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Innovations

Rhenus Lub receives an award from the  
Association for German Science!

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Important information

You can rely on us for the new classification

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Machining today

Light solutions for aviation





## We invest for your benefit.

Dear  
Sir/Madam,

As the owner of Rhenus Lub, I am committed to safeguarding the future of our company. And we have a clear vision for our future: We want to support you, our customers, in the best way we possibly can. We achieve this by continually engaging in dialogue with users of our products, and then, of course, by actioning what we learn from these discussions. In other words, we make targeted investments in the future for our customers. That is one of the reasons why we are currently seeing a high level of expenditure within our company. Rhenus Lub invests heavily in research and development. We currently dedicate a significant proportion of our laboratory

capacity to innovative processing methods, such as the machining of composite materials. We work closely with the renowned German Aerospace Center (DLR), integrating the requirements of our customers, such as Rolls-Royce and Airbus Industries, directly into the development process. In addition, we are currently investing over two million euro in our production facilities for special greases. Rhenus Lub will continue to operate the most modern grease factory in Europe — and will continue to produce lubricants of the very highest quality for you. Find out how on page 7 of this issue.

All the best,  
Dr Max Reiners

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### Excellent innovations

## Rhenus Lub receives an award for consistent research

*Rhenus Lub has impressed the industry once again with its strong commitment to research and development. The Association for German Science recently awarded the lubrication experts the "Innovative through Research" title for two years.*

The Association shares the Rhenus Lub philosophy: Only those who commit to research can make new discoveries and create the foundations for innovation and growth. For this reason, Rhenus Lub makes an above-average level of investment in research and development. Around 20% of Rhenus Lub employees work in this area. In high-tech laboratories at the company headquarters in Mönchengladbach, Germany, experts are already working on the lubricants of the future. The "Innovative through Research" award shows customers that the company is committed to R&D.

[www.stifterverband.info](http://www.stifterverband.info)



## Mixing water – the basis for optimal performance

*The role of water is often underestimated when using water-miscible coolants. For this reason, it is a good idea to look at water as a medium a little more closely.*

The impact that the mixing water has on the emulsion used must not be underestimated: Water that is too high in chloride, for example, can cause corrosion on the machine itself and on workpieces. Water that is too hard may cause the coolant emulsion to split.

These examples prove that a detailed knowledge of the composition of the mixing water used is an important prerequisite for selecting and correctly adjusting the coolant itself. But what components of water are truly key? And what minimum requirements does the mixing water need to fulfil for optimum machining performance? Find out in the table below.

Water components	Metal machining	Metal forming
pH value	Approx. 7	Approx. 7
Conductivity [ $\mu\text{S}/\text{cm}$ ]	Max. 1000–1500	Max. 50–75
Total hardness [ $^\circ\text{d}$ ]	5–20	Max. 5
Nitrite [ppm]	Max. 5	Max. 5
Nitrate [ppm]	Max. 50	Max. 50
Chloride [ppm]	Max. 250	Max. 50
Microbial count [cfu/ml]	Max. $10^2$	Max. $10^2$

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### News

#### Important information: Please read!

## Globally Harmonized System (GHS)



*The Globally Harmonised System (GHS) provides a uniform global framework for the classification and labelling of chemicals (from 01/12/2010) and mixtures (from 01/06/2015). For customers of Rhenus Lub, the regulations do not change anything about the product itself – the only difference is the packaging.*

New pictograms and signal words on the packaging will replace the symbols that were previously used. The regulation has also redefined a number of limit values. Products

that previously needed no label may be labelled in future.

Despite the changes, one thing remains certain: The new labels on our products do not mean that the product composition has changed. Rhenus Lub will continue to supply products meeting the same high quality standards, but with the new pictograms and updated safety data sheet. Do you have any questions? Contact us and we can help.

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### Point of view

## Formaldehyde in coolants – neither right nor wrong.

*With the 6th ATP (Adaptation to Technical Progress) of the European CLP Regulation on the classification, labelling and packaging of substances and mixtures, the Risk Assessment Committee (RAC) of the European Chemicals Agency (ECHA) categorised formaldehyde as a carcinogenic (category 1B) and mutagenic (category 2) substance. As a result, many companies are unsure when it comes to selecting coolants.*

With Rhenus Lub you can rest assured that you have made the right choice: All Rhenus Lub products, including those containing formaldehyde, comply with all legal requirements. Formaldehyde-releasing rhenus coolants remain well within the legal limit values for the substance. "There are no right or wrong answers in this matter. Our customers still have the freedom to choose for themselves, and we will advise

them based on their individual objectives", says Meinhard Kiehl, Director of Marketing, Product Management at Rhenus Lub.

