTE.

Getting the Angles Right

Manufactured by the German company KEMROC, the EK (ERKATOR) is a unique range of excavator attachments designed for trenching in soft to medium hard rock with compressive strength up to 100 MPa. They are a drum cutter with a patented, central drive chain allowing them to operate like a standard trencher. With models suitable for working on excavators from 10 to 50 tons, they are ideal for narrow, deep trenches.

Under normal circumstances, the operator positions the excavator with its tracks either side of the trench being excavated. At the section of railway near the town of Scharenstetten, the embankment located close to the side of the trench ruled out the use of an excavator in the same way as it ruled out the use of the trencher. However, another feature of the excavator attachment solved this problem and provided the ideal solution for the contractor. As an



In hard limestone, the STUTZ/BUNTE consortium used hydraulic excavators with KEMROC chain cutters to excavate trenches that will be carrying power cables on the Wendlingen – Ulm section of the high-speed train line being constructed.

optional extra, the KEMROC chain cutter can be fitted with a “sandwich style” rotation unit. This mechanical feature allows the cutter to be rotated and fixed in steps of 22.5 degrees thereby enabling the operator to excavate a trench parallel but offset to the central axis of the excavator. This was the solution that the contractor had been looking for; the trench could be excavated in the correct position with the excavator located on a flat, level surface with the tracks located away from the embankment.

Feasible and Economical

Since starting with the chain cutter in December 2017, about half of the project had been completed by April 2018. Having analysed the results to date, the Project Manager Mr. Klaus Pretsch said, “Compared to the common alternatives such as breakers and drill and blast, using the chain cutter has proven to be a cost effective, viable, option. It produces a trench with clean, straight walls with good productivity. Under the given circumstances, trenching with a chain cutter is a practical, economical method for us.”

For the Project Manager, an important factor contributing to the success of this project was the information provided in advance. Estimated feasibility and cost-effectiveness of the chain cutter together with estimated grain size of broken rock were provided so that a proper logistical plan could be prepared for type and amount of material to be transported off site. This was provided by the supplier, BM Baumaschinen Service GmbH from the German town of Inzigkofen, who can draw on knowledge gained from years of experience in the use of drum cutters in many different applications. BM Baumaschinen draw on this knowledge to advise customers on all aspects related to the use of drum cutter excavator attachments. Mr Bertram Zebrowski, the product specialist, said, “Included in our service is a reliable feasibility and cost analysis which we make on site. This provides the customer with specific information to plan and execute the work required to complete the project.” ■



A unique technical feature made it possible to use a chain cutter along a line outside the excavator tracks; as an optional extra, the cutter can be rotated and fixed at an angle to the axis of the excavator arm.

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