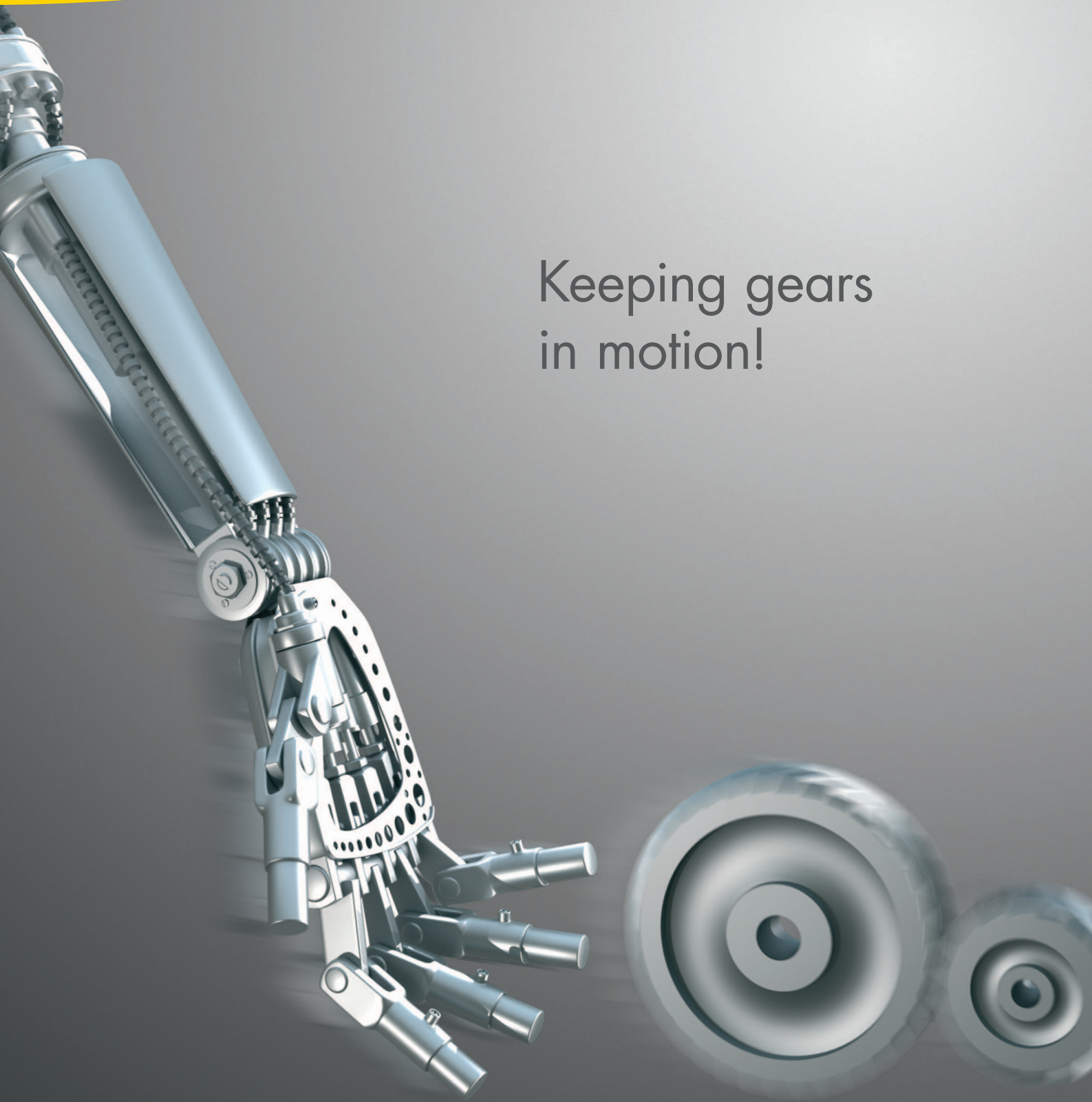


Keeping gears
in motion!





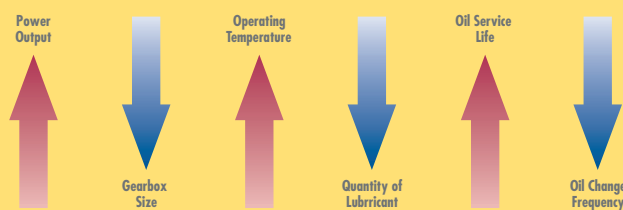
Can your gearbox cope with today's demands?

