Efficient lubricant solutions for the Forest Industry

Mobil™

Advancing your sustainability ambitions is as critical as optimising the reliability and productivity of your equipment. Mobil™ solutions are designed to help it perform at its peak, while delivering in-use sustainability benefits, such as extended ODIs, energy and fuel efficiency*

Mobil SHC™ PM 220 synthetic paper machine oil, helps to deliver 10 years of service life with reduced bearing failures on dryer cans*

In a Voith PM 4 dryer section, **Mobil Paper Machine Oil S 220** helped reduce energy consumption by 3% and maintenance stops*

Mobil SHC™ Gear 220 synthetic gear oil has helped a tissue paper machine achieve 7% energy efficiency and reduce maintenance needs*

Mobilith SHC™ PM 460 helped a corrugated cardboard mill increase the re-greasing intervals by 200%*

Mobil SHC™ Rarus 46, high performance synthetic compressor oil, has helped a paper mill to double the air compressors oil drain intervals*

Mobil SHC™ PM 320 synthetic paper machine oil has helped a paper mill to triple the oil life*

*Actual benefits may vary depending upon the type of equipment used and its maintenance, operating conditions and environment, and any prior lubricant used.

For more details on ExxonMobil Sustainability ambitions and actions, please refer to Sustainability Reporting | ExxonMobil

Increase equipment reliability, reduce operating costs, maximize production whilst advancing your sustainability ambitions with the help of Mobil Industrial Lubricants

In the forest industry, peak performance is the key to staying competitive. Whether you are producing fine papers, corrugated board, food grade paper packaging, optimizing your equipment availability is vital to maximum productivity in a global environment. You need your machines to deliver continuously. And with paper machinery operating at speeds over 2,000 m/min and steam temperatures exceeding 200°C, your equipment is under a lot of pressure. Which puts a lot of stress — and importance — on your lubricants.

Mobil synthetic paper and board machine lubricants - specially engineered for a wide range of applications and conditions.

To satisfy the specific needs of the pulp and paper industry, we developed Mobil SHC™ PM, Mobil Paper Machine Oil S and Mobilith SHC™ PM — a family of supreme-performance synthetic circulation oils and greases designed to stay on the job significantly longer than conventional mineral oils. Formulated with leading-edge synthetic technology and application expertise, these products can help increase equipment availability and potentially save energy at a time when minimizing downtime and optimizing operating expenses has never been more crucial.

A full offering for enhanced productivity.

Whether you are continuing to operate and upgrade your existing paper machinery or investing in new equipment, our comprehensive line of synthetic and premium mineral oil–based lubricants offers the right product for your critical applications. Our complete line of lubricants for paper machinery, including hydraulic, compressor, gear oils and greases, have all been designed for the diverse range of operating environments found in pulp and paper processing. The exceptional product offering includes*

Circulation oils:
- **Mobil SHC™ PM Series** supreme-performance synthetic circulation oils for dryer sections and calendar applications with energy saving potential
- **Mobil Paper Machine Oil S 220** supreme-performance synthetic circulation oil for dryer sections and calendar applications with excellent wear protection, color, oxidation stability as well as energy saving potential
- **Mobil DTE™ PM Excel Series** premium multi-functional paper machine oil for use in wet end, dry end, press sections and calender circulation oil systems

Hydraulic Oils:
- **Mobil DTE™ 10 Excel Series** superior high-viscosity-index, shear-stable, antiwear, zinc-free hydraulic oils designed for long oil life and energy saving potential
- **Mobil DTE™ Hydraulic Zinc Free Series** premium zinc-free hydraulic oils designed to meet the needs of modern industrial hydraulic systems
- **Mobil DTE™ 20 Ultra Series** premium antiwear oils for modern industrial hydraulic systems designed for long oil life

Gear Oils:
- **Mobil SHC™ 600 Series** supreme-performance synthetic gear and circulating oils for a wide range of critical applications, designed for long oil life and energy saving potential
- **Mobil SHC™ Gear Series** extra high-performance synthetic gear oils for gear, bearing and seal protection. Designed for long oil life and energy saving potential
- **Mobilgear™ 600 XP Series** high-performance gear oils for gear, bearing and seal protection

Turbine Oils:
- **Mobil SHC™ 800 Ultra Series** superior high-performance turbine oils designed for use in steam turbines, gas turbines, combined cycle gas turbine (CCGT) and turbo compressor applications under the most severe operating conditions.

