

FUCHS special hydraulic oil

RENOLIN



**Reduces
fuel
consumption!**

RENOLIN XtremeTemp High Performance Hydraulic Fluid

**LUBRICANTS.
TECHNOLOGY.
PEOPLE.**



OUR LUBRICANTS KEEP THE WORLD MOVING

For more than 80 years, we have been concentrating all our activities and research efforts on the development of innovative lubricants. This specialization means that we are enjoying continuous growth – geographically, technically and in the number of application areas.

Today, FUCHS is a company that offers powerful lubricants and associated specialties worldwide in practically all areas of application and industries.



What makes our products more valuable.

We develop lubricants on an application-specific basis and tailored to our partners' processes. Together, we look for the best lubricant for our customers. This type of collaboration is unique in its form, scope and intensity. We call it a development partnership. This ability is based on one key feature: As a true lubricant specialist with its headquarters in Mannheim/Germany, we are the largest independent lubricant specialist, and this independence makes all the difference. We are open to new methods and visionary approaches – a prerequisite for innovations. And innovations are a FUCHS trademark.

Together, we can move more.

Maximize the efficiency –
and minimize the costs.



Buzzwords such as fuel economy and energy saving are becoming more and more popular. In the light of this , and in order to meet the special demands of a large construction machinery manufacturer, we have developed and successfully launched the new RENOLIN XtremeTemp hydraulic oil.

RENOLIN XtremeTemp significantly reduces fuel consumption while at the same time offering high efficiency, longer service life and thereby less maintenance and lower failure related downtimes as well as a broader operating temperature range.

RENOLIN XtremeTemp significantly reduces the operating costs of machinery such as earth-moving machines.

You can benefit from our experience, too!

Note

The information contained in this product information is based on the experience and know-how of FUCHS EUROPE SCHMIERSTOFFE GMBH in the development and manufacturing of lubricants and represents the current state-of-the-art. The performance of our products can be influenced by a series of factors, especially the specific use, the method of application, the operational environment, component pre-treatment, possible external contamination, etc. For this reason, universally valid statements about the function of our products are not possible.

The information given in this product information represents general, non-binding guidelines. No warranty expressed or implied is given concerning the properties of the product or its suitability for any given application. We therefore recommend that you consult a FUCHS EUROPE SCHMIERSTOFFE GMBH application engineer to discuss application conditions and the performance criteria of the products before the product is used. It is the responsibility of the user to test the functional suitability of the product and to use it with the corresponding care.

Our products are subject to continuous further development. We therefore retain the right to change our product program, the products, and their manufacturing processes as well as all details of our product information sheets at any time and without warning. With the publication of this product information, all previous editions cease to be valid.

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RENOLIN XtremeTemp –
higher efficiency, lower fuel consumption.



13%

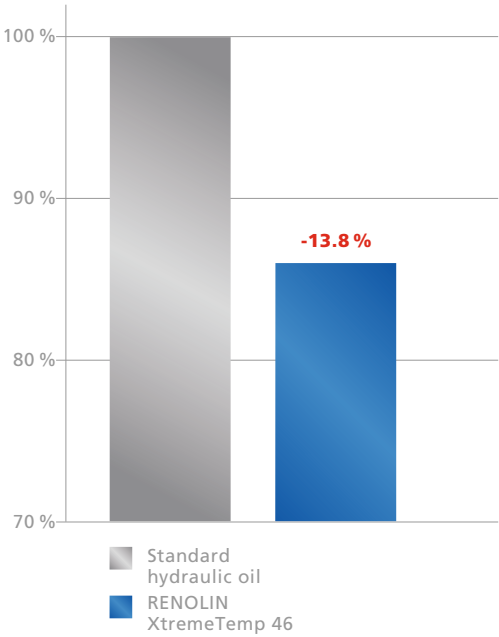
Lower fuel consumption
(Comparison between conventional
hydraulic oil and RENOLIN XtremeTemp)

Today, hydraulic systems, and in particular construction machinery and material handlers, often operate at full capacity (low tank volume, high circulation rates, high pressure, highest specific oil levels). In other words, today's hydraulic oils can often no longer reliably meet the requirements placed upon them. The demand for lower fuel consumption and the associated reduction of CO₂ emissions while maintaining the same level of performance can now only be met by using special hydraulic oils such as RENOLIN XtremeTemp.