The demanding conditions in which gearboxes operate nowadays mean that your gear oil must work harder than ever to keep up.

Its performance is put to the harshest of tests by:

- Decreasing gearbox sizes
- Higher speeds and loads
- The need to increase uptime
- Increased pressure to lower production costs

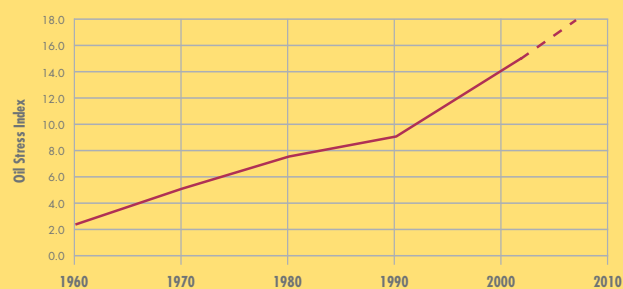
The world is changing: recent developments in industrial gearboxes



The result is that equipment needs to be able to run at higher operating temperatures, handle increased loads and cope with exposure to water and other contaminants. In these tough conditions, operators need a gear oil that is designed to tackle the problems that can affect operational efficiency. Shell has invested heavily in R&D to ensure that we can provide a revitalised range of gear oils that meets these new challenges and offers:

- Enhanced gearbox protection
- Longer oil life
- High energy efficiency
- Enhanced seal compatibility

Increase of Oil Stress Index



A full range to match your requirements

The revitalised range of Shell gear oils includes our well-known Omala and Tivela brands. These specialist oils have proven their protective abilities in millions of hours of use all over the world.

Gear Oil Selection Table

Product	Gear Type	Max. Temp.	When to recommend
Shell Omala	All (except worm)	Up to 100°C (210°F)	For loaded gears operating under normal conditions
Shell Omala HD	All (except worm)	Up to 120°C (250°F)	Extreme pressure and high temperatures Heavy loads
Shell Tivela S	Worm	Up to 120°C (250°F)	Worm gears

This table is a guide only. Contact Shell Lubricants today for more details on selecting gear oils for your application. When selecting a gear oil, always check seal compatibility. It is not recommended to operate gearboxes at these temperatures for extended periods of time.

Our gear oils comply with the latest specifications and the severe tests of relevant original equipment manufacturers. For detailed information, please refer to the product data sheet.

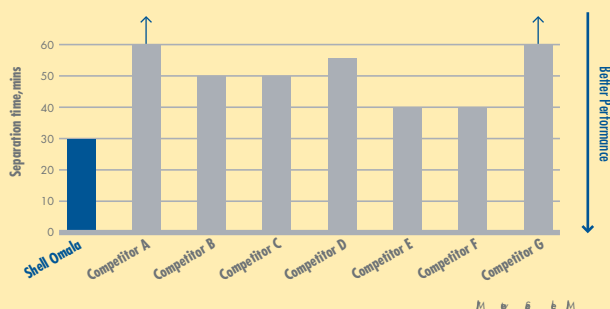


Shell Omala – exceeding the norm

Shell Omala is a general-purpose gear oil that meets or exceeds all key industry standards, and is recommended, approved or listed by over 120 key original equipment manufacturers (OEMs). It is designed to lower your running costs by:

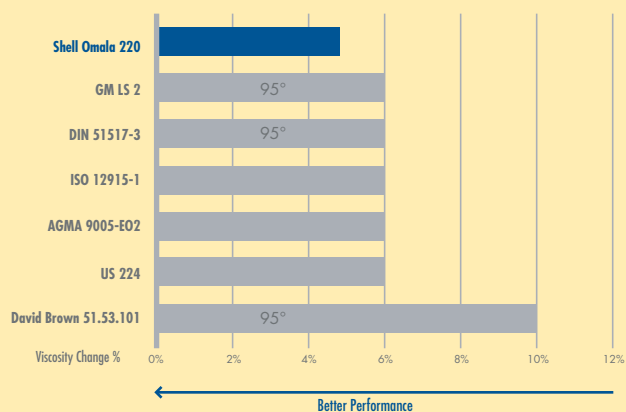
- **Lengthening the life of your equipment** through excellent wear protection. High resistance to foaming and exceptional demulsibility maintain the fluid's performance when contaminated with water
- **Increased oil life** through high oxidation stability

