ASK
DOES IT HAVE DYNAVIS?

JUST BY CHANGING YOUR HYDRAULIC FLUID

CASE STUDY: Uab Vakaru Verslo Projektai / Lithuania

Cutting screening costs: DYNAVIS® Technology works wonders in the sand quarry

There is perhaps no more challenging environment in which to operate hydraulic equipment than the mining industry. Performance is critical. The environment is challenging. And operation is non-stop. A sand and gravel quarry near Klaipeda, Lithuanias offered the opportunity to compare the efficiency of various hydraulic fluids. With a wheel loader, hydraulic excavator and a mobile screening unit as test candidates, the MS 19 Z Kleemann screening unit was selected.

In earthmoving and excavation equipment, cost per metric ton per hour is the ultimate measure of performance. A screening unit like the Kleemann MS 19 Z is designed for a maximum feed capacity of 500 metric tons per hour.

The screened and graded sand is the finished product, and hourly fuel consumption is the baseline component of its price. In the Klaipeda quarry, the very fine-grained sand is excavated with crawler excavators. Wheel loaders move the material to feed the hopper of the screening unit where it is screened and then discharged on three belts as fine, medium, and oversized particles.

Once started, the Kleemann screening unit runs without interruption. It is moved only infrequently. Its hydraulic system uses 660 liters of fluid, 400 liters of which are contained in the compensating reservoir. In a screening unit of this design, the hydraulic system is the “heart”, and the fluid the “blood”, of the machine. All of the conveyor belts – the feed belt as well as the three delivery belts – are hydraulically operated, as are the screen, chain drive, and the hydraulic folding mechanism that expands and collapses the belts. There could hardly be more hydraulics in a single piece of equipment. For every hydraulic fluid, the screening unit is the ultimate test.

DynaVIs
More Power • Less Fuel

Testing performed over six months

Arunas Aliulis, sales manager at UAB Intrac Lietuva, a leading construction equipment dealer for CASE in the Baltic, introduced the idea of a DYNAVIS® test to Alfredas Vybernaitis, manager of the sand quarry. Aliulis was aware of the benefits of DYNAVIS® technology and recommended that Alfredas test the DYNAVIS®- formulated hydraulic fluid in the screening unit. The operation of the screening unit made it the best candidate for the test. With its nearly continuous operation, and its high fuel consumption, the screening unit offered the greatest potential for savings. With a full six months of testing, the DYNAVIS®-formulated fluid would experience frosty winter days when cold-starts are most difficult, and summer days when hydraulic systems experience higher cooling requirements. On December 18, 2013, the old hydraulic fluid was drained and replaced with a DYNAVIS®-formulated fluid. The average fuel consumption at the time was 20 l/h.

A tough competitor: high-grade hydraulic oil vs. a fluid formulated using DYNAVIS® technology

The replaced fluid was a high-grade hydraulic oil, making the comparison with the DYNAVIS®-formulated hydraulic fluid a true competition. But after only 80 hours of operation, the DYNAVIS® Efficiency Team received a phone call from Alfredas. His first impressions of the DYNAVIS®-formulated fluid included "significantly better cold-start behavior" and "smoother and quieter machine operation." On June 13, 2014, at the end of the test, the average fuel consumption of the screening unit over the six months of the test was calculated at 17 l/h; moreover, the cooling requirements for the hydraulic system during the summer months were found to be significantly lower. The previously used hydraulic fluid, a modern multigrade oil identified as HVLP 46, was clearly inferior to the oil formulated with DYNAVIS® technology, at least in the screening unit comparison.

Excavator problem also solved along the way

In addition to the screening unit, Aliulis also had the oil changed out in a 30-ton CASE crawler excavator that had earlier experienced severe productivity problems. The problems were resolved after switching to the fluid formulated with DYNAVIS® technology.

FACTS AND FIGURES

Machine	Screening Unit Kleemann MS 19 Z
Hourly Operating Cost	€ 18.75
Hydraulic Fluid Volume	660 l
Activity, Application	Mining, screening unit
Hydraulic Fluid	DYNAVIS®-formulated Hydraulic Fluid
Counter reading, test start, Dec. 18, 2013	1,968 operating hours
Counter reading, test end, June 13, 2014	2,250 operating hours
Total duration of test operation	282 operating hours
Working days per week / Hours per day	5/8 h

Results at the end of the test	HVLP 46	DYNAVIS® Fluid ISO46
Fuel consumption	**20 l/h**	**17 l/h**
Savings per hour	–	€ 3.81
Savings per day	–	€ 30.48

Savings over the test period (35 working days): € 1,070

Annual savings (50 weeks): € 5,330

All calculations based on a diesel price of 1.27 €/l

Alfredas Vybernaitis, general manager of Vakaru Verslo Projektai (left):

"Thanks to changing to a fluid formulated with DYNAVIS® technology, we've been able to reduce fuel consumption by 15 percent. But that's not all. Cold-start problems that cost us additional time have been eliminated, and the shaking and vibrations coming from the hydraulic pump have disappeared. Over the six months of the test, from frigid winter to blazing summer, DYNAVIS® technology proved its value in at least three significant ways. From now on, hydraulic fluid formulated with DYNAVIS® technology is our fluid of choice."

Where to find hydraulic fluids formulated with DYNAVIS® technology? Visit dynavis.com