

# ENERGY EFFICIENCY GAIN OF UP TO 10% WITH HIGH PERFORMANCE HYDRAULIC FLUID FORMULATED WITH DYNAVIS®



**PERFORMANCE DEMONSTRATION:** schoen + sandt machinery GmbH, Pirmasens, Germany



## HIGH SHEAR STABLE, HIGH VI HYDRAULIC FLUID PROVIDES CONTINUOUS SAVINGS

### FINAL TEST RESULTS\*

Efficiency gain at 25° – 30° Celsius	+ 10%
Efficiency gain at 50° Celsius	+ 5%

\*after statistical evaluation

### VISCOSITY HAS A MAJOR IMPACT ON EFFICIENCY AND CUTS ENERGY CONSUMPTION

In today's marketplace for hydraulic cutting machines, energy efficiency has become almost as important as high levels of technical innovation. Because of this, the specialists at schoen + sandt don't stop at designing and manufacturing top-of-the-line hydraulic cutters and control systems, but also go the extra mile to help realize continuous savings through lower energy consumption, higher output via increased machine accuracy and prolonged service life. They compared a monograde fluid to a high shear stable multigrade fluid with a high viscosity index of 183. Just by changing the hydraulic fluid, they measured an improved energy efficiency of up to 10%. The new high-performance fluid propels schoen + sandt machinery GmbH into an exciting new era of higher profits at lower operating costs.

### EFFICIENCY STUDY SHOWS NEW COST-EFFICIENCY PERSPECTIVES

The solution was provided by DYNAVIS® - an additive technology for hydraulic fluids that has proven its energy-saving potential over many years of performance testing. The engineers at schoen + sandt machinery GmbH were excited to work with the flow efficiency specialists from Evonik to learn more about the impact of a high VI hydraulic fluid in hydraulic cutters. The test would compare a multigrade VG 32 fluid with a viscosity index of 183 formulated with DYNAVIS® technology to a reference oil, in this case, a conventional monograde VG 46 VI ~100 and would be carried out on a schoen + sandt hydraulic die cutter in the company's production hall in Pirmasens, Germany.



## MISSION AND MACHINERY

The testing of the fluids was conducted on a 6005BA hydraulic die cutter with a cutting force of 1250 kN. These types of hydraulic cutters with retractable beams are all-purpose punch presses for small and medium lot sizes for processing sheet and roll materials.

### MACHINE INFORMATION

Machine type	6005BA
Construction year	2017
Cutting force	1250kN
Oil volume	250 l
Oil temperature	25°C – 55°C
Cycle 1	Pressure peak = 170 bar
Cycle 2	Pressure peak = 320 bar

The following parameters were measured to compare the impact of hydraulic fluids on energy consumption:

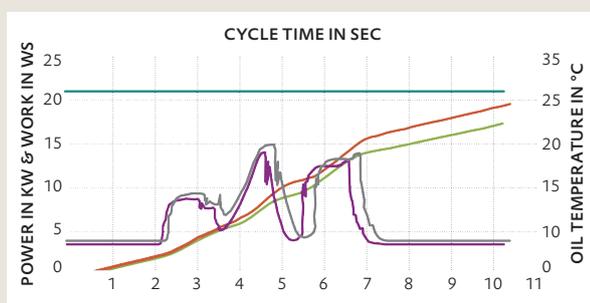
- Power
- Oil tank temperature
- Pump pressure
- Ambient temperature

### THE BEST FORMULA FOR SUCCESS: MULTIGRADE VG 32 FLUID USING DYNAVIS® TECHNOLOGY

All readings were taken in simulation mode in two different cycles. The cycles are distinguished by their respective maximum pressure (cycle 1 ~ 170 bar, cycle 2 ~ 320 bar). Compared to the conventional monograde VI ~100, the first test cycle with multigrade VG 32 fluid showed efficiency gains of up to 10% at temperatures ranging between 25°C and 30°C.

At a higher temperature of approx. 50°C, an efficiency gain of around 5% was measured. This means that the viscosity of the fluid has a major impact on the efficiency of the system.

### POWER AND WORK AT 26 °C IN CYCLE 2



- WORK MULTIGRADE VG 32 FLUID VI 183
- WORK MONOGRADE VG 46 FLUID VI ~ 100
- POWER MULTIGRADE VG 32 FLUID VI 183
- POWER MONOGRADE VG 46 FLUID VI ~ 100
- OIL TEMPERATURE (°C)

## SUPERIOR PERFORMANCE OF MULTIGRADE VG 32 FLUID FORMULATED WITH DYNAVIS®

When a hydraulic system is exposed to heat and pressure, a viscosity-optimized fluid such as multigrade VG 32 transports more pump energy due to higher viscosity and less leakage loss to the site of action. At normal temperatures it flows better and creates less resistance to the pump. If starting cold, it benefits from faster and easier movement/flowing properties. Thanks to their high shear stability, high-viscosity index fluids ensure a wider operating temperature range for the equipment, provide improved protection for the hydraulic system and extend fluid changing intervals.

Just by changing to a hydraulic fluid formulated using DYNAVIS® technology enables practically any hydraulically powered machine to achieve fast and valuable gains in productivity, energy efficiency and handling rate.

"The test with DYNAVIS® technology from Evonik showed that our customers can operate our machines in a more efficient way just by using the right hydraulic fluid. We didn't expect such a big result by using the DYNAVIS® fluid. Energy savings of more than 10 percent can be reached which will be important for the future regarding energy resources."



says Bernd Heitzmann, Managing Director of schoen + sandt GmbH. He proposed adding the multigrade VG 32 fluid formulated with DYNAVIS® to their list of recommended oils as an energy efficient fluid.

### ABOUT SCHOEN + SANDT MACHINERY GMBH

As part of ICG International Cutting Holding GmbH, schoen + sandt machinery GmbH is a medium-sized manufacturer of innovative machines with over 150 years of experience. Building on this tradition, teams of dedicated, highly-qualified, customer-focused designers, electrical and mechanical engineers, software developers and service technicians are employed at three worldwide locations where they design, develop and manufacture a full range of customized machines and peripheral equipment.

### WHAT IS DYNAVIS® EXACTLY?

DYNAVIS® is a technology for formulating hydraulic fluids which optimizes their viscosity. Merely changing from a standard hydraulic fluid to one formulated using DYNAVIS® technology generates a number of benefits, including quantifiable increases in machine productivity and improved fuel efficiency. A number of additional benefits from using DYNAVIS®-formulated hydraulic fluids have also been identified: machines operate more efficiently, react more precisely, need less frequent servicing, and suffer less wear and tear, extending their effective service life. The use of hydraulic fluids formulated with DYNAVIS® technology pays off quickly, most notably in extremely demanding applications, while also assuring higher returns, lower energy consumption and reduced CO<sub>2</sub> emissions.