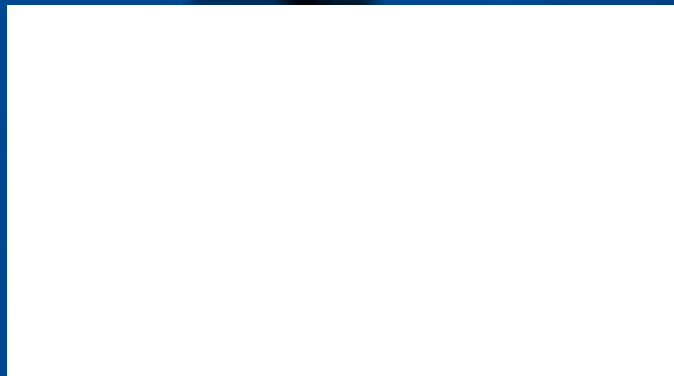


FUCHS LUBRICANTS GERMANY

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.

Contact:



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Note

The information contained in this brochure is based on the experience and know-how of FUCHS LUBRICANTS GERMANY GmbH in the development and manufacture 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.

Our products must not be used in aircraft or spacecraft. Our products may be used in the manufacture of components for aircraft or spacecraft if they are removed without residue from the components prior to assembly into the aircraft or spacecraft.

The information given in this brochure 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 LUBRICANTS GERMANY 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 undergo continuous improvement. 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 prior notification, unless otherwise provided for customer-specific agreements. With the publication of this brochure, all previous editions cease to be valid. Any form of reproduction requires express prior written permission from FUCHS LUBRICANTS GERMANY GmbH.

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Lubricant Solutions for the Corrugated Industry



MOVING YOUR WORLD



LUBCON

FUCHS LUBRICANTS GERMANY

Facts and figures

Company: FUCHS LUBRICANTS GERMANY GmbH,
a company of the FUCHS Group

Locations: Mannheim, Dohna, Kaiserslautern, Kiel and Wedel;
approx. 1,400 employees

Product range: A full range of more than 3,000 products
for all application areas

Certifications i. a.: ISO 9001, IATF 16949, ISO 14001,
ISO 45001, ISO 50001, ISO 21469, HALAL, KOSHER
(detailed certifications at www.fuchs.com/de/en)

Gate-to-Gate* CO₂-compensated

FUCHS LUBRICANTS GERMANY is a subsidiary of FUCHS SE, the world's largest independent supplier of lubricant solutions. Around 1,400 specialists at the headquarters in Mannheim and the sites in Kaiserslautern, Wedel, Kiel and Dohna work with dedication on innovative lubricant solutions that enable the mobility of tomorrow.

The high level of technical consulting expertise combined with the largest, nationwide network of its own technical contacts makes FUCHS LUBRICANTS GERMANY a reliable local partner. A comprehensive product range, supplemented by digital offerings and Smart Services, as well as many years of lubricant expertise and a high level of research competence are the foundations for the innovative FUCHS lubricant solutions. They reduce wear and energy requirements, extend the running times and service life of machines, and thus keep the world moving - from industrial motors and e-cars to wind turbines and washing machines. FUCHS LUBRICANTS GERMANY is certified to a wide range of standards and, as a technology leader and development partner, places the highest demands on quality management.

Customers in all industries benefit from this quality management: automotive suppliers and OEM, mechanical engineering, metal processing, mining and exploration, aerospace, energy, construction and transport, agriculture and forestry, as well as the paper, steel, metal, cement, forging and food industries, but also qualified lubricant dealers, car dealerships, workshops, and semiconductors as well as medical technology.