Alongside the legal stipulations (exhaust emissions standards, emissions laws, environmental provisions), increased fuel costs (over 60% in the last 10 years) make up a large proportion of operating costs.

In comprehensive tests at test benches as well as in numerous field tests and practical applications at our customers, we have recorded fuel savings of approx. 5–20% when using RENOLIN XtremeTemp.

Significantly reduced fuel consumption



RENOLIN XtremeTemp sustainably reduces your operating costs

Alongside a number of other tests, nine days of field tests lasting several hours were carried out with a shovel excavator in which the machine was unloaded at 180° from a distance of 30 meters. This work cycle was constantly repeated. RENOLIN XtremeTemp 46 was compared with conventional hydraulic oil for this application.

Field test:
At full load, the fuel consumption of the excavator was 20l per hour using conventional hydraulic oil. With RENOLIN XtremeTemp this figure dropped to just 17l per hour – a significant reduction.

Specific results of the field tests are available on request.

Get off to a great start at any temperature with RENOLIN XtremeTemp.

Superb results – even under extreme conditions.



100%

Improvement in starting characteristics

(Comparison between conventional hydraulic oil and RENOLIN XtremeTemp)



65%

Less wear

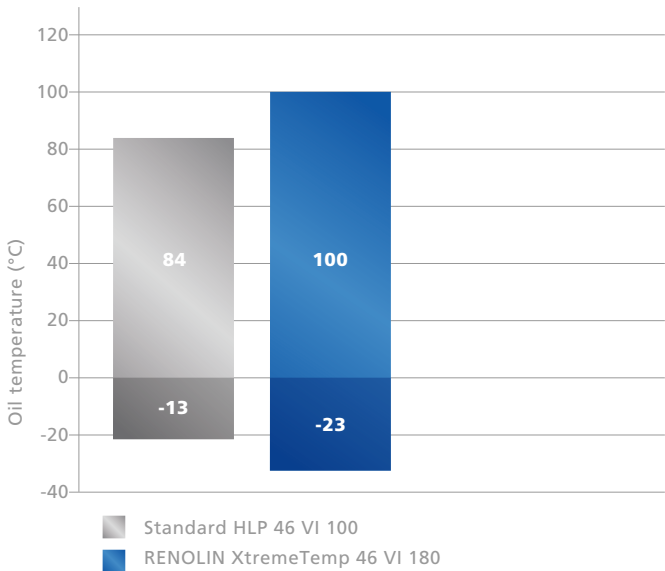
(Comparison between conventional hydraulic oil and RENOLIN XtremeTemp)

Special viscometric properties

The improved properties of the oil include its efficient use at a wide range of temperatures, minimal friction loss at low temperatures, lower internal pumping losses and outstanding performance even in environments with high pressures and temperatures. RENOLIN XtremeTemp ensures a faster start and thereby offers a larger temperature window for an effective work process.

This in turn results in increased productivity, lower energy consumption per work cycle and thereby – sustainability being the key word here – lower CO₂ emissions, higher machine performance and longer service lives and oil change intervals. At the same time, it counteracts the danger of overheating and system failure and thereby contributes to reducing costs for users.

Temperature window – based on the requirements:
Start: max. 1,000 mm²/s
Working: min. 10 mm²/s



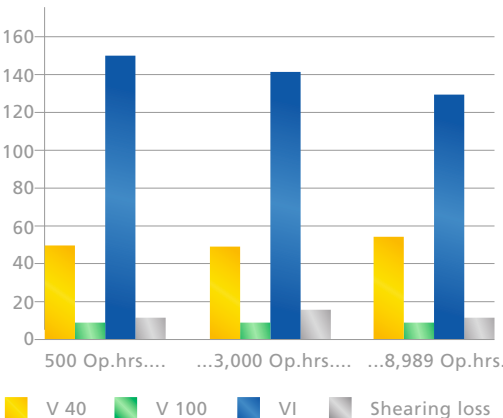
Field test exceeds expectations

In the past, the ever-tougher demands placed on modern hydraulic systems resulted in increasingly frequent damage to the hydraulic pumps. However in common pump tests the use of RENOLIN XtremeTemp 46 produced less wear in comparison to conventional hydraulic oils.