Water Contamination Test Modified ASTM D1401 (using mill water* at 54°C)



Oxidation Stability Omala significantly exceeds industry standard & key OEM requirements

Viscosity Increase (ASTM D2893), 312 hours at 121°C



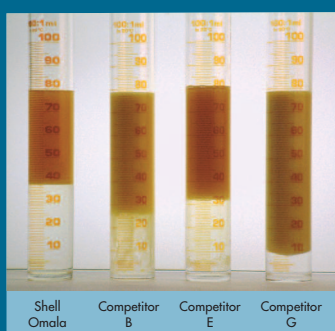
Benefits of using Shell gear oils:

- Longer oil life
- Extended gearbox life
- Reduced power losses*

leading to:

- Lower operating costs

The ability of a gear oil to shed water has a big impact on gearbox reliability. The latest Shell Omala formulation offers enhanced water separation properties, outperforming major competitors. This will help you to extend equipment life and lower costs.



Modified ASTM D1401 (using mill water* at 54°C) at 30 minutes.
* Mill water ex Steel Mill

*Shell Omala HD and Shell Tivela S



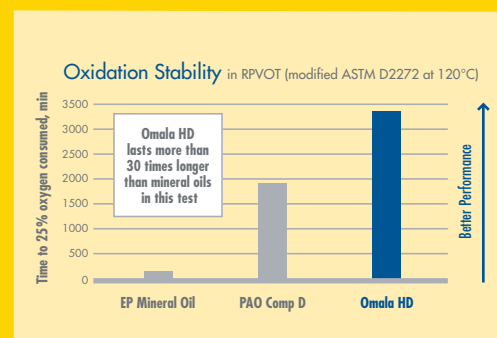
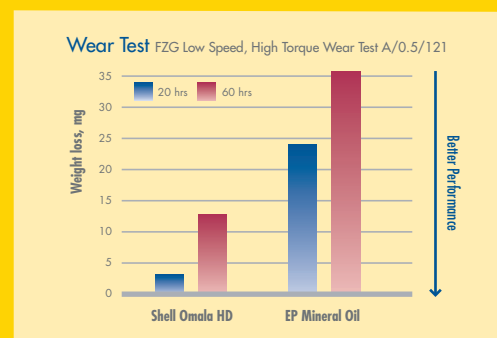
Shell Omala HD – superb performance in tough conditions

Our synthetic, PAO-based Shell Omala HD gear oil, listed by over 30 key OEMs, is especially suitable for gearboxes operating under extreme pressure, in high temperatures or with heavy loads. It meets all major OEM specifications and offers:

- **High gearbox protection** through outstanding anti-wear capabilities compared to mineral EP oil
- **Very low wear** in the FAG FE8 key bearing test
- **High resistance to micropitting**

With Omala HD, you benefit from:

- Up to **4 times extended oil life** compared to conventional mineral oils in the same application
- Up to **25% less energy loss** compared to mineral oils in the same application



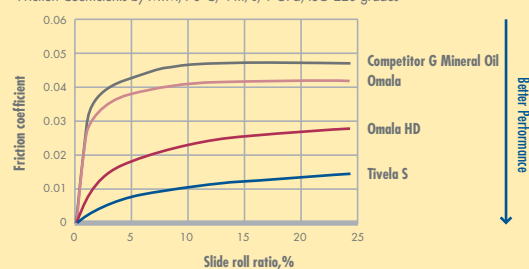
Why the need for greater gearbox efficiency?

- **Reduced power consumption**
- **Lower gearbox operating temperatures**
- **Extended oil life**

Reduced costs per unit produced

Energy Efficiency

Friction Coefficients by MTM, 70°C, 4 m/s, 1 GPa, ISO 220 grades



Shell Tivela S – keeping worm gears turning

Shell Tivela S is a PAG-based synthetic lubricant specifically suited to meet the requirements of worm gears.

Tivela S is approved, recommended or listed by over 50 different OEMs including some of the biggest names in general engineering and the gear industry.