MOVING YOUR WORLD

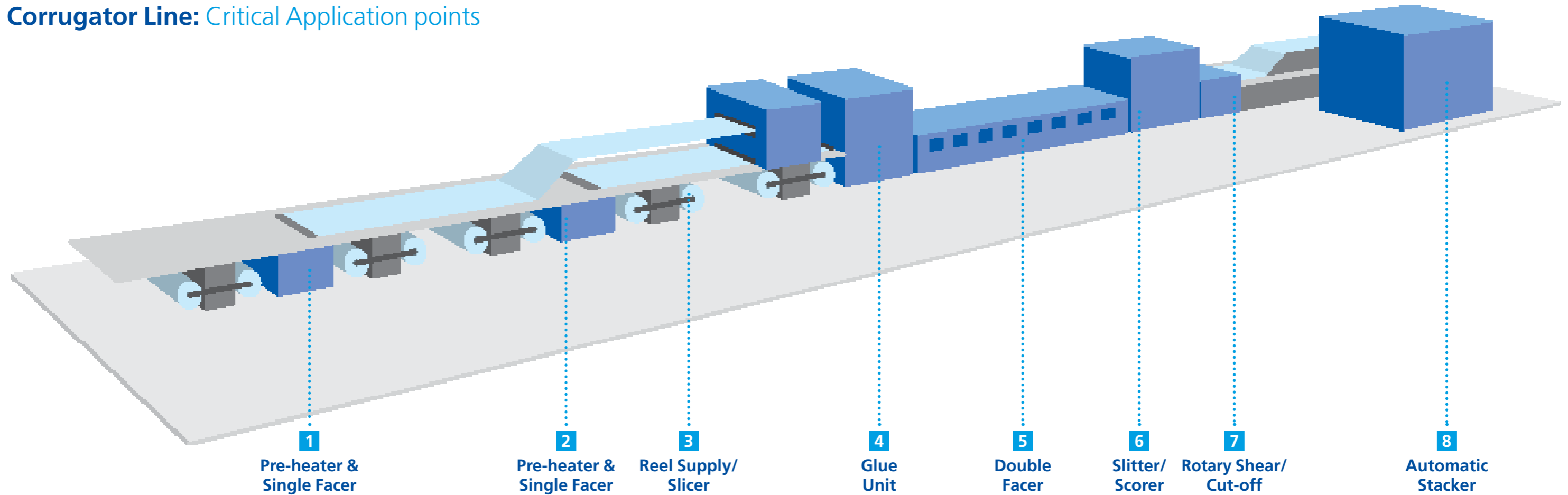
*Gate-to-Gate Scope includes GHG-Protocol Scope 1, 2 and selected Scope 3 emissions (water, waste, business travel, commuting)

LUBCON and FUCHS – Strong Alliance for Customer Success

LUBCON became part of the FUCHS Group in 2024, creating valuable synergies that strengthen both product technology and local support. LUBCON's extensive expertise in high-performance lubricants perfectly complements FUCHS' global innovative strength, enabling us to deliver customized lubrications solutions for complete production processes.

With the combined portfolios of FUCHS and LUBCON, we now offer a comprehensive range of lubricants for various industries such as railway, roller bearings, paper, textiles, food, pharmaceutical, corrugated, and wood processing industries. This enables us to meet the diverse needs of our customers even more effectively, ensuring optimal performance and efficiency across all applications.

Corrugator Line: Critical Application points



There are many lubrication application points along a typical corrugator production line, each of which requires its own tailored type of specialised lubrication.

The graphic above shows where these points are found. The numbered tables below and on the following pages relate to the numbered critical application points above.

For further information on our products or to discuss setting up your bespoke service package, please contact your local FUCHS representative.

1 Pre-heater

| Product Name | Base oil viscosity at 40°C (mm ² /s) | Operating temperature | | Base oil/ Thickener | Features & benefits |
|--------------------------|---|-----------------------|-------|------------------------|---|
| | | Min | Max | | |
| TURMOTEMP LP 2502 | 250 | -30°C | 250°C | PFPE / Li complex soap | High temperature grease based on PFPE and a Li complex soap. Its superior flow behaviour at high thermal and mechanical stress reduces wear to a minimum enabling hydrodynamic lubrication. Fully compatible and miscible with PFPE/PTFE containing lubricants. |
| NYECORR 140 (H1) | 135 | -20 | 250 | PFPE / PFPE | A synthetic lubricant that protects bearings at 480F, is NSF H-1 food grade registered and contains no PFOAs (Perfluorooctanoic acid). NYECORR 140 is the most environmentally friendly and economical option available to the corrugated industry today. |