Greases:
- **Mobilith SHC™ PM Series** supreme-performance synthetic paper machine greases for wet- and dry-end bearing lubrication
- **Mobilith SHC™ Series s**upreme-performance, synthetic multipurpose grease for a wide variety of demanding industrial applications
- **Mobilgrease™ XHP Series** high-performance industrial grease with superb adhesion and resistance to water contamination
- **Mobil Polyrex™ EM Series** are specially formulated premium greases for electric-motor bearings
- **Mobil Centaur™ XHP Series** are premium greases designed to lubricate bearings in wet, high-temperature and heavy load applications

You can read in detail a series of Food Grade Lubricants in the next pages of this brochure.

*Since equipment and operating conditions vary, please refer to equipment builder manual for preferred lubrication recommendations.

Mobil synthetic paper and board machine lubricants were designed to stay on the job significantly longer than conventional mineral oils

Backed by unsurpassed industry expertise.

Our highly experienced engineers work closely with customers and leading equipment builders for unique insights into their new technology and lubrication requirements, which helps guide our product development process. Our knowledgeable worldwide pulp and paper network leverages its applications expertise to help offer professional advice on sound lubrication practices, proper lubricant selection, equipment troubleshooting, and other lubrication services that will help your equipment run longer and trouble free.

Rely on our products and the support behind them.

Thoroughly tested before they are commercialized, Mobil™ Industrial Lubricants and greases are well supported by equipment builder approvals. We meet global quality standards and are compliant with internal stringent management systems for manufacturing, customer service, laboratories, safety, health, and environment. Because of this, Mobil is recognized across the industry for consistently delivering reliable performance and maximum equipment protection by leading OEMs.

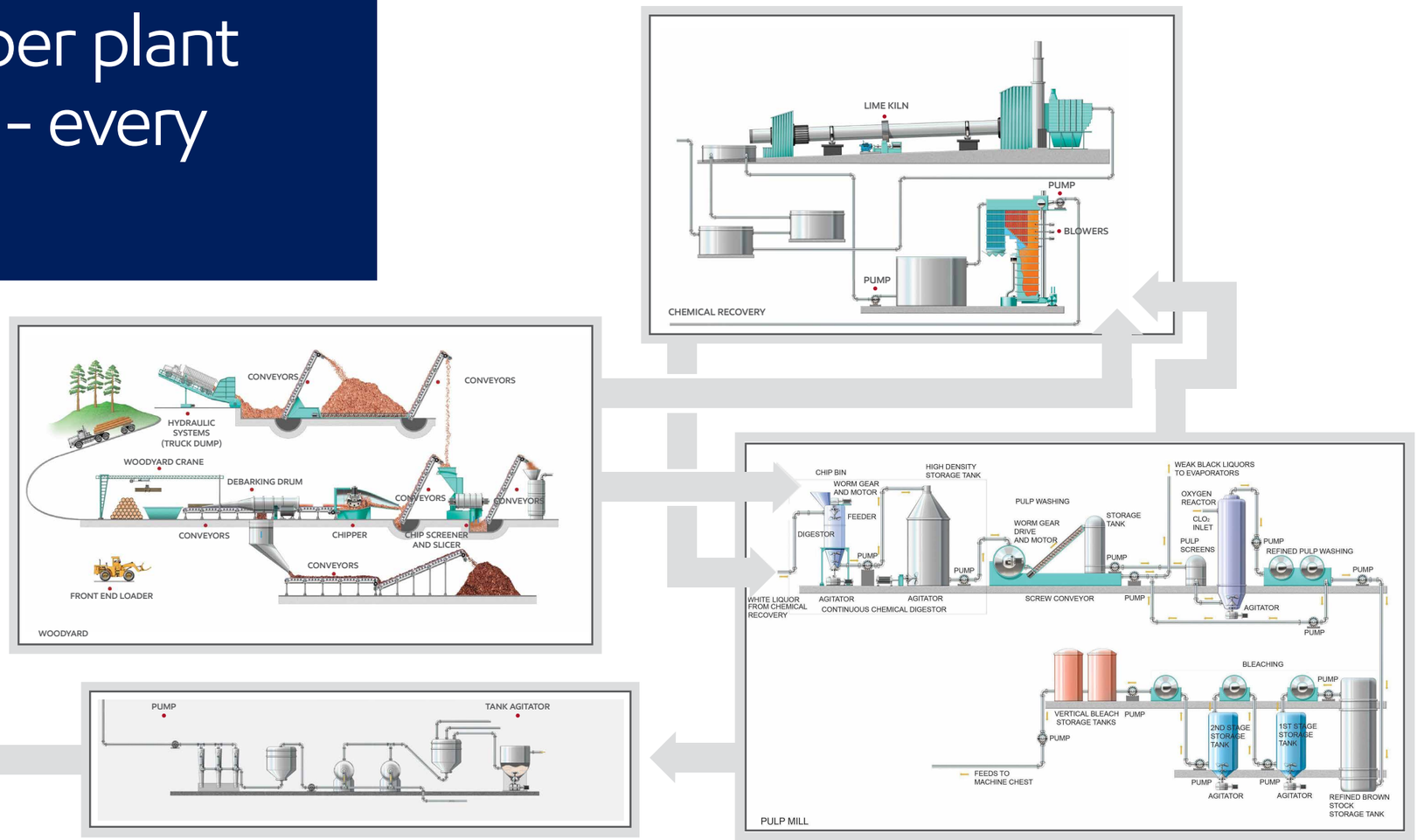
Keep your pulp and paper plant running better – longer – every step of the way

