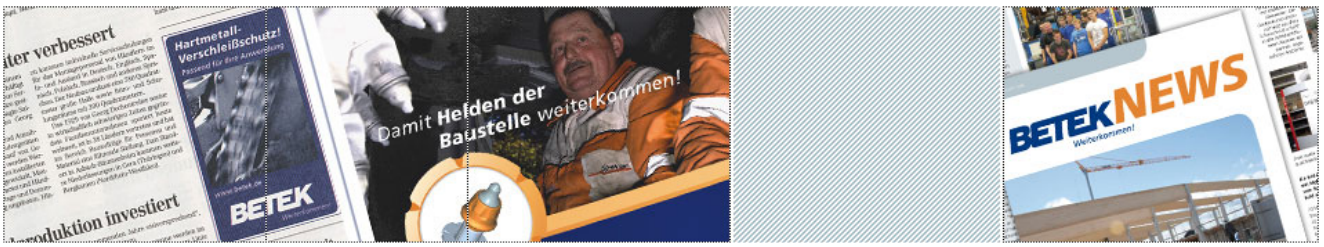
Bergbau - und Hartmetalltechnik
Karl - Heinz Simon GmbH & Co. KG

BETEK Progress!



'Changing teeth' and thus any extraction of the milling machine was a thing of the past for Geo Rumo's machine operators – saving them 30 minutes per panel. And, as everywhere, on construction sites 'time is money'!

The milling wheels can be driven in both directions. Specially developed by Betek together with Bauer for this process: the SB38DC (double cut) milling tooth, with which milling can be done in both directions.

Making fast progress
New SB38DC cuts in every direction – forwards and backwards

The Romans called the Limia River the 'Lethe' and in classic mythology it was surrounded by legends as a river of forgetfulness and perfidy. When it came to laying a water pipeline under this river only one thing was perfidious: the geological and spatial conditions. However, thanks to a specific excavation method and the fitting of the milling machine with newly developed cutting teeth these challenges were soon forgotten.

A water pipeline was laid under the Limia in Portugal using a micro-tunnelling system. To do this, initial shafts first had to be built. An experienced special underground construction firm, Geo Rumo, had the contract to produce the retaining walls. They were produced using the CSM (cutter soil mixing) process with an RTG RG25S. 24 panels were cut per shaft, 23 metres deep, using a BCM5 (800mm milling wheel) developed by Bauer Machines.

The cutter-soil-mixing process is derived from the diaphragm wall milling technique. The ground is loosened using milling wheels, which rotate around a horizontal axis. Through the rotary movement of the wheels and the addition of a self-hardening suspension it is then mixed into a soil and cement mortar. At the heart of the Bauer machine are two milling drives that power standard cutting wheels. The wheels can be driven in both directions. The suspension gets pumped via a central opening between the cutting wheels and mixed by the rotation of the wheels with the loosened soil. The wheels and deflectors located between the cutting teeth act like a positive mixer.

Cutting tooth optimises the loosening of soil

Betek together with Bauer developed the SB38DC cutting tooth specifically for the CSM process and this was tested for the first time at the construction site in Ponte de Lima in Portugal. This cutting tooth is what you might call a 'little all-directions biter' – using this cutter you are able to mill in both directions. That's important in order to optimise the loosening up of the ground. Apart from that it also enables the milling machine to be corrected in order to get a straight panel. The ground conditions at this construction site provide everything from soft topsoil, varying layers of gravel and sand, clay and stone, all the way to very hard slate. Right from the very first test run it was evident that the twin-cutting SB38DC milling tooth was perfect for such jobs. Wear was more than appreciably

minimised and the loosening of the ground optimised. The machine runs much more quietly and delivers a constantly high feed rate.

Any drawing back of the milling machine after 15m, which due to the complex geology found in this case used to be necessary for inspecting and possibly changing the teeth, was no longer required. On this construction site that meant a time saving of around 30 minutes per panel. Grossed up, with 24 panels per shaft, that makes twelve hours – now if that's not a good reason...