2 Single facer

| Product Name | Base oil viscosity at 40°C (mm ² /s) | Operating temperature | | Base oil/ Thickener | Features & benefits |
|-----------------------------|---|-----------------------|-------|------------------------|---|
| | | Min | Max | | |
| TURMOTEMP LP 2502 | 250 | -30°C | 250°C | PFPE / Li-special soap | High temperature grease based on PFPE and a special metal soap. Its superior flow behaviour at high thermal and mechanical stress reduces wear to a minimum. Miscible with PFPE/PTFE containing lubricants. |
| NYECORR 140 (H1) | 135 | -20 | 250 | PFPE / PFPE | A synthetic lubricant that protects bearings at 480F, is NSF H-1 food grade registered and contains no PFOAs (Perfluorooctanoic acid). NYECORR 140 is the most environmentally friendly and economical option available to the corrugated industry today. |
| TURMOCUT LMI 18 (H1) | 17 | -40°C | 200°C | | Fully synthetic cutting oils. Perfectly suitable for lubrication in the paper and corrugated board industry. Very good dissolving effect on starch build-up, also on corrugating rolls. H1 registration. |
| TURMOCUT LMI 22 (H1) | 15 | -5°C | 220°C | | Fully synthetic, low viscosity oil with low evaporation and excellent surface wetting properties for quick and easy cleaning of corrugating rolls. Due to its excellent lubricating properties and high corrosion protection, the oil is also ideal for lubricating cutting discs in the slitter scorer of the corrugator. Excellent dissolving and cleaning effect for starch build-up. Can also be used at hot corrugating rolls without smoke emission. H1 registration. |

3 Reel supply/Slicer

| Product Name | Base oil viscosity at 40°C (mm ² /s) | Operating temperature | | Base oil/Thickener | Features & benefits |
|----------------------------|---|-----------------------|-------|--------------------------------|---|
| | | Min | Max | | |
| GRIZZLY GREASE NO.1 | 800 | -30°C | 150°C | Lithium calcium complex grease | Developed as special grease for high loaded open gears such as bore mills. Due to the high temperature properties this product can be used for a wide range of applications, where high temperatures and high loads exist. Can be recommended for ball bearings and roller bearings as well as for slide bearings/bushes. |
| TURMOFLUID 40B | 270 | - | - | Synthetic hydrocarbons | Thermally stable synthetic chain oil suitable for high temperature lubrication. |

4 Glue unit

| | | | | | |
|--------------------------|-----|-------|-------|---|---|
| TURMOGREASE HDC 2 | 410 | -30°C | 150°C | mineral oil / calcium sulphonate complex soap | High performance grease with outstanding water and media resistance. For rolling and plain bearings subject to various requirements and loads. |
| TURMOGREASE N 2 | 150 | -40°C | 160°C | synthetic hydrocarbons / ester / polyurea | Synthetic grease with high thermal load capacity. Suitable for long-term lubrication, e.g. in electric motors, fans etc. Resistant to hot/cold water and steam. |

5 Double facer

| | | | | | |
|--------------------------|-----|-------|-------|------------------------|---|
| TURMOTEMP LP 2502 | 250 | -30°C | 250°C | PFPE / Li-special soap | High temperature grease based on PFPE and a special metal soap. Its superior flow behaviour at high thermal and mechanical stress reduces wear to a minimum. Miscible with PFPE/PTFE containing lubricants. |
| NYECORR 140 (H1) | 135 | -20 | 250 | PFPE / PFPE | A synthetic lubricant that protects bearings at 480F, is NSF H-1 food grade registered and contains no PFOAs (Perfluorooctanoic acid). NYECORR 140 is the most environmentally friendly and economical option available to the corrugated industry today. |

6 Slitter/Scorer

| | | | | | |
|--------------------------------------|------------|-------|-------|--|---|
| TURMOCUT SR 15-68 series (H1) | 15, 32, 68 | -15°C | 150°C | | Special cutting oils with excellent glue and starch dissolving properties, also on corrugating rolls. Unique additives dissolve any starch build-up in felts, grinding stones, the slitter scorer and cutting discs. Improves significantly the performance. Very good wetting properties and excellent corrosion protection, keeping cutting blades clean and sharp. Long service life time of up to > 30 million linear meters. Other viscosities available. H1 registration. |
| TURMOCUT LMI 18 (H1) | 17 | -40°C | 200°C | | Fully synthetic cutting oils. Perfectly suitable for lubrication in the paper and corrugated board industry. Very good dissolving effect on starch build-up, also on corrugating rolls. H1 registration. |
| TURMOCUT LMI 22 (H1) | 15 | -5°C | 220°C | | Fully synthetic, low viscosity oil with low evaporation and excellent surface wetting properties for quick and easy cleaning of corrugating rolls. Due to its excellent lubricating properties and high corrosion protection, the oil is also ideal for lubricating cutting discs in the slitter scorer of the corrugator. Excellent dissolving and cleaning effect for starch build-up. Can also be used at hot corrugating rolls without smoke emission. H1 registration. |