From hydraulics to bearings, couplings to gear drives, choosing the right lubricants and greases is a crucial factor in protecting the huge investment associated with paper plants. To ensure maximum reliability and productivity, premium-quality paper machine oils and greases should aim to exceed the lubrication needs of the machine for all critical areas — even in some of the most severe operating conditions. Mobil™ Industrial Lubricants are designed to provide outstanding wear protection, corrosion prevention, keep-clean performance, and water tolerance to meet the aggressive environments found in paper manufacturing.

For more specific product information on woodyard, pulp mill, chemical recovery, and paper machine processes, please get in touch with one of our Mobil representatives.

- **Electric Motor Bearings** — Mobil Polyrex™ EM, Mobilith SHC™ 100
- **Hydraulics** — Mobil DTE™ 10 Excel Series, Mobil DTE™ 20 Ultra Series
- **Couplings** — Mobilith SHC™ PM 460, Mobilith SHC™ 1500, Mobilgrease™ XTC
- **Press Systems** — Mobilgear™ 600 XP Series, Mobil DTE™ Hydraulic Zinc Free Series, Mobil DTE™ 10 Excel Series
- **Bearings** — Mobilith SHC™ PM Series, Mobilgrease XHP™ Series, Mobil Centaur™ XHP Series
- **Gear Drives** — Mobil SHC™ Gear Series, Mobilgear™ 600 XP Series, Mobil SHC™ 600 Series, Mobil SHC™ PM Series, Mobil™ Paper Machine Oil S 220, Mobil DTE™ PM Excel Series
- **Circulation Systems** — Mobil SHC™ PM Series, Mobil DTE™ PM Excel Series, Mobil™ Paper Machine Oil S 220

Note: Schematic is intended as a general guide only. NOT TO SCALE.



The importance of food grade lubricants for food packaging manufacturing

Lubricating oils and greases are an essential element to the smooth running of industrial machinery. Part of the risk of any lubrication system is the chance of accidental and/or routine leakage into or onto the final product.

In the food industry, customer's health and safety is the number one priority. All parties involved in the food manufacturing process and supply chain work to reduce risks of contamination, including those deriving from food packaging.

Due to their ability to migrate from packaging into food, hydrocarbons such as Mineral Oil Saturated Hydrocarbons and Mineral Oil Aromatic Hydrocarbon (MOAH) are in sharp focus to food professionals.*

Whilst it is important to avoid any lubricant leakage, to ensure food safety it is good practice to use food grade lubricants, formulated to meet the strict requirements of the Food and Drug Administration (FDA) and approved NSF H1 for incidental food contact.