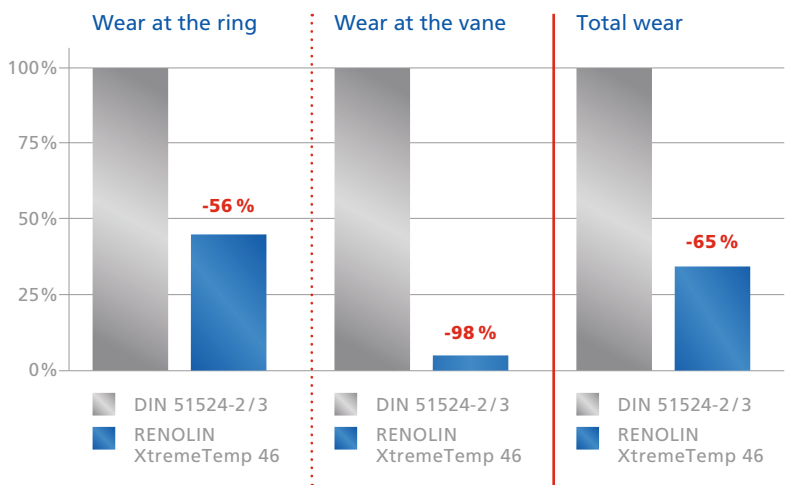
And what's more, a range of practical examples from the field prove that the oil isn't just a success under the ideal conditions at the test bench.

Field test: Viscosity – RENOLIN XtremeTemp 46

Temperatures up to 40°C and up to 100% air humidity

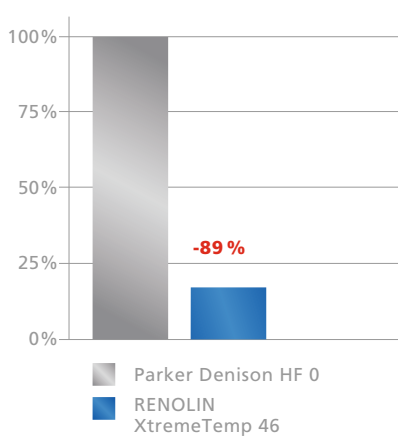


Vickers Vane Pump Test V104C



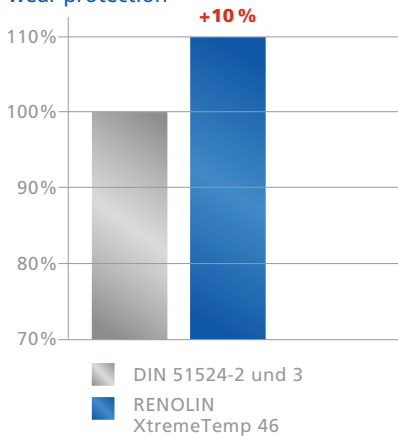
Denison T6H20C Hybrid Pump Test

Low wear at the pump (vane/piston)



FZG gear tension test

High scuffing load stage – greater wear protection



Longer service life,
extended change intervals.

Work efficiently
with RENOLIN XtremeTemp.



400%

Longer service life

(Comparison between conventional
hydraulic oil and RENOLIN XtremeTemp)



12%

Increase in productivity in
earth-moving work

(Comparison between conventional
hydraulic oil and RENOLIN XtremeTemp)

Longer service lives,
extended oil change –
work more efficiently
with XtremeTemp!



When used in mining excavators and at high temperatures and humidity, RENOLIN XtremeTemp achieved an oil change interval of over 10,000 oil operating hours. This represents a fourfold increase in service life compared to the standard oil used previously.

Reduced sludge, reduced varnish.
FES rolls in-house test – aging over 168h/135°C in a beaker glass with metal roller

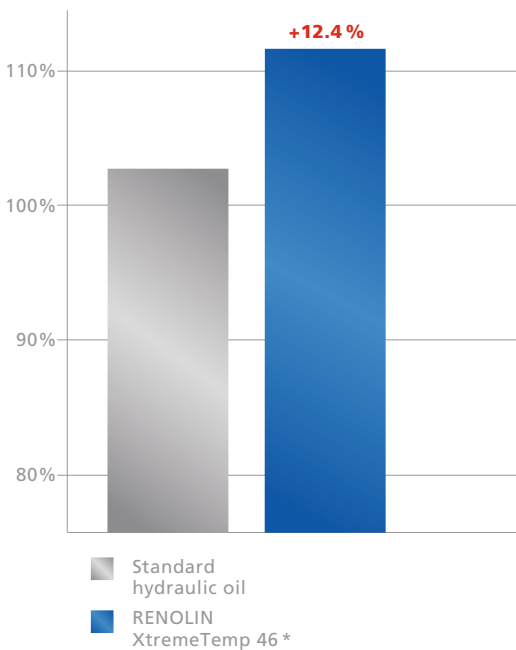


Conventional hydraulic oil,
ISO VG 46



High performance,
RENOLIN XtremeTemp 46

Operating cycles



* RENOLIN XtremeTemp 46 is specified in line with DIN 51 524-3 and ISO 11158-HV and fulfills / exceeds their requirements.

