Expansion at the Wurzburg State Fire Brigade School

PRECISION TRENCHING IN LIMESTONE

KEMROC chain cutter EK 100 proves itself in solid rock

While preparing a construction site at the Wurzburg State School for fire brigades, the German contractor Höhn unexpectedly hit upon a deposit of solid rock. As the limestone would not fracture far below the surface when using an excavator with a drag hook, a road planer was used to level the site. Afterwards, a drainage trench was excavated using a KEMROC EK 100 chain cutter attachment with a rotation module mounted on a 24-ton crawler excavator. This method achieved the objectives in a timely manner.

The Wurzburg State Fire Brigade School is currently going through a phase of massive expansion. In addition to a new training facility, the project (investment value: Euro 23 million) will include a modern accommodation building and new vehicle bays. While clearing the 60 x 15 m job site down to a depth of 5 m, the site engineers from the contractor, Balthasar Höhn Bauunternehmung GmbH & Co., found a deposit of shell bearing limestone at a depth of 3 m. This is not unusual in and around Wurzburg but in this case, the rock was exceptionally hard. Contrary to previous experience with this material, which is normally found as a thinly layered sedimentary rock, it had a very dense composition. As a result, it was only possible to scrape away the top 10 cm with the excavator. A self-propelled road milling machine was rented and quickly installed on site to remove the rock down to the foundation level. They then attempted to excavate a drainage ditch around the job site using a combination of excavator with hydraulic breaker. From the start, site manager Wolfgang Metzger could see that this wasn't going to work so he decided to investigate using an excavator milling attachment from KEMROC.

After contacting the manufacturer, Wolfgang Metzger had discussions with the KEMROC application engineer Enrico Trender and Andreas Öhrlein, the sales consultant from KEMROC's sales partner Carl Beutlhauser Baumaschinen GmbH. The decision was taken to excavate the trench using a KEMROC EK 100_700 (700 mm cutting width) chain cutter together with a rotation module.

Getting the equipment right

The EK range of chain cutter excavator attachments are part of the successful range of products manufactured by KEMROC. The unique drum cutters have a patented chain with

The construction company Höhn had to excavate a drainage trench at the job site of the State Fire Brigade School in Wurzburg. The combination of a 24-ton excavator with KEMROC EK 100 chain cutter proved to be ideal for the project.

cutter picks running between the two cutter heads and are specifically designed for the excavation of narrow, deep trenches in soft to medium hard rock. Available in a range of sizes to suit excavators up to 50 tons operating weight, they can excavate deep narrow trenches in rock with compressive strengths to 120 MPa. KEMROC is extending the range and from autumn 2020, the 220-kW model EK 220 for 50 to 70 ton excavators will be available followed by the EK 40 for 5 to 10 ton excavators (planned for autumn 2021). The recently completed range of KRM rotation modules is already available in sizes to fit excavators from 2 to 70-ton operating weight. Compact, sturdy and low maintenance, this range of attachments with stepless, continuous rotation extends the scope and range of applications for all KEMROC milling attachments. When used in conjunction with a chain cutter, trenches can be excavated not only in the middle, along the axis of the excavator but also to the side of the excavator. This saves a lot of space and the excavation of more material than necessary, which can happen when having to excavate at an angle to the line of the trench.

In June 2020, the advantages of using a rotation module were very evident at the Wurzburg Fire Brigade School job site. It began with the fast delivery of the correct combination of cutter and rotation module from KEMROC. Within only some days after the first contact, Beutlhauser, the KEMROC dealer, delivered on site in Wurzburg a Liebherr R924 GB (24 ton) crawler excavator from their rental fleet together with the attachments.

Fast and Accurate Results

On site, thanks to the rotation module, the excavator operator was able to stand the excavator close enough to the side wall of the excavation with the chain cutter positioned parallel to the wall and facing along the desired axis of the trench. The actual time taken to excavate the 150 m long, 700 mm wide and 400 mm deep drainage trench around the periphery of the job site was two eight hour working days, excluding a couple of short interruptions. This equated to a production rate of approximately ten linear meters per hour. According to Wolfgang Metzger, using an excavator with hydraulic breaker or with a ripper tooth, they would never have arrived at this level of production or with such an accurately excavated trench: “Under such time pressure, excavating the trench with the chain cutter turned out to be a blessing. We were pleasantly surprised with the trench profile. Only in a couple of places, the trench width went up to 800 mm, where walls caved in due to the conditions where the rock was loose, exceptionally weak and layered.” The trench was then cleaned out with the excavator bucket and the drainage pipe was laid. “Afterwards we used the chain cutter two excavate two holes to house the pumps”, commented the site manager, “and then we handed the site over on the day as scheduled.”

Paula Höhn, the managing director of the Wurzburg based construction company, also made a favourable report at the end of the project, “Despite considerably higher rental costs compared to using an excavator with a breaker attachment from our own fleet, the

With a rotation module between the excavator arm and cutter attachment the operator can excavate the trench parallel to the side wall regardless of the position of the excavator. This also avoids excavating a larger trench than necessary.

short-term use of the excavator with chain cutter at the job site has paid off. Using a breaker, the work would have taken three times as long. In addition, with the current chronic shortage of skilled construction workers, we welcome anything that stops us tying up our personnel on a site for longer than necessary.”

In contrast to the use of a breaker, the sudden build-up of rainwater or standing water in the trench has no adverse effect on the operation of a cutter. On the contrary, it makes the cutting process easier.

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