*To learn more about the challenge of MOSH and MOAH in food industries please visit www.mobil.eu/MOSH&MOAH

Offering ingredients for success. The ultimate lubrication solution for food grade paper and board manufacturing.

Our complete range of high performance Mobil lubricants, specially formulated for food grade board and paper manufacturing, can help you achieve greater efficiency and productivity. And now we have added **Mobil DTE™ FM Excel,** the first food grade paper machine oil formulated to meet the challenging operating environments in today's paper industry, whilst complying with the strict international food standards.

Mobil DTE™ FM Excel meets NSF H1 and FDA requirements, is approved for Kosher, Parve and Halal dietary requirements, and is formulated to minimize the risk of MOAH contamination in food.

Hydraulic Systems
Mobil SHC Cibus™ 32, 46, 68, 100

Gearboxes
Mobil SHC Cibus™ 150, 220, 320, 460

Worm Gears
Mobil SHC Cibus™ 220, 320, 460
Mobil Glygoyle™ 220, 320, 460, 680

Bearings
Mobil SHC Polyrex™ 005, 222, 462
Mobilgrease™ FM 101, 222

Air-lines
Mobil SHC Cibus™ 32

Refrigeration Units
Mobil Gargoyle Arctic SHC™ 200

Compressors
Mobil SHC Cibus™ 32, 46, 68
Mobil SHC Cibus™ 68, 100, 150

Heat Transfer Systems
Mobil SHC Cibus™ HT 32

We have the right lubricant solution for you! For more information on our comprehensive offer please visit www.mobil.eu

Reliable support services mean you're never on your own

We don't just sell lubricants; we aim to provide you with the optimum lubrication solution whatever your particular process. We not only assist you in selecting the right lubricants for your application, but also can provide you with a wide variety of engineering services that help reduce costs and improve productivity through better lubrication management.

Mobil Technical Support — Convenient assistance from our team of technical experts, available by phone or online, providing guidance and advice for your facility.

Trained Distributor Sales Representatives — On-site guidance in lubricant selection to help enhance your plant's productivity.

Field Engineering Services (FES) — Professional advice on sound lubrication practices, optimizing lubricant performance, and equipment troubleshooting, plus systems inspections and proactive monitoring to help you run your machines longer and more efficiently.

State-of-the-art Mobil Serv℠ Lubricant Analysis (MSLA) program — Monitors lubricant and equipment condition to help increase equipment life and reliability, and reduce maintenance costs. Specifically tailored for the paper industry to gauge critical indicators in used oil, the program delivers the knowledge you need to better understand your company's lubricants and equipment status.

Partners in mill productivity.
So, count on the technology leadership and application expertise behind Mobil Industrial Lubricants to help your machinery produce more, better, faster, with more uptime and greater efficiency. Discover how we can help you fold productivity into your forest business — and help it soar.

For more information on all Mobil Industrial Lubricants and services, call your local company representative or visit www.mobil.eu

Success stories

Discover how Mobil™ lubrication solutions have helped customers around the world achieve new heights in productivity, environmental care and safety

Mobil™

Dryer section circulation system of PM 4 | Equipment builder: Voith | Leipa Schwedt, Germany

Mobil Paper Machine Oil S 220 saved up to 3% of energy*

Situation

PM 4 at LEIPA Georg Leinfelder GmbH in Germany produces 300,000 tons of LWC paper annually on a wire width of 8.90 meters. Production can be based on up to 100% recovered paper. Previously customer used mineral oil in circulation system. Customer has put in place a strategy to decrease energy consumption, due to constantly rising energy costs and sustainability demand. They had also experienced a limited lifetime for the spherical roller bearings, and failures have occurred when machine is operating at crawling speed.

Recommendation

ExxonMobil engineers recommended using the synthetic **Mobil Paper Machine Oil S 220.**
Mobil Paper Machine Oil S 220 is ideal for reducing energy use as it has low traction properties that result in low fluid friction in the load zone of non-conforming surfaces, such as gears and rolling element bearings. The film thickness calculations showed improved lubrication film at slow speeds compared to previous mineral oil.