When used in a track excavator for over 4000 working hours with a hydraulic system volume of 255 liters, it quickly became apparent that the higher price of RENOLIN XtremeTemp 46 is outweighed by numerous advantages:

- 12% increase in productivity.
By using RENOLIN XtremeTemp it was possible to move more earth during the same period, or the time required to move the same amount of earth was reduced.
- Fuel required for excavator reduced by 12,680 liters.
With consumption of 80,017 liters of fuel compared to 92,696 liters when using a conventional hydraulic oil, RENOLIN XtremeTemp brought about a noticeable reduction in fuel costs.

Products you can count on.

RENOLIN XtremeTemp – range

AW – circulating and hydraulic oils with a high viscosity index, high shear stability and extremely good air release properties

The products of the RENOLIN XtremeTemp range were developed as extremely shear-resistant multigrade hydraulic oils for applications in the field of mobile hydraulics. Moreover, they can also be successfully used in stationary hydraulic systems that are exposed to changing ambient temperatures.

The RENOLIN XtremeTemp range is based on special base oils, giving them outstanding low-temperature properties.

Application recommendation	Specifications	Advantages and benefits
Universally deployable multigrade hydraulic oil based on partially special base oils, HVLP hydraulic oils; for stationary and mobile systems.	Excellent shear stability and high viscosity index	Low dependence of viscosity on temperature, very good low-temperature properties while at the same time maintaining high operating viscosity
	Excellent low temperature properties	Good cold flow properties, low starting viscosity, avoidance of cavitation
	Excellent air release properties	Minimal air absorption, rapid release of dragged-in air, avoidance of cavitation and wear
	Semi-synthetic base oils, high additive reserve	High aging and temperature resistance, excellent performance, long service life, extended change intervals
	High protection against wear and corrosion	Universally deployable hydraulic oil with high wear protection capacity, extends service life of components, extended oil change intervals

Brand name	Viscosity index	Shear stability in tapered roller bearing (VKA – 20h)	Viscosity at – 20 °C (mm²/s)	Pour point °C
RENOLIN XtremeTemp 32	> 180 (multigrade hydraulic oil). Low temperature/viscosity dependency	< 10% Shear loss High shear resistance	990 (very good cold flow properties)	-33 (very good low temperature behavior)
RENOLIN XtremeTemp 46			2150 (very good cold flow properties)	-34 (very good low temperature behavior)

While the information and figures given here are typical of current production and conform to specification, minor variations may occur. Subject to amendments. As at August 2013

Work it out for yourself.

Save fuel costs per hour, e.g. for earth-moving machines – simply switch to RENOLIN XtremeTemp!

Your calculations could look like this:

Annual operating hours	Fuel consumption per hour, in liters	Annual fuel consumption, in liters	Diesel price (per liters) in € without VAT	Saving with RENOLIN XtremeTemp 46	Annual saving
1,500	15	22,500	1.2	5%	€ 1,350
After 8 years =					€ 10,800

Work out your own savings:

Example:		
	2,000	Average annual working hours per vehicle
X	15	Average fuel consumption (in liters/per hour)
=	30,000	Total annual fuel consumption (in liters) per vehicle
=	30,000	x 5% Saving with RENOLIN XtremeTemp : 100
=	1,500	
		Fuel economy (liters)
X	1,2	Average fuel price (diesel, excluding VAT) per liter in € (e.g. 1,2 €/L)
=	1,800	Annual saving in € per vehicle
X	10	Number of vehicles
=	18,000	Annual total saving in €

FUCHS special hydraulic oil

Innovative lubricants need experienced application engineers

Every lubricant change should be preceded by expert consultation on the application in question. Only then can the best lubricant system be selected. Experienced FUCHS engineers will be glad to advise on products for the application in question and also on our full range of lubricants.



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