7 Rotary shear/Cut-off

| Product Name | Base oil viscosity at 40°C (mm ² /s) | Operating temperature | | Base oil/Thickener | Features & benefits |
|----------------------------------|---|-----------------------|-------|---|--|
| | | Min | Max | | |
| TURMOSYNTH VG-SERIES (H1) | 150 - 220 | -10°C | 120°C | synthetic hydrocarbons / ester / polyurea | Universal gear oil containing effective additives for high performance. Also suitable for applications in the food/pharmaceutical industry, for technically unavoidable contact with the product. H1 registration. |

8 Automatic stacker

| | | | | | |
|--------------------------|-----|-------|-------|---|---|
| TURMOGREASE HDC 2 | 410 | -30°C | 150°C | mineral oil / calcium sulphonate complex soap | High performance grease with outstanding water and media resistance. For rolling and plain bearings subject to various requirements and loads. |
| TURMOGREASE N 2 | 150 | -40°C | 160°C | synthetic hydrocarbons / ester / polyurea | Synthetic grease with high thermal load capacity. Suitable for long-term lubrication, e.g. in electric motors, fans etc. Resistant to hot/cold water and steam. |

Additional lubrication

| Application | Product Recommendation | Notes |
|----------------------|----------------------------------|-------------|
| Chains | TURMOFLUID 40 B | - |
| | CASSIDA FL5 | H1 |
| Gearbox | TURMOGEOIL OM-series | Mineral oil |
| | TURMOPOLIOIL HT-series | - |
| | TURMOGEOIL PE-series | PAO |
| | TURMOSYNTHOIL GV-series | H1, PAO |
| | CASSIDA FLUID GL-series | H1 |
| Spindle/Spindle Nuts | THERMOPLEX ALN 1001 | - |
| | URETHYN EM 1 | - |
| | THERMOFLUID ED 13 | - |
| | TURMOSYNTHOIL 75 TF SPRAY | - |
| Electric motors | TURMOGREASE L 802 EP PLUS | - |
| | TURMOGREASE PHS 1002 | - |
| | CASSIDA GREASE FC 2 | H1 |
| | NYECORR 140 | H1 |
| Rotating unions | CASSIDA GREASE EPS 2 | H1 |
| | CASSIDA GREASE GTS 2 | H1 |

| Application | Product Recommendation | Notes |
|----------------------|---------------------------------|---------|
| Vacuum pumps | THERMOFLUID VAC 81-113 | - |
| | COMPUGUARD VPO 100 | H1 |
| | CASSIDA FLUID HF | H1 |
| | CASSIDA FLUID CR | H1 |
| Screw air compressor | COMPUGUARD GPX 100 | - |
| | COMPUGUARD GPX 32 | - |
| | COMPUGUARD FG 100 | - |
| | COMPUGUARD FG 32 | - |
| Maintenance sprays | CASSIDA FLUID HF | Text |
| | CASSIDA FLUID CR | Text |
| | TURMOFLUID ED 13 SPRAY | - |
| | GRIZZLYGREASE NO.1 SPRAY | - |
| | LC 500 SPRAY | Cleaner |

Corrugated packaging is one of the most economical, rugged and environmentally sound ways to ship goods. More than two-thirds of the world's retail commodities are transported in corrugated packaging which is only expected to increase with the proliferation of online shopping.

The efficient, cost-effective and continuous production of corrugated board depends on good lubrication. Without it, the entire corrugated production line would come to a screeching halt.

TURMOTEMP LP 2502 for corrugating roll bearings

Through our Centre of Excellence for the Corrugated industry, FUCHS has identified a unique way to successfully break the inert structure of perfluoropolyether (PFPE) most commonly used in Corrugator high temperature bearings and combine it with specifically developed lithium soap. This breakthrough offers a large variety of features and benefits, which common PFPE/PTFE products do not offer.