3%

less energy consumption

Mobil Paper Machine Oil S 220 reduced energy consumption on average by 3% compared to previous mineral product. After the switch to **Mobil Paper Machine Oil S 220**, no losses in production due to bearing failures were recorded. Productivity improved due to reduced maintenance stops and decrease in replaced bearings.

* This proof of performance is based on the experience of a single customer. Actual results can vary depending upon the type of equipment used and its maintenance, operating conditions and environment, and any prior lubricant used.
** Visit mobil.eu to learn how certain Mobil-branded lubricants may provide benefits to help reduce environmental impact. Actual benefits will depend upon product selected, operating conditionsand applications.

Yankee Cylinder Drive Gearbox | Tissue paper machine | Germany

Mobil SHC™ Gear 220 synthetic gear oil helps prevent vibration related gearbox damage*

Situation
A German tissue paper manufacturer has a Yankee dryer roll driven by a shaft-mounted Flender gearbox. The customer experienced roller bearing damage due to strong vibrations. A lubrication expert had determined that the lubricant film thickness of their ISO VG 220 mineral oil was insufficient and recommended changing to an ISO VG 320 oil.

Recommendation
The ExxonMobil Field Engineer performed an EHL calculation for the required oil film thickness and recommended switching to **Mobil SHC™ Gear 220** synthetic gear oil to decrease vibrations in the gearbox.

Mobil SHC™ Gear 220 is a synthetic industrial gear oil designed to provide protection for gears and bearings, extend oil life even under extreme conditions, and help enable problem-free operation. The high viscosity index enables a wider operating temperature range. **Mobil SHC™ Gear Series** oils have inherently low traction properties that result in low fluid friction in the load zone of non-conforming surfaces such as gears and rolling element bearings. Reduced fluid friction produces lower operating temperatures and can help improve gear efficiency.

Up to

€ 138,000

maintenance savings due to improved lubrication

After switching to **Mobil SHC™ Gear 220** synthetic gear oil the customer has not experienced any vibration related bearing failures, decreasing spare parts and related maintenance costs compared to operation with the prior mineral oil. The customer also reported a 7% energy savings with the use of the synthetic gear oil.

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Motor bearings | Paper company | Germany

Mobilith SHC™ 100 synthetic grease helps German paper company reduce bearing damage*

Situation
A German paper company operates electric motors whose bearings were lubricated for years with a grease meeting the DIN KP2N-20 specification. The motors experienced oil ingress into the winding space due to oil bleeding, and cage creep was identified by vibration measurements. The company experienced more than €250,000 of bearing damage and approached ExxonMobil engineers to explore alternative greases.

Recommendation
ExxonMobil engineers recommended a grease compliant with the OEM-preferred DIN-KP3N-20 specification. They recommended **Mobilith SHC™ 100** synthetic grease, initial fill for many electric motors. **Mobilith SHC™ 100** has a high quality lithium complex thickener for reduced oil bleed deposits and longer lubrication intervals. It's synthetic ISO VG 100 base oil is suited to high speed motors, providing low starting torque and excellent performance in very cold or hot temperatures. The grease provides robust wear protection in boundary lubrication conditions and where high sliding friction is present in bearings with rims.

Impact
Since making the switch to **Mobilith SHC™ 100** synthetic grease, the company reports that it has eliminated bearing damage and prevented the formation of oil-deposits on the windings.

€ 100K

In company-estimated annual savings

The company reports **Mobilith SHC™ 100** synthetic grease helped it reduce bearing damage and lower maintenance costs to deliver a companyestimated annual savings of approximately **€100,000**.

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mobil.eu

Dryer Section Bearings | Corrugated cardboard mill | The Netherlands

Mobilith SHC™ PM 460 helped paper mill increase the re-greasing intervals by 200%*

Situation
A Dutch paper mill produces corrugated cardboard from waste paper. After rebuilding the dryer section, a number of support reels were eliminated. Reel Bearings were lubricated by synthetic **Mobilith SHC™ PM 460** grease with 6 weeks re-greasing intervals.

