

GeoDrilling International



Quarrying

Looking beyond the role of drilling in the world of mineral extraction and open pit mining

Training

Targeted education from traditional classroom environments to the latest in simulator technology

Mining projects

The changing face of mining as new technology and new techniques impact the industry

EURODRILL revolutionises drive technologies in anchor drilling

When COVID lockdown restrictions induced supply chain issues EURODRILL took the opportunity to push forward with new product development that would allow it to meet customer demands

At the end of 2021, when the motors usually used in the anchor drilling industry could no longer be sourced, EURODRILL – like many in the industry – had its back against the wall. It was clear that alternatives had to be found without delay, so as not to jeopardise the company's ability to deliver products.

An extensive brainstorming exercise took place, resulting in the drawing up of several concepts in January 2022, of which two were ultimately selected and implemented. Looking back now, one could say that the crisis accelerated technological developments and that EURODRILL, with the resulting drive system that it developed, was able to take drive technologies in specialist civil engineering to a new level: for the innovative EA 61 V drive system that was developed not only offers strong performance data, but also huge savings potential.

THE EA 61 V DRIVE SYSTEM

The new EA 61 V drive system from EURODRILL

The new
EURODRILL
EA 61 V
drive system



comprises a high-quality axial piston motor from a leading manufacturer, which operates very comfortably within its limits of performance.

This is combined with planetary gearing that has been specially developed by EURODRILL.

EURODRILL's experience, over many years, of manufacturing planetary gearing for piling rigs allowed it to reduce the diameter of the planetary gear for the EA 61 V system to such an extent that perfect implementation of the new system was possible.

ADVANTAGES

In diagram 1 it can be seen, simply when comparing the theoretical values, that the EA 61 V offers significantly superior performance to the Geroler motors. As well as slightly more torque and 50% more speed, the system is particularly notable for the variable adjustment of its gears. What is more, the new drive system can be operated at 35% higher output power, thereby making use of the

installed capacity of the increasingly more powerful drilling rigs. The additional, utilisable speed/torque performance is shown in red in the diagram.

So much for the theory – in real-life conditions, the advantages of this new drive system compared to

Geroler motors are even more pronounced, as can be seen in diagram 2.

1. Speed stability at the highest level of torque. Thanks to the significantly better volumetric efficiency of the axial piston

motor, there is markedly less speed loss at the highest level of torque.

2. Higher practical torque at high speed. Due to the higher efficiency rate of the EA 61 V and the fact that serial shifting is no longer required, the losses in top gear are significantly smaller.
3. Higher speed at the same torque. Where torque of 25kNm is required, the speed available almost doubles e.g. 38rpm instead of 20rpm
4. Higher torque at the same speed. At a speed of 50rpm, roughly three times the practical torque is available e.g. approximately 20kNm instead of 7kNm.

POTENTIAL SAVINGS

Due to the significantly greater efficiency (see points 1 and 2 Diagram 2) and the greater net drilling capacity (see points 3 and 4 Diagram 2), markedly lower drive performance is required for the EA 61 V drive system, thereby saving on fuel.

By way of an example to illustrate the savings potential, EURODRILL is assuming average savings of 10kW/h on drive performance – and this is a conservative estimate. As approx. 0.2L of diesel is saved for each kW/h not required, a saving of some 20,000L of fuel is achieved over 10,000 operating hours.

An incredible 53t of CO₂ is saved as a result, which makes a huge contribution towards reducing the carbon footprint on the construction site.

Even with higher acquisition costs, the new system remains an attractive proposition because with the documented savings

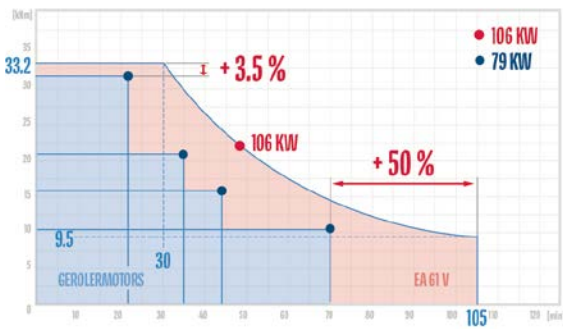


Diagram 1 – Geroler motors versus EA 61 V – theoretical comparison with the RH 32 X

payback is rapid – and at the same time, deploying the EA 61 V drive system allows the drilling rig to be operated at a higher drilling speed.

The lower output required means important drilling rig components (motor, pumps and other hydraulic components) are conserved for longer. The thermal economy of the entire drilling rig is significantly improved, too.

THE EA 61 V IN ACTION

The latest-generation drive system is being deployed, among other projects, for one in Antwerp. In 2024, not far from the city centre, 350m of new quay walling is to be secured with 150 anchors in total. The building contractor working on this project, Herbosch-Kiere (part of the EIFFAGE Group), had drilled some test anchors in advance to make the dimensioning of later anchors easier. As the existing hydraulic hammer was not equal to the challenge of a 219mm diameter and a drilling depth of up to 42m, the decision was taken to deploy a EURODRILL RH 32 X using the EA 61 V drive system. It had to drill through several metres of sand, followed by a thick layer of clay and finally 4m of the infamous, extremely hard “Boomse Klei”. Thanks to its high torque and powerful percussion unit, it was able to master the combination of a large drilling diameter and deep drilling depth to the full satisfaction of client Herbosch-Kiere. ▼

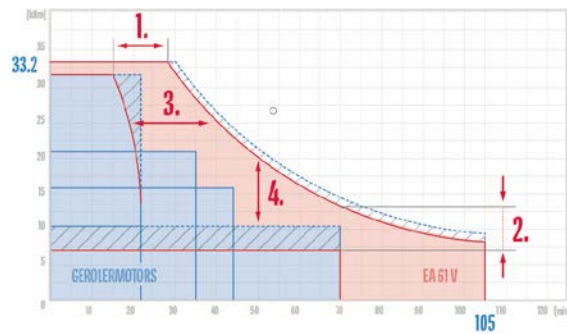


Diagram 2 – Geroler motors versus EA 61 V – (real-life) comparison with the RH 32 X, actual values