This breakthrough has made it possible to include a complete range of additives into the lubricant, such as corrosion inhibitors, EP additives, anti-wear-additives. Furthermore, due to the drop point of the lithium soap TURMOTEMP LP 2502 exhibits a superior hydrodynamic lubrication within the bearing. We see this characteristic as especially important in the lubrication of roller bearings where the lubricant is displaced far to the side, due to the geometry of the line contact.

Unlike standard PFPE/PTFE grease where we find that over-rolling displaces excess grease to the outside of the raceway, hence resulting in a lack of consistent lubrication.

TURMOTEMP LP 2502 is a premium OEM APPROVED product for the lubrication of highly loaded cylindrical roller bearings, combining the properties of chemically and thermally stable perfluorinated base oils with the excellent properties of metal soaps. TURMOTEMP LP 2502 enables flow back to the contact zone and therefore guarantees adequate lubrication, with these superior performance characteristics proven through extensive testing (FAG, FE 8). In rolling bearings tested with TURMOTEMP LP 2502 wear was reduced by up to 80 % compared to bearings lubricated with PFPE/PTFE products.

FUCHS is a world leader in the technology used in the formulation of bearing grease for the corrugating process. The manufacture of corrugated cardboard, requires the use of steam resulting in temperatures as high as 240°C. In addition, High load, high temperature and high friction are extremely demanding conditions for the bearings in use which represents a huge challenge for the lubricating grease requirements.

Advantages at a glance:

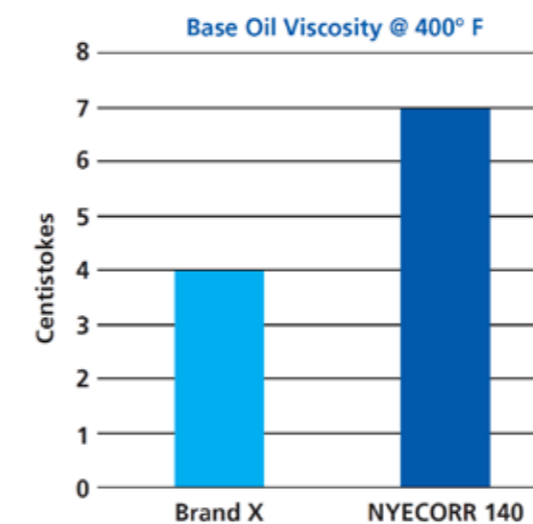
- Protection against wear and corrosion
- Up to X3 longer bearing service life
- Vibration and noise reduction,
- Low frictional torque
- Energy and cost saving
- No hardening effects
- No oil separation effects
- No hazardous ingredients
- Miscible with any PTFE/PFPE pastes
- No special cleaning agents required

NYECORR 140

When we first introduced NYECORR 140 to the corrugated industry, we gave customers an option they had long been without; a high-viscosity base oil lubricant that would protect their corrugated roll, pressure roll and pre-heater roll bearings without breaking the bank.

NYECORR 140, a synthetic lubricant that protects bearings at 480F, is NSF H-1 food grade registered and contains no PFOAs (Perfluorooctanoic acid). NYECORR 140 is the most environmentally friendly and economical option available to the corrugated industry today.

Trust Solutions Backed by Proven Performance



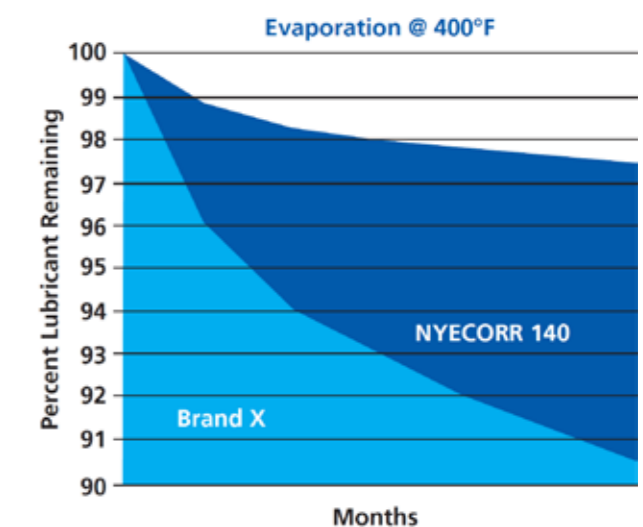
Higher Oil Viscosity

- Less vibration and wear
- Less bearing/race contact
- Thicker film of oil for protection

Lubricating Corrugator Bearings

NYECORR 140 is a synthetic grease formulated specifically for the maintenance of bearings in the corrugated industry. Since its introduction, hundreds of corrugated plants worldwide have converted to NYECORR 140 and realized significant cost reductions, while increasing performance, improving in-plant safety and extending maintenance cycles compared to heritage greases for corrugator bearings.