Recommendation
To optimize greasing intervals, ExxonMobil recommended disconnecting one bearing grease line to carry out controlled tests and evaluate the optimal grease interval for bearings. During the test, vibration levels and malfunctions were monitored. After targeted 18 weeks interval, the bearing was visually inspected.

58

man hours less annual maintenance

The re-greasing intervals were safely extended from 6 to 18 weeks. This increase in re-greasing intervals led to 58 man hours less annual maintenance.

Mobil™

Proof of Performance

Quincy QSI 1500 Series Air Compressors | Paper Mill | Ohio, United States

Extending Oil Drain Intervals with Mobil SHC™ Rarus 46*

Situation
An Ohio paper mill operates six Quincy air compressors dedicated to plant air service. After five years in service, the compressors were converted from the original equipment manufacturer's lubricant to **Mobil SHC™ Rarus 1025**, a synthetic compressor oil. With the use of **Mobil SHC™ Rarus 1025**, the compressors were able to maintain an 8,000 hour oil drain interval even when operating under temperatures exceeding 93°C. In an effort to further optimize oil drain intervals, the company approached ExxonMobil engineers for a lubricant solution capable of providing long oil life and equipment cleanliness.

Recommendation
After evaluating the air compressors, ExxonMobil engineers recommended upgrading to **Mobil SHC™ Rarus 46**, next-generation synthetic compressor lubricant. Formulated with high performance base stocks and a high viscosity index, **Mobil SHC™ Rarus 46** is specifically designed to provide outstanding equipment protection and high load carrying capabilities under extreme temperatures.

Impact
Since transitioning to **Mobil SHC™ Rarus 46** synthetic compressor oil, the company has reported an extension in oil drain intervals from 8,000 hours to 16,000 hours, with results from **Mobil Serv℠ Lubricant Analysis (MSLA) program** indicating that the lubricant is suitable for continued service. Achieved benefits have helped deliver a company-estimated annual savings of US$5,610.

16,000

hours of oil drain interval achieved

Mobil SHC™ Rarus 46 fully synthetic compressor oil has helped this paper mill double oil drain intervals from 8,000 hours to 16,000 hours, and improve compressor cleanliness, generating a company-estimated annual savings of **US$5,610**.

Suction roll bearings | Paper mill | Maryland, United States

Mobil Serv℠ Engineering Team helps paper mill improve equipment reliability by extending bearing life

Situation
A paper mill operates an 18 inch suction roll bearing at its facility in Maryland. While lubricating these bearings with six ounces of a competitive grease every 28 days, the mill was replacing them every 463 days despite the OEM's suggested 546-day life expectancy. After making several maintenance modifications to the bearings by adjusting the lubrication method, installing stop blocks and allowing the TS Bearing inner race to float, the mill was unable to extend bearing life on its own. As a result, they approached the **Mobil Serv℠ Engineering Team** to provide a maintenance recommendation capable of extending bearing life and ultimately improving equipment reliability.

Recommendation
After conducting a thorough plant study and reviewing equipment and operation data, the **Mobil Serv℠ Engineering Team** recommended the mill use **Mobilith SHC™ PM 460** bearing grease, which is formulated to provide outstanding protection for bearings in industrial paper machine circulating systems. In addition, the **Mobil Serv℠ Engineering Team** suggested the mill increase greasing amounts to five ounces per week and continuously monitor bearing temperatures for abnormalities.

Impact
After following the recommendations proposed by the **Mobil Serv℠ Engineering Team**, the mill experienced extended bearing life from 463 days to **680 days**, ultimately improving equipment reliability.

Company-estimated annual savings of

US $42,750K

The mill reports that the **Mobil Serv℠ Engineering team**'s evaluation and recommendations helped extend bearing life, which reduced maintenance costs by improving equipment reliability.

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Proof of Performance

Pulp Dryer - Roll Bearings | Pulp and Paper Mill | North Carolina, United States

Mobil Centaur XHP™ 462 Helps U.S. forest products producer reduce equipment failure and enhance productivity, delivering an annual savings of USD $60,000

Situation
A leading producer of forest products operates a pulp dryer machine at its pulp and paper mill in North Carolina. Lubricated with a competitive lithium-based grease, the roll bearings were experiencing frequent failures, stemming from recurring issues with grease washout, corrosion, and heavy water contamination. Hoping to improve equipment reliability and enhance productivity, the company approached Mobil™ engineers for a lubricant solution capable of reducing premature roll bearing failures.