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Processes, approvals and optimisation

# Safety from the specialist: Solutions for aviation

*When an airline gets a call raising an AOG, or "Aircraft on Ground", alarm, every minute counts. In the aviation industry, every hour that a high-tech aeroplane spends out of action and grounded due to a technical fault costs the airline thousands of euros. If the airline has to resort to sourcing a replacement plane, it will lose revenue and incur additional operating costs and landing fees. Compensation claims from passengers or contractual penalties from freight customers further elevate the financial risk.*

However, safety and availability in the aviation industry can only be guaranteed because all processes related to the production and operation of passenger aircraft are subject to stringent safety standards and must be certified according to specific guidelines. In the aerospace sector, coolants, alongside tools and production methods, are a core element of part approval. It is essential that Rhenus Lub customers can put their trust in us, knowing that all fluid process parameters are fulfilled in a stable and safe way to consistently high quality standards.

Rhenus Lub's extensive experience in core areas of aircraft component machining is almost unique in the industry. This experience includes:

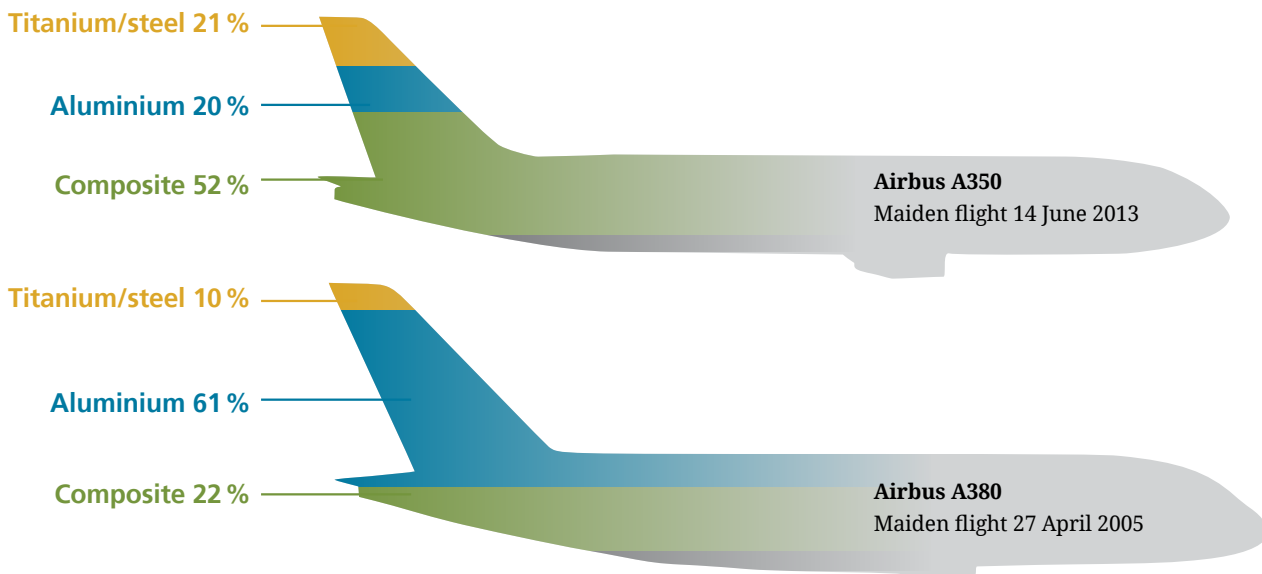
- Special machining processes in the aviation industry
- Handling approvals for machining processes
- Process optimisation and cost reduction

Rhenus Lub holds particular expertise in state-of-the-art raw materials and the machining of these materials. Customers – manufacturers and suppliers to the aerospace industry – require high-strength materials and composites. They also want to reduce weight and fuel consumption. But innovative lightweight materials are especially difficult to machine. Whether for the demanding aluminium machining processes involved in manufacturing the body frame, fuselage and wing components, or the production of turbine blades, jet engine discs, turbine sealing rings or enclosures, Rhenus Lub offers solutions for all raw materials (see diagram).

In its own state-of-the-art laboratories, the company has developed high-performance lubricants that are approved by industry leaders such as Airbus, Rolls-Royce, MTU, Premium Aerotec and Embraer. Rhenus Lub products will ensure aviation customers reach new heights in their machining processes.