NYECORR 140 gives customers an option of a high-viscosity base oil lubricant that protect their corrugated roll, pressure roll and pre-heater roll bearings without breaking the bank. NYECORR 140 is the most environmentally friendly and economical option available to the corrugated industry today. NYECORR 140 is a H1 approved product.



Lower Evaporation

- Leaves no gummy tars/deposits
- Eliminates the potential for oil leaks
- Smaller volumes of grease are needed

Advantages of NYECORR 140:

- Reduces maintenance costs
- Increases load-carrying capability
- Resists common solvents, steam & water
- Extends bearing life
- Anti-corrosion package for rust protection
- Withstands high temperatures & harsh chemicals

Better cut. Less maintenance.

In close cooperation with OEMs, we have developed the next generation of cutting fluids for the corrugated industry. Targeting the service life of knives and felt pads, with the aim of decreasing maintenance effort and costs.

Corrugated machines produce many kilometres of corrugated board every day, which is subsequently cut and scored by longitudinal cutters, and again by the cross cutter further along the process. Through the process the combination of the paper and starch glue generates a chemically aggressive layer on the cutting discs and blades. If this layer is not removed, starch and fibre deposits will cause corrosion of the steel material and increase the abrasive wear of the cutting discs and blades. This in turn prolongs maintenance related downtime and decreases the quality of the cutting systems.

Correctly lubricated blades, prevent starch and fibre build-up, allowing the blades to cut through extremely adhesive material. With TURMOCUT SR Series knives are able to maintain their sharpness significantly longer, ensuring smooth cuts, reduced friction and preventing the material from being damaged or burned.

TURMOCUT SR 15 & SR 68 Lubricating oil for the slitter and scorer

A lubricating oil based on high-purity hydrocarbons. It is a combination of base oil and additives and has very good surface wetting properties. It shows excellent lubrication characteristics, dissolves starch and keeps the knives clean and sharp.

Tests under harsh operating conditions have proven that Turmocut SR 15 has an excellent dissolving effect on starch built ups and provides optimum felt penetration. Thus, this unique preservation and cleaning oil reduces the cleaning interval of stones and increases the service life of knives.

The lubricant is H1-certified.

Advantages of the TURMOCUT SR series:

- Good lubrication capabilities
- Friction reduction
- Good corrosion protection
- Cooling capabilities
- Starch and glue dissolving capabilities
- H1 certified



TURMOCUT LMI 22 - Cleaning oil for the corrugating rolls

Turmocut LMI 22 is a fully synthetic oil based on Ester for faster and easier cleaning of corrugating rolls on the Modul Facer.

This thermally stable lubricant is NSF/H1 certified and has excellent surface creeping and spreading capabilities combined with excellent lubrication properties.

As the TURMOCUT LMI 22 exceeds 230°C (446°F) it is ideally suited for the cleaning and preservation of hot corrugating rolls.

Advantages of the TURMOCUT SR series:

- High flash point
- Excellent cleaning effect
- Efficient starch removal
- Outstanding surface wetting properties
- Low evaporation rate
- Good corrosion protection



Application equipment

We offer a range of solutions for the frequent, automated relubrication of chains (e.g., drive chains, conveyor chains) or any other lubrication application with greases and oils:

- **Precise**
- **Reliable**
- **Safe**
- **Robust**
- **Protection against contamination**
- **Cost-efficient**

Depending on the application, individual or multiple points can be relubricated at a time. Different container sizes are supported, as is the configurability of the relubrication quantity and frequency.

As lubricant experts, we work together with innovative and specialized regional partners or develop specific solutions in collaboration with you. This enables us to solve any application-specific matter quickly and professionally.