Recommendation
After assessing the existing application, Mobil engineers recommended transitioning to **Mobil Centaur XHP™ 462** premium grease. Formulated with advanced calcium sulfonate thickener technology, **Mobil Centaur XHP™ 462** is specifically designed to provide outstanding wear protection, superb resistance to water contamination, and reliability and consistency even in some of the toughest applications.

Impact
After a year in service, the company reports that **Mobil Centaur XHP™ 462** premium grease has helped reduce water washout and resulting corrosion on the pulp dryer roll bearings. This enhanced equipment protection has helped reduce bearing failures from an average of one failure per month to no recorded failures over the course of a year. By eliminating equipment failures, **Mobil Centaur XHP™ 462** has helped the company improve production reliability, and minimize downtime and associated maintenance costs, delivering a company-estimated annual savings of **USD $60,000**.

Company-estimated annual savings of

US $60K

Mobil Centaur XHP™ 462 premium grease has helped this pulp and paper mill reduce equipment failure and improve operational reliability, generating a company-estimated savings of **USD $60,000** per year.

Voith paper machine | Paper mill | Virginia, United States

Mobil SHC™ PM 320 synthetic paper machine oil enables big lube cost savings*

Situation

A Virginia paper mill installed a state-of-the-art Voith paper machine over 18 years ago. Maintenance personnel needed a high-performance circulating oil for the two 6,000-gallon reservoirs of the machine's dryer lubrication system. As a result, the company approached **Mobil™** to identify a long-lasting lubricant solution capable of helping protect the heavily-loaded dryer bearings.

Recommendation

Mobil™ engineers recommended the paper mill switch to **Mobil SHC™ PM 320** synthetic paper machine oil. Formulated with advanced base oil and additive technology, **Mobil SHC™ PM 320** is designed to provide superior viscometrics under dryer section temperatures, preventing varnish and deposits that can restrict oil flow and shorten bearing life. In addition, **Mobil™** engineers recommended the company implement routine **Mobil Serv℠ Lubricant Analysis** to monitor equipment and oil condition.

Impact

After transitioning to **Mobil SHC™ PM 320** synthetic paper machine oil, the paper mill was able to triple oil life compared to a conventional mineral oil. This allowed the company to reduce lube system change-outs, cleaning and related plant downtime.

Original fill oil lasted more than

18 years

The company reports that the long life benefits of **Mobil SHC™ PM 320** synthetic paper machine oil have generated company- estimated average savings of over **US $100,000** per year.

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Proof of Performance

Dryer Can Bearing Lubricant | Paper Mill | North Carolina

Mobil SHC™ PM 220 delivers 10 years of service life with reduced bearing failures on dryer cans

Situation

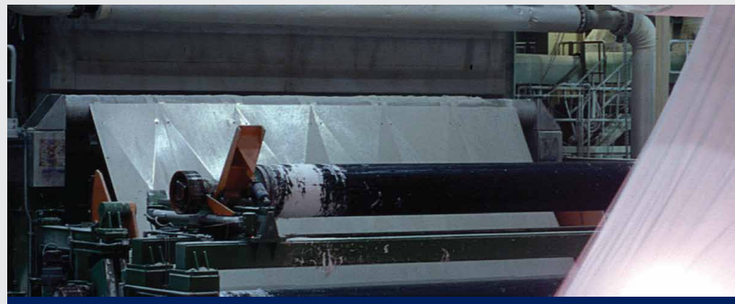
During a paper machine rebuild in 2010, a paper mill customer in North Carolina installed new dryer cans and kept the dryer cans from the old machine (40/60 split). The customer's ambition was to optimize the performance of their new high-temperature dryer cans and improve the service life of the bearings in their old/reused cans. They reached out to the **Mobil Serv℠ Engineering Team** to provide expertise and recommend lubrication measures to meet their ambitions.

