

An excavator with KEMROC attachment

SAVING TIME DRESSING NATURAL STONE

Breaking out large pieces of sandstone and dressing them down into manageable blocks suitable for the processing plant – this used to require a lot of strenuous manual labour and time at the natural stone producer Fark Naturstein located at Havixbeck in the Munsterland of Germany. The process has recently been mechanised and made significantly easier. Instead of drilling and using wedge and feathers, the blocks are now being cut with precision using a KEMROC ES 110 HD universal cutter attachment mounted on a 24-ton excavator.

Baumberger sandstone – the fine grained, yellowish-grey sandstone has been mined for centuries at a location near the northern edge of the Baumberge mountains and was used extensively in Münster (North Rhine-Westphalia) and the surrounding region for both internal and external applications. Since the calcite content can range between 50 and 70%, it is frequently described as a very sandy limestone or limestone. Fark Naturstein in Havixbeck own one of the few remaining quarries to extract Baumberger sandstone and they have eight generations of experience as stonemasons.

Fark's quarry covers an area of around 10,000 m² and the Baumberger sandstone deposit consists of a 4 m thick layer located under 20 m of overburden. The dense, homogenous, fine grained and relatively soft (compressive strength 40 – 50 MPa) rock, can be divided into three different sections, where the characteristics of the rock determine suitable applications for the rock: softer and malleable for internal applications (e. g. fireplaces/ hearths), to slightly harder, more wear resistant characteristics suitable for paving slabs to harder, more weather resistant characteristics suitable for cladding.

Cutting rather than drilling and splitting

After the overburden had been removed, stone blocks were broken out using a 45-ton excavator with a claw attachment and these blocks were then shaped into rectangular blocks suitable for processing by drilling and splitting using wedges and feathers. Shaping the blocks was a time-consuming process involving heavy, tedious



A KEMROC ES 110 HD universal cutter (110 kW) with cutter wheel (1,000 mm cutting depth) mounted on a 24-ton excavator at Fark Naturstein in the Münster region of Germany.



Sandstone blocks can be dressed into manageable sized blocks quicker, better, and more conveniently than by the drilling and splitting method used before.

manual labour which also resulted in a relatively high wastage rate due to unavoidable spalling. Following detailed consultation with KEMROC sales manager Enrico Trender, an ES 110 HD universal cutter attachment was supplied to the quarry for initial testing and evaluation. This attachment proved to be well suited for use on the company's smaller 24-ton excavator. Having completed a number of successful trials, Fark Naturstein has now started the new season with a completely new process.

The individual steps in the quarrying process are as follows: First, a vertical slot is cut in the sandstone deposit using an excavator and cutter wheel attachment. The slot is used by a 45-ton excavator with bucket to pull large sandstone blocks out horizontally from the main deposit. The large blocks are then cut down into smaller, more manageable sized blocks using the 24-ton excavator fitted with the KEMROC ES 110 HD universal attachment with cutter wheel (1,000 mm cutting depth). All the rough-hewn surfaces on the blocks are also dressed by the cutter wheel so that the blocks have a perfect oblong shape. This saves storage space in the quarry since they are ideal for stacking one upon another. With flat external surfaces, the blocks are also optimally dressed for the next operation at the saws.

Better accuracy, speed, and comfort

The ES range of universal cutter attachments from KEMROC are exceptionally versatile, equally capable of cutting small slots in concrete or asphalt and accurately profiling horizontal and vertical surfaces. They can be fitted either with a cutter wheel or with a cutter drum and once mounted on and powered by the carrier machine, they can be used for work on concrete, asphalt, or rock. After consultation with KEMROC sales manager Enrico Trender, the stone masons at Fark decided to try the largest model ES 110 HD (110 kW) fitted with a cutter wheel with maximum cutting depth of 1,000 mm as a suitable attachment for their hydraulic excavator LH R 914 B.

They agreed on an excavator and attachment combination that used a high-torque motor to develop very high peripheral cutting speeds at around 42 rpm which was ideal for this application. Through trial and error, the operator found that a relatively quick back and forth motion of the cutter wheel in the slot with an advance of about 5 cm per cut provided the best cutting performance. In this way, there was little risk of jamming the cutter wheel in the slot.

As a result of using the new production method, Fark Naturstein has not only significantly increased the percentage yield of its valuable sandstone material by cutting the blocks instead of using the old drilling and splitting method. But also, they have also saved a lot of time and hard manual labour. "Previously, we needed a good half man-hour of work for a linear meter at a depth of one meter," calculated master



Cutting produces blocks with smooth surfaces at right angles. This makes them easier to store in the quarry and they are ideal shape for processing on the saw bench.

stonemason Thomas Fark, “but now the excavator operator can achieve the same result in just five minutes working with a joystick! For us, this is a completely new level of quality and work comfort.” ■



A video of the KEMROC universal cutter
is available here:

→ https://youtu.be/Da0duFe0r_Y

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