KEMROC KR 120 drum cutter and EK 40 chain cutter

A DOUBLE DOSE OF PRECISION TOOLING

Preparing the construction site for “Königsteiner Höfe”

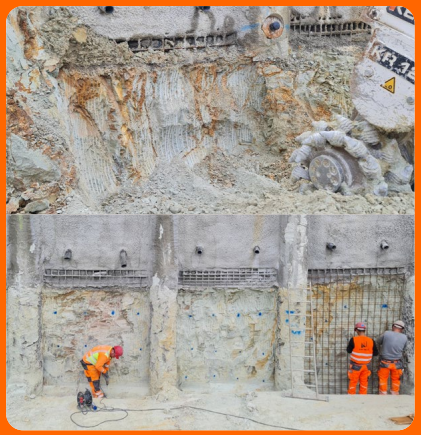
The “Königsteiner Höfe” is a new residential and commercial quarter being constructed in the middle of Königstein im Taunus in the German state of Hesse. Acting as a subcontractor to the Köster Group, the company Höfling Erdbau was engaged to complete the site preparation work. Using two excavators with cutter attachments from KEMROC, the contractor put all the bored pile walls in place and put in the drainage systems efficiently and to the required accuracy.

Königsteiner Höfe is the exclusive address of an innovative residential and commercial quarter which is being built in the middle of the Hessian town of Königstein – on the former parking lot of a car dealership. The 9,000 m² site offers enough space for a total of eight buildings with around 75 apartments with 7,000 m² of living space as well as facilities, offices, a bistro, and an organic market. The general contractor Köster and the subcontractor Höfling Erdbau have started the first phase of this ambitious project which has to be completed by June 2024. This phase involves excavating the site and installing all the required ground support.

Bored pile wall with shotcrete

After the ground-breaking ceremony at the end of December 2022, the 65,000 m³ construction site was first excavated to a depth of 15 m on the slope side and to a depth of 7 m on the valley side, and the shoring was erected as a contiguous bored pile wall. By mid-February 2023, all 186 bored piles surrounding the excavation pit were completed. The piles then had to be anchored and lined by filling the space between each pile with steel mesh and shotcrete. To keep costs down, the shoring wall had to be profiled back beforehand with a surface to be as flat as possible. Achieving the surface finish required would have been impossible in the difficult quartzite ground conditions using an excavator with breaker or ripper. For this reason, Daniel Korn, site manager at the contracting company Gerhard Höfling GmbH, chose a different excavator attachment – namely a rotary drum cutter. After initial trials with a different brand that did not yield the desired results, Enrico Trender, Sales Manager at KEMROC, recommended the combination of a 25-tonne excavator and a KEMROC KR 120 (120 kW) rotary drum cutter to complete this task.

Using a 25-tonne short-tail excavator and a KR 120 rotary drum cutter from KEMROC, the contractor Höfling profiles the shoring wall before lining with steel mesh and shotcrete on the “Königsteiner Höfe” construction site.



Layer by layer, the areas of quartzite rock between the bored piles are exposed. After lining with steel mesh, shotcrete is applied. The amount of shotcrete used is kept to a minimum.

KEMROC's KR range comprises 19 transverse cutters with spur gears. They are particularly robust and wear-resistant and serve as ideal attachments for carriers with short booms in confined spaces – especially in demolition and tunnelling as well as in trenching and pipeline work, concrete renovation, quarrying of soft rocks, underwater and profiling work. Daniel Korn from Höfling rented a KR 120 drum cutter for use on the company's own 25-tonne excavator for the profiling work. With this combination, it was possible to mill the ground containing quartzite from between the bored piles with a smooth surface finish and line it with shotcrete in what would have previously been classed as soil class 6 to 7 material.

Drainage trenches all around

Subsequently, the contractor had to excavate a drainage trench 50 – 60 cm deep and 50 cm wide inside and at the foot of the shored wall for its entire length. After his experience using milling equipment in these ground conditions, Daniel Korn decided to carry out this work using the combination of a 9-tonne short-tail excavator and a KEMROC EK 40 chain cutter (44 kW).

The KEMROC EK range of chain cutters are equipped with a unique cutter chain running between the outer cutter drums. They loosen the material along the entire width of the cutter head without leaving a central spur as would be the case when using conventional drum cutter without any sideways movement. In this way, they excavate trenches with a precisely defined width. This operating characteristic saves time and up to 40% energy, is gentle on excavators and produces fine-grained milled material that can often be used immediately as backfill.

On the "Königsteiner Höfe" construction site, however, the milled material was transported away for recycling. Backfill was not required because the sloping drainage trench was to be lined with a fleece material and filled with special drainage gravel so that when it rained, the water collected would flow down to the pump shafts. In retrospect, site manager Daniel Korn considered that completing the work with the equipment they rented as a complete success: "In view of the difficult soil conditions with the presence of quartzite prevailing on our construction site, the choice of equipment was almost perfect for this task." ▮

Along the foot of the bored pile wall, a drainage trench is excavated – saving time and money with a 9-tonne excavator and an EK 40 chain cutter.

The entire length of the trench is lined with a fleece material and filled with drainage gravel. This allows rainwater to drain off in the direction of the pump shafts.

Video from the construction site:
https://projector.kemroc.net/web/?id=d2LAOXp45yCyVYFvPtOZ

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