

**Energy and Cost Savings by using
Synthetic Food Grade Lubricants**



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LUBRITECH
Special Application Lubricants



FUCHS LUBRITECH – SPECIAL APPLICATION LUBRICANTS

The FUCHS Group has developed, produced and sold lubricants and related specialties for more than 80 years – for virtually all applications and sectors. With over 100,000 customers and 50 companies worldwide, we are the world's leading independent lubricant supplier.

Within the FUCHS Group, FUCHS LUBRITECH is the expert for special application lubricants. A team of more than 500 specialists around the world work to meet your needs. However demanding the application, we offer a specialised solution.

FUCHS LUBRITECH specialty lubricants stand for highest performance and sustainability, safety and reliability, and efficiency and cost savings. They represent a promise: technology that pays back.



CASSIDA Food Grade Lubricants

The production of food, beverages and related products puts the highest requirements on the lubricants used in the manufacturing process. Consumer protection is absolutely essential.

In addition, ensuring that the production process runs smoothly and is highly effective (meaning longer component lifetimes, extended maintenance intervals and energy savings) is a number one priority.

Food grade lubricants come in many forms from white oils through semi-synthetic to fully synthetic oils and greases.

FUCHS LUBRITECH offers two food grade lubricant ranges: the CASSIDA range, based on fully synthetic oils and the FM range based on semi-synthetic and white oils.

The following notes relate to the use of CASSIDA fully synthetic food grade lubricants and include examples of how they can bring savings in both energy and maintenance costs.

The CASSIDA range is NSF H1 registered as well as being the first food grade lubricant range to receive ISO 21469 certification.

NSF registered
ISO certified



Nonfood Compounds
Program Listed
ISO 21469 certified

Kosher certified



Halal certified



Energy and Cost Savings by using Synthetic Food Grade Lubricants



How do lubricants save energy?

For any machine to run, energy has to be provided to overcome friction. Lubricants reduce friction, but some lubricants reduce friction more than others. Therefore careful selection of the lubricants can provide tangible savings in energy requirements.

Why is energy saving important?

- Industries are targeted to reduce energy usage.
- Reduced energy usage = less pollution from power stations.
- Reduced energy usage = lower manufacturing costs.
- Climate Change: This means companies are reducing energy consumption to limit their CO2 footprint. Many countries even have implemented tax encouragements for saving energy.

Where can lubricants save energy?

Process industries that convert raw materials into usable goods require energy. In a food plant, vast amounts of electricity are required to operate gear drives, hydraulics, compressors and bearings.

Electricity is a major cost overhead, but lubricant costs by comparison are minimal. The selection of the correct lubricant for an application can reduce power consumption and therefore reduce energy requirements. It will also extend lubricant life, reduce downtime and improve overall efficiency.

FUCHS LUBRITECH offers a full range of CASSIDA fully synthetic products to meet the requirements of the food, beverage, pharmaceutical and related industries.

What are synthetic oils and which are the most efficient ones?

The types of synthetic oil used in the production of CASSIDA food grade lubricants are:

- Polyalphaolefin (PAO) – used in hydraulic, chain and gear oils and as a base oil for most CASSIDA greases.
- Polyglycol – used specifically in the CASSIDA FLUID WG series of worm gearbox lubricants.
- Ester – used in conjunction with PAO in products such as the CASSIDA FLUID FL and CASSIDA FLUID HFS hydraulic oil ranges and CASSIDA CHAIN OIL HTE.

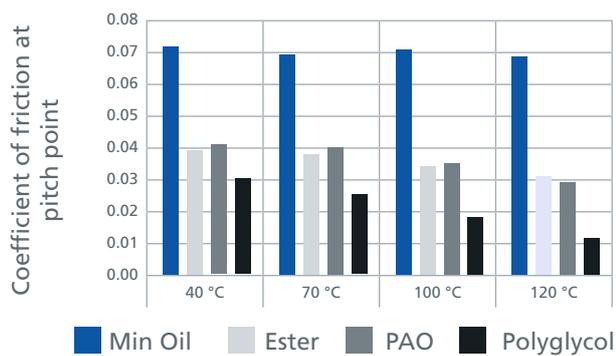
The benefits of synthetic oils

Fully synthetic oils are tailor-made for high performance, and will offer superior performance over conventional mineral oils, vegetable oils and white oils.

Synthetic oils:

- Are less susceptible to temperature changes, due to their higher viscosity indexes.
- Are cleaner in use, especially at the elevated temperatures found in heavily loaded systems.
- Offer much better “sludge protection” than mineral oils, especially in gearbox applications.

The chart below details typical data for the various oil types in relation to energy efficiency. Using synthetic oils can provide significant energy saving benefits compared to mineral oils.



Accept additive packages more readily than mineral oils, and their refining process allows them to retain natural anti-oxidants and sulphur compounds with anti-wear characteristics.

- Generally offer significantly increased service life over mineral oils. For example, a synthetic compressor oil can provide an 8,000+ hour life compared with the 2,000-4,000 hour life of mineral or semi-synthetic oils. (Figures quoted are from actual test results for a Hydrovane Rig Oxidation Test at 120 °C.)