SmartLevel

In today's fast-paced industrial environment, maintaining a continuous supply of lubricant is crucial. However, manual checks and orders often lead to delays and shortages. FUCHS SmartLevel is designed to address these challenges. Our solution allows, both the customer and FUCHS, to monitor the fill levels of various tanks, IBCs, and drums, ensuring a continuous supply of lubricant. It eliminates the risk of running out of lubricant due to late manual orders or overlooked tank levels.

Moreover, FluidsConnect provides valuable insights into lubricant consumption over time. This data enables accurate forecasting and allows customers to compare consumption against other documentation to identify trends and patterns. The solution uses sensors to provide continuous knowledge about the lubricant levels, preventing inaccuracies from manual readings or checks. It is designed for easy and quick implementation and can be equipped on various tank types. Automated reordering rounds up the package. With FUCHS SmartLevel, we are committed to providing a seamless, automated, and efficient solution for your lubricant management needs.

Customized service programs to optimize your total cost of ownership.

Expert support in fluid supply, distribution, monitoring and maintenance. Our lubricants, together with our Smart Services options, are geared towards benefiting your company - helping build a valuable maintenance program.

High performance lubricants keep your operations running whilst our advanced monitoring tools, together with unrivalled technical support, remove any unwanted surprises before they happen.

Our team of fully trained technical staff and engineers are on hand to implement customized service programs across your site or to simply assist with any product or application enquiry.

FUCHS also offers various tools to help with the application, storage, monitoring and analysis of your products and equipment to help you identify issues, react quicker and reduce costly downtime.

From digitized tank telemetry and automatic reordering, to real-time fluid reporting, the FUCHS Smart Service Team is fully equipped to help your operations run smoothly and efficiently, saving you time and reducing your total cost of ownership.

FluidsConnect

FUCHS' Fluid Management is a complete lubricant supply and management program which is unique and flexible to meet the requirements of your business. It is a carefully managed, structured system of operations in which all aspects and consequences of fluid usage are managed, monitored and assessed.

At FUCHS we utilize the latest technology to aid our customers, with this being demonstrated using digital systems for many years. FluidsConnect (part of the LubeLink Service Software Suite) is your Service Management Platform for all service provisions at your facility.

FluidsConnect is an easy to navigate, cloud hosted, data collection, activity management and reporting tool, with integrated KPI measurements; to give maintenance, production engineers and management immediate and remote access to the current condition of assets and lubrication products in use.

Expert support

We provide expert support in the areas of fluid supply, storage, distribution, monitoring, maintenance, assessment and disposal, allowing our customers to concentrate on what they know best. Full technical support is provided by a dedicated team of production fluid specialists, complemented by extensive laboratory facilities.

Benefits

- Digital Twin of production, lubrication points & products
- Digital recording of individual status data & consumption
- Customizable dashboards & reports
- Seamless access to all information in a central application
- Detailed planning, control & documentation of all activities
- Guided service operation with mobile devices
- Configurable notification system (Email, SMS)
- Automated analysis of condition data
- Data-driven decision making

FUCHS Smart Services - The complete service solution

Customers who sign up for FUCHS Smart Services follow a strategic journey with us as we start to understand their requirements, develop a plan, help to implement and manage the action points before optimizing all processes for maximum efficiency. This often leads to cost savings and operational benefits to the customer.

- HSE Compliance
- Stores management
- process optimisation
- Training
- Equipment support
- Document management
- Fluid analysis
- Fluid Control
- Predictive maintenance
- Smart data capture
- Environmental support
- Waste minimization

FUCHS Smart Services

THERE'S MORE TO LUBRICATION THAN JUST OIL

FUCHS Smart Services bring far more to the table than "just" a product. Instead, we combine performance fluids, digital technologies and a wide range of services into customized, holistic solutions.

- Lubrication assessments
- Reliability testing
- Fluid management
- Lubrication management
- Storage solutions
- Sensor based solutions
- LubeLink Software Suite
- Technical training

FUCHS SOLUTIONS

Lubrication

Digitalisation

Services

FUCHS PROCESS

Understand
Assess and Analyse

Develop
Plan and Set-Up

Manage
Implement and Operate

Optimise
Fine-tune and Re-use

Contact us to discuss a tailored service for you