Recommendation

The **Mobil Serv℠ Engineering Team** recommended **Mobil SHC™ PM 220**, a premium synthetic paper machine oil. This allowed **Mobil** to meet customer needs for outstanding wear performance, service life, and reliability friendly properties in high water environments.

Impact

10+ years after the initial fill the paper mill has not experienced any bearing failures in the new dryer cans and has had 75% fewer bearing failures in the reused dryer cans. Given the length of service and very low top-off volume (5% annually), the customer wanted to confirm suitability for continued use of the installed Mobil SHC™ PM 220. The Mobil Serv℠ Engineering Team utilized Mobil Serv℠ Advanced Analysis to assess equipment and lubricant performance. The team concluded that key indicators supported the continued use of the installed Mobil SHC™ PM 220.



US $423K

Customer estimated savings due to increased oil drain interval and reduced bearing failures

By using **Mobil SHC™ PM 220** and proactively engaging the **Mobil Serv℠ Engineering Team**, the mill reports reduced bearing failures in a dryer lube system and go **10+ years** without a reservoir change out.

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Kiln fan bearings | Lumber mill | Mississippi, United States

Mobil Serv℠ Engineering Team helps lumber mill reduce bearing failure in its kiln fans

Situation
A Mississippi-based lumber mill operates multiple kiln fans that were experiencing an average of 10 bearing failures every year. These failures often resulted in heightened production and maintenance-related costs, with the mill dedicating as much as 120 hours per year to repairing any broken equipment. In an effort to reduce the mill's downtime related to repairing its kiln fans, the mill team worked alongside the **Mobil Serv℠ Engineering Team** to identify the root cause of the bearing failures and determine a solution to improve their reliability.

Recommendation
The **Mobil Serv℠ Engineering Team** found that the lubricant that was applied to the bearings was not adequate for the conditions of the kiln fans. As a result, the mill switched to **Mobilith SHC™ 460** synthetic grease, which is formulated to provide excellent protection against wear, rust and corrosion, which can impact bearing condition.

Impact
After switching to **Mobilith SHC™ 460** synthetic grease, the number of the mill's annual bearing failures dropped to less than three per year. As a result, the mill was able to decrease downtime by up to 100 hours, generating annual cost savings of **US $453,000**.

Company-estimated annual savings of

US $453K

The mill reports that **Mobilith™ SHC 460 s**ynthetic grease helped reduce annual bearing failures, which helped generate company-estimated annual savings of **US $453,000** in production and maintenance-related costs.

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Proof of Performance

Pulp washing machine bearing | Hainan Jinhai Pulp & Paper Co., Ltd. | Yangpu City, Hainan Province, China

Mobilith SHC™ 1500 synthetic grease helps pulp and paper company eliminate bearing failure and increase production*

Situation
Hainan Jinhai Pulp & Paper Co., Ltd. installed a production line with a capacity of 10,000 tons per year. Using a conventional mineral grease to lubricate the 36 bearings on its nine sets of pulp washing machines, the company often experienced bearing failures due to poor grease performance, causing unscheduled downtime. To improve equipment reliability, the company approached ExxonMobil for a grease solution capable of reducing bearing failure and increasing production capacity.

Recommendation
ExxonMobil engineers recommended switching to **Mobilith SHC™ 1500** synthetic grease after examining the bearings' operating conditions and interpreting Elastohydrodynamic calculations. Formulated with wax-free synthetic fluids and a lithium complex thickener, **Mobilith SHC™ 1500** has excellent adhesion, structural stability and resistance to water, as well as excellent protection against wear, rust and corrosion.

Impact
After transitioning to **Mobilith SHC™ 1500** synthetic grease, the washing machine did not experience a lubrication-related bearing failure for more than four years.

Company-estimated annual savings of

US $347K

The company reports that **Mobilith SHC™ 1500** helped improve bearing lubrication, which helped eliminate bearing failure and improve production capacity.

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Mobil Lubricants Europe

Health and Safety
Based on available information, these products are not expected to produce adverse effects on health when used for the applications referred to above and the recommendations provided in the Material Safety Data Sheets (MSDSs) are followed. MSDSs are available upon request through your sales contact office or via the Internet. These products should not be used for purposes other than the applications referred to above. If disposing of used product, take care to protect the environment.