## Raw material trends in aircraft construction



# rhenus products for the aerospace industry



## RIBS, STRUCTURAL COMPONENTS

Turning, drilling, milling

- rhenus TU 43 P

## TURBINE

Grinding, turning, drilling, milling, deep drilling

- rhenus EA 11 S
- rhenus FS 750
- rhenus FU 51
- rhenus FU 60
- rhenus R-FLEX
- rhenus EDD 10
- rhenus FU 50 W
- rhenus FU 52 TD
- rhenus TU 44
- rhenus TU 65

## CHASSIS PARTS

Turning, drilling, milling

- rhenus EA 12 S
- rhenus FU 60
- rhenus FU 70 W

## FUSELAGE

Turning, drilling, milling, grinding

- rhenus EA 11 S
- rhenus FS 750
- rhenus FU 60
- rhenus TY 100 S
- rhenus EA 12 S
- rhenus FU 51
- rhenus TU 43 P
- rhenus TY 101 S

"Did you know..."

...that there are machined parts in the aircraft industry with a machining proportion of approx. 98%?

Example: Machining of the wing rib of an Airbus A380

- Weight of the original block material: 3.2 t
- Weight of the finished workpiece: 58 kg

Added value for the aerospace industry

# Optimising processes without risk

*How do you optimise a process that is already established? This question is one of the challenges faced by many manufacturers in the aviation industry. The reasons are clear: Once a product process has been established, we are reluctant to change it. And this reluctance is understandable – after all, with change comes risk. So how can you reduce unit costs and increase machining quality without changing certified processes?*

**Find where changes can be made**

The rhenus lubriningering fluid management concept optimises your fluids process without changing any related certified processes – and the entire concept is tailored specifically to the needs of the aviation industry.

But how does it work? The key to the concept's success is a specially developed

parameter system that provides precise information about the status of the fluids process. We use these parameter values to determine the status quo so that we can then gradually make effective and non-critical adjustments to the process.

Typical parameters for the aviation industry include freshly prepared emulsion, the service life of fluids used, consumption of additives or possible lubricant tolerances.

**Make minor improvements — get great results**

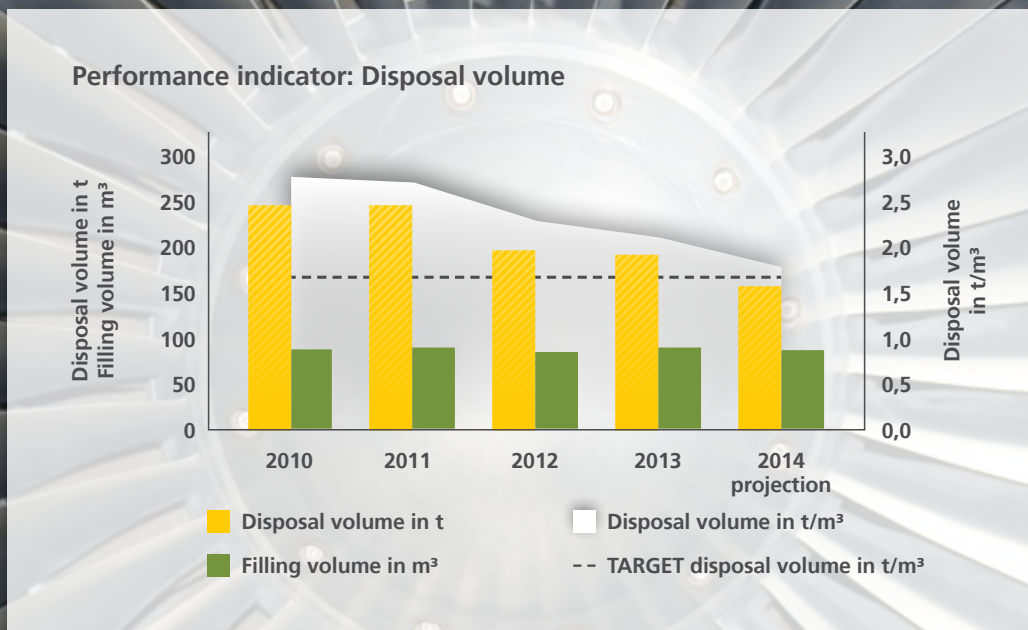
Reducing concentrate top-up rates even by tiny fractions of a unit can generate five-figure savings over the long term. A further example is the reduction of the disposal rate measured using clear performance indicators (see diagram). This is another area that is full of hidden potential. "There are so many little areas

where we can make minor adjustments that aren't critical to the process as a whole but still have a significant effect. With the rhenus lubriningering concept, we can find out exactly where these areas are", says Björn Linevondeberg, Product Manager for rhenus lubriningering.

In this highly sensitive industry, we understand that the cornerstones of processes are fixed. And these cornerstones must remain untouched – with no exceptions. But even without introducing radical changes, there are many ways to continually fine-tune processes.

**In the aviation industry, Rhenus Lub has been able to reduce production costs by up to 20% – without putting the process at risk. Please do not hesitate to contact us for further information.**

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Europe's most modern grease factory

# Top quality thanks to INDUSTRY 4.0

Everyone is talking about Industry 4.0. But Rhenus Lub is doing more than just talking – it is putting Industry 4.0 into action and using innovative production methods for the benefit of its customers. That is why Europe's most modern grease factory is now being upgraded just a few years after its initial opening, in a program intended to automate production processes. "We are investing over two million euro to guarantee that our customers will benefit to an even greater degree from full and complete documentation, consistent product quality and high delivery reliability", says Dr Max Reiners, owner of Rhenus Lub. "We have dedicated a great deal of time to carefully preparing for this in-depth, ongoing quality, safety and efficacy development process. Customers – as well as industry media and experts – are already eagerly awaiting the commissioning of the new plant, which is set to take place later this year".

In the future the often very complex processes for producing lubricating greases

will be planned, controlled and monitored using the latest process control technology. Lubricants "made by Rhenus Lub" are already considered indispensable elements

*"To us, Industry 4.0 means the ability to use intelligent processes to respond efficiently and in a highly flexible manner to [...] constantly changing requirements"*

Dr Frank Hentrich  
Managing Director of Rhenus Lub

of lifetime lubrication. They ensure that bearings placed under high stress in trains, cars, steel mills and in mechanical engineering function flawlessly over years and decades. "To us, Industry 4.0 means the ability to use intelligent processes to respond efficiently and in a highly flexible manner to ever increasing complexity and constantly changing requirements", says Dr Frank Hentrich, Managing Director of Rhenus Lub.

This has two main benefits for customers who wish to implement innovative and demanding applications. The first is a new level of quality in production, achieved through increased monitoring and recording accuracy across key process parameters such as temperature, mixer settings, response times or exact timings for the addition of raw materials. The second benefit is even more accurate documentation, which increases the traceability and transparency of the production process – increasing security for customers across all processes.



Forecasts and trends

## Aviation in an up-current

Saving fuel is a top priority – so lightweight construction is a hot topic. While turbines in older aircraft can easily consume 4.5 litres of fuel per 100 passenger kilometres, newer models have long since broken through the three-litre barrier, and the downward trend is continuing. Our graphs show the trends in the aviation industry.

**10.1%**

*of the entire foreign trade volume will be transported by aircraft.*

### Performance indicators in modern aviation

	Dash 8-Q 400	Airbus A319	Airbus A320-200	Airbus A321-200	Airbus A330-200
Max. take-off weight in kg	29,574	75,500	77,000	93,000	233,000
Cruising speed in km/h	666	858	858	870	890
Fuel consumption (litres per 100 passenger kilometres)	5.1	4.5	3.3	3.1	2.9

### Development trends in aviation up to 2032

	Civil aircraft in use around the world	Passengers worldwide
2012	17,170	2,900,000,000
2032	36,650	6,700,000,000
Development total	+19,480	+3,800,000,000
Development %	+113 %	+131 %

## Mapa Distributors

# Our strong partner for NAFTA



*In Canada, Mexico and the United States too, companies can now apply coolants, special greases and the expertise of Rhenus Lub in their production processes to further increase safety and cost-effectiveness – a development that will be of particular benefit to companies with manufacturing processes in NAFTA countries.*

As a new distribution partner in the countries of the North American Free Trade Agreement (NAFTA), Mapa Distributors sells Rhenus Lub branded products. Since its founding in 1989 in Texas, USA, Mapa

Distributors has become a leading supplier to the North American and global markets for petrochemical products, manufacturing technology and special chemicals. "Rhenus Lub and Mapa Distributors are united by a firm conviction: If we make a promise to our customers, we keep it. Trust is the reason why our customers work with us – and why we work with Rhenus Lub", says Paco Larzabal, Managing Director of Mapa Distributors.

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*"Trust is the reason why our customers work with us – and why we work with Rhenus Lub."*

Paco Larzabal  
Managing Director of Mapa Distributors

## Logistics

# Securely wrapped for transport

The Logistics team at Rhenus Lub has a new motto — not to go "Faster, higher and further" but instead to aim for "Cleaner, safer and more efficient". This motto is all down to the new machine at the heart of the Logistics department's processes: the

"Helix 3" fully automatic winder from Aetna Deutschland GmbH. The state-of-the-art device is equipped with integrated conveyor technology and has 15 user-defined programs. The lubricant experts can now process up to 45 pallets an hour, wrapping each one tightly in film and affixing cover sheets. For Rhenus Lub customers, the new winder ensures that orders will arrive perfectly packaged – whether in drums, pails or cartridges – as it features

exactly the right settings for any type of container.

Lothar Woltz, Head of Logistics at Rhenus Lub, explains: "The new winder allows us to pack products for transport much more cleanly, quickly and effectively, both on pallets and in trucks. This means that we can deliver a significantly better service for our customers".

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