It provides:

- **Exceptional protection** for gearboxes and bearings (zero roller wear in FAG FE-8 [DIN 51819] bearing wear test)

Wear Test - David Brown Radicon Endurance Test (500 h)



Tivela S 320
0% pitted

PAG Competitor A
15% pitted

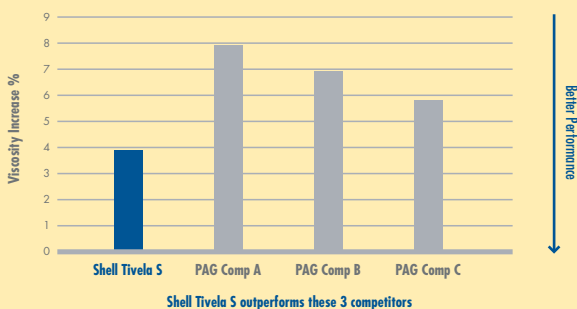
PAG Competitor B
50% pitted

No pitting with Tivela S

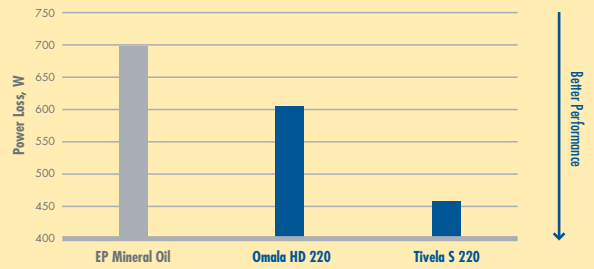
In addition, when compared with competitors, Shell Tivela S achieved:

- The **longest fluid life** (due to strong oxidative stability)
- **High energy efficiency**
- **Reduced gearbox temperatures:** 5°C lower than major competitors, leading to longer fluid and gear life
- **Good seal compatibility** passing Freudenberg, Flender and other OEM specifications, reducing oil consumption and prolonging gear box life

Shell Tivela S - Oxidation Stability - ASTM D2893, 312 h at 121 °C



Energy Efficiency Test - Measured Power Losses by FVA method 345, 70°C, 8.3 m/s



There are clear benefits (lower power losses) in trading up from EP Mineral Oil to either Omala HD or Tivela S 220

Tried, tested and proven

For over 50 years, Shell has been investing in the development of industrial fluids. With products working in a wide range of environments and applications in more than 100 countries, Shell continues to develop products literally geared towards your needs.

Wherever you work, our global presence and expertise ensure that you can rely on an extensive range of support services and consistent products to help you get the job done.

Lenze

"At Lenze we are very satisfied with the quality of Shell products and Partnership. The use of Shell gear oils contributes towards extending the life of our gearboxes and increasing power output for gearboxes. In particular, Shell's competent and fast recommendations as well as its support with oil analysis convince us over and over again."

Kay Lieske, Advance Development, Lenze Drive Systems GmbH & Co KG



Tested and recommended by Bonfiglioli

For a long-lasting and trouble-free operation, Bonfiglioli recommends that the first fill as well as subsequent replacements are only made using Shell Lubricants.

Source: Bonfiglioli service manual.

Full Factory Plant Maintenance product range

Shell also manufactures a full range of factory plant maintenance products designed to give you improved protection, longer service life and reduced wear.

Hydraulic oils	Shell Tellus	A complete range of hydraulic oils for stationary and mobile applications
Compressor oils	Shell Corena	High-quality compressor oils
Refrigerator compressor oils	Shell Clavus	High-quality refrigerator compressor oils
Bearing & circulating oils	Shell Morlina	Premium-quality bearing & circulating oils available in a wide range of viscosities for a large number of industrial applications
Fire-resistant hydraulic fluids	Shell Irus	A full range of very high-performance fluids for high fire risk areas
Industrial greases	Shell Albida and Alvania	High-performance industrial greases
Turbine oils	Shell Turbo	A full range of turbine oils
Environmentally considerate lubricants and greases	Shell Naturelle	A full range of environmentally considerate high-quality products
Lubricants and greases for food & beverage production	Shell Cassida	High-performance products for the food industry

Local product portfolio might vary slightly. Please consult your Shell representative for more information.
Some photography courtesy of Lenze Drive Systems GmbH.