How to realise Energy Savings with Synthetic Food Grade Lubricants



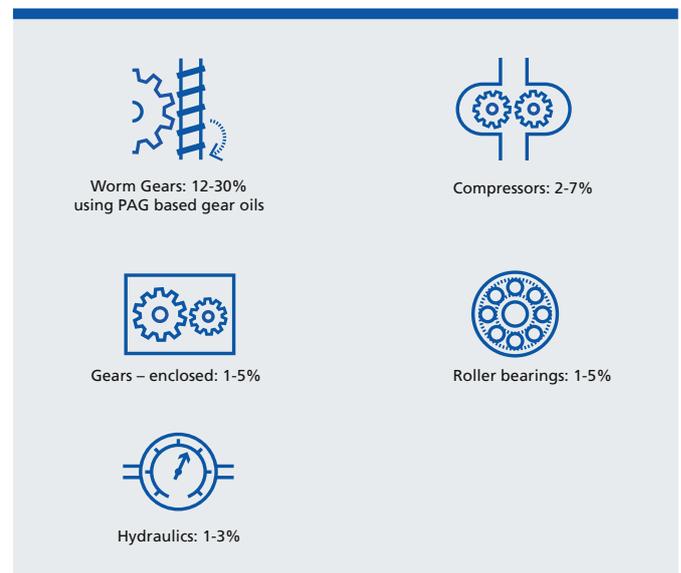
Steps how to measure energy savings?

1. Select suitable plant machinery
2. Measure power consumption and temperatures
3. Check condition of plant (Condition Monitoring)
4. Change oil to new product
5. Measure power consumption temperatures
6. Calculate power saving

Power savings

What sort of power savings can we achieve with the correct synthetic lubricant?

From our experience the following power savings can be achieved when using synthetic oils compared with standard non-food grade mineral oil based lubricants of the same viscosity:



Real cost savings achieved by the use of synthetic CASSIDA food grade lubricants*

Equipment	Problem	Solution
Bakery ovens and wheelbearing lubrication on oven trolleys.	Oven temperature up to 300 °C, normally 270 °C. Trolley in oven 5-10 min. Customer had tried several greases including a silicone grease but grease leaked causing bearing failure.	Changed to CASSIDA GREASE HTS 2. Bearing lubricated every 2-3 weeks during maintenance. Grease turns black and soft, but no bleeding/leak and no bearing failure.
Oven-drive worm gear used to feed a bakery operation.	Experienced continual failures on a semi-synthetic gear oil. Failure as often as 6 times a year, which caused severe downtime, costing 220,000 Euro per year in lost production, labour and parts.	After switching to CASSIDA FLUID GL 460 gear did not fail and operating temperature dropped. Now oil changed every 12 months.
Rotary blower in bulk powder handling.	Constantly over-heating temp ranges from 100 up to 140 °C causing the gear oil to deteriorate and grease running out through the seals. Bearing & gear malfunctioned – spalling, stress marking and carbon deposit. Gear box rebuilt every 6 months costing 3,700 Euro per unit.	Through use of CASSIDA FLUID GL 220 and CASSIDA GREASE EPS 2 the temperature dropped. Now been operating for 18 months without failure. Total cost saving: 7,500 Euro per unit per year.
20.3 cm thrust-loaded SKF bearings on a 8.3 cm diameter shaft, under 1143 kgf pressure in powder mill.	Bearing overheated despite daily lubrication. The processor ran the bearing until failure and forced operation to stop.	CASSIDA GREASE EPS 2. No bearing failure for 18 months and only weekly lubrication required. Total cost saving: 30,000 Euro/year
Coffee bean roaster.	Bearing couldn't retain grease, due to extreme temperature at 230 °C reached in direct fire roasting. Outboard bearing temperature regularly reached 150 °C, which the mineral grease could not endure. 4-6 bearings needed replacing each month.	CASSIDA GREASE HTS 2 with weekly lubrication. No more bearing failure. Total cost saving: 18,500 Euro over 18 months.

* The information above has been collected from well monitored field trials. It is offered in good faith and is believed to be accurate. However because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our CASSIDA and FM products are safe, effective, and fully satisfactory for the intended end use.

TOTAL COST BENEFIT OF USING CASSIDA FULLY SYNTHETIC LUBRICANTS

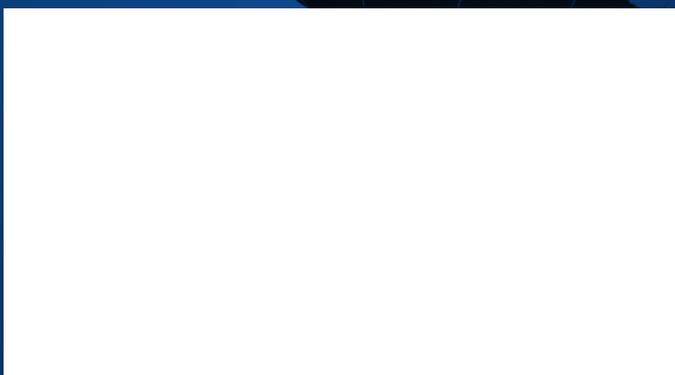
- Reduced energy charges
- Reduced lubricant usage
- Improved plant efficiency
- Reduced maintenance requirements and replacement costs
- Less manpower required to change oils
- Reduced waste generated
- Reduced costs for your production plant

Innovative lubricants need experienced application engineers

Every lubricant change should be preceded by expert consultation on the application in question. Only then the best lubricant system can 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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