

Safer process.
Safer profit.



rhenus
LUBRICATING GREASES
Supreme performance in rail transport



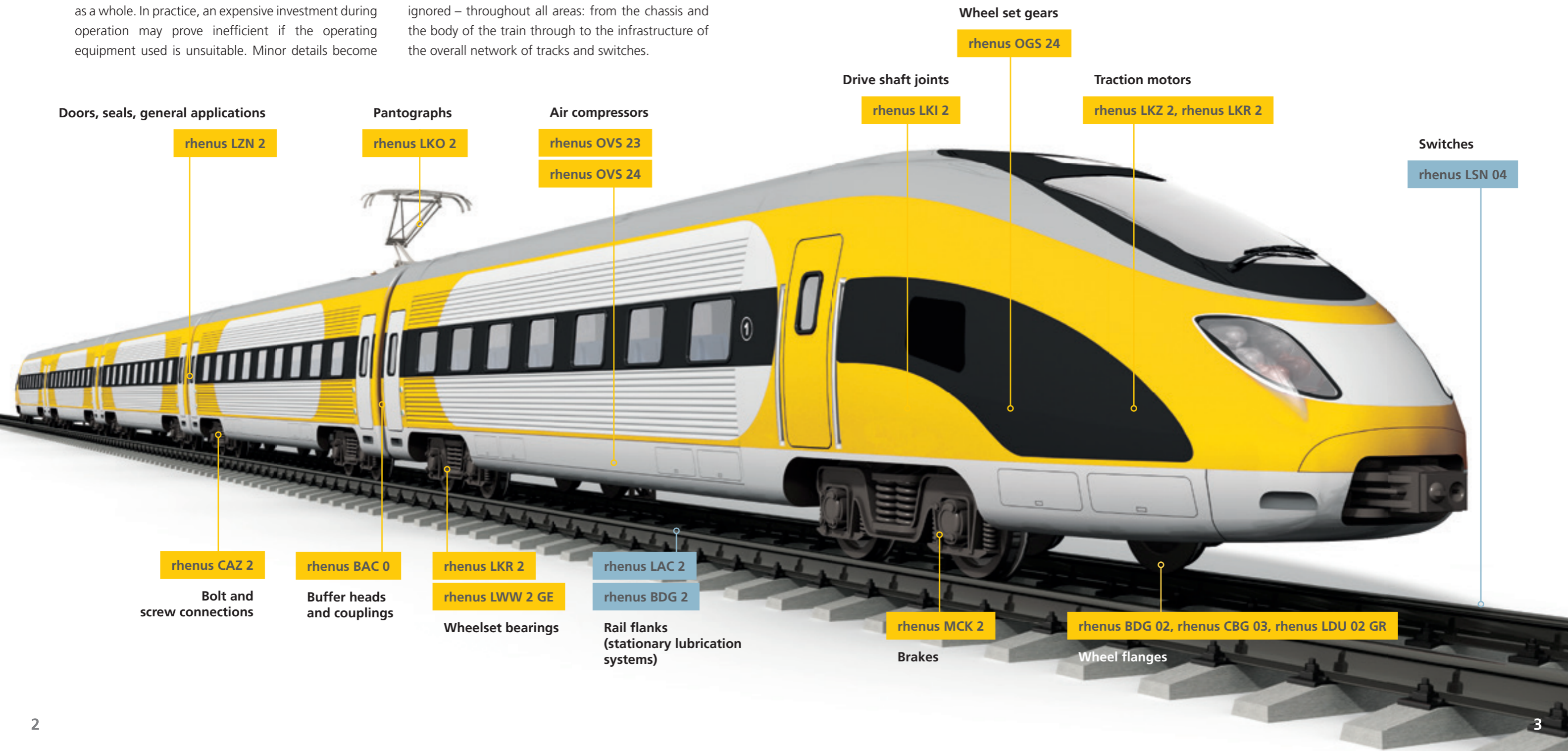
For rails and vehicles – rhenus special lubricating greases

Passenger and cargo transport per rail are particularly challenging, yet equally sensitive areas. Efficiency and reliability are paramount parameters in rail transport to guarantee comfortable and on-time transport. If something is not working, this can quickly cause far-reaching problems. There is also a constant drive to reduce operating costs across the maintenance cycle as a whole. In practice, an expensive investment during operation may prove inefficient if the operating equipment used is unsuitable. Minor details become

crucial in preventing this from happening – particularly within the context of lubricants.

Special lubricants from Rhenus Lub make it easier for you to achieve your strategic maintenance and servicing objectives. Reliability is top of the list here, but it goes without saying that efficiency cannot be ignored – throughout all areas: from the chassis and the body of the train through to the infrastructure of the overall network of tracks and switches.

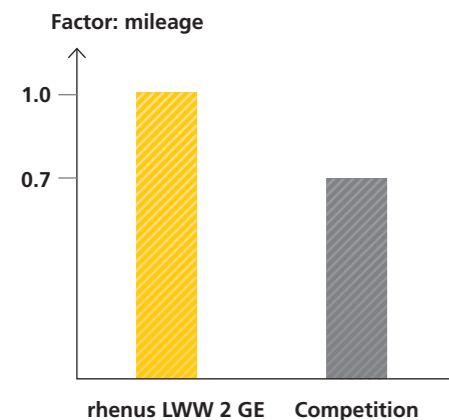
- Rails
- Railway vehicles



Your genuinely added values at a glance

Safety in operation

- Optimum results thanks to lubricating greases developed for specific applications within the rail industry
- References and approvals from the most important rail operators in Europe
- Consistent quality and 100% product control
- Reliable access worldwide thanks to an ample distribution network
- Compliance with legal standards and directives, such as DIN 12081 for rail applications – wheelset bearings – lubricating greases

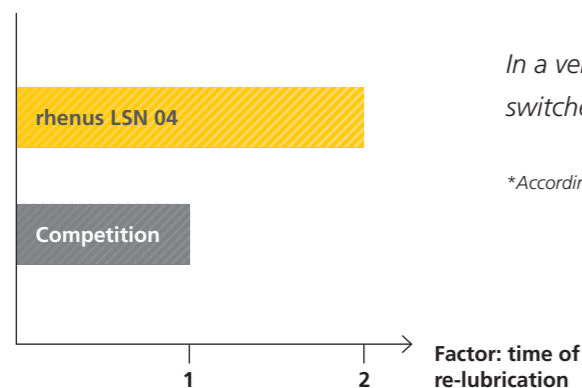


*rhenus LWW 2 GE convinced during practical tests thanks to a significantly lower friction value. Wheelset bearings lubricated with rhenus LWW 2 GE reached 30% higher mileages in comparison to those lubricated with an equivalent competitor lubricating grease.**

*According to customer statement from Head of Technology

Reduced costs

- High mechanical stability guarantees a long service life
- Lower wear thanks to raw materials that are precisely tailored to each other
- Extended maintenance intervals save personnel costs and material costs



In a verified customer trial, the re-lubrication intervals on switches were 50% longer when using rhenus LSN 04.*

*According to customer statement from Head of Maintenance

rhenus lubricating greases for rails

Main application	Product	Temperature	Additional information
Rail flank lubrication (stationary systems)	rhenus LAC 2	-45°C to 120°C	Wide temperature range, used in southern Europe
	rhenus BDG 2	-30°C to 100°C	New development, biodegradable, contains graphite, very good adhesion
Switches	rhenus LSN 04	-40°C to 120°C	Biodegradable, used by Deutsche Bahn and private rail companies in Germany, the Austrian Federal Railways and rail operators in Norway
Rail fastenings	rhenus CAZ 2	-30°C to 110°C	Protects against corrosion, makes it easier to unscrew fittings, water-repellent, very adherent

rhenus lubricating greases for track vehicles

Main application	Product	Temperature	Additional information
Wheelset bearings	rhenus LKR 2	-30°C to 150°C	Very mechanically stable, used by the Dutch railway
	rhenus LWW 2 GE	-40°C to 140°C	Very low friction value, longer service life, suitable for use in very cold and hot regions, such as Russia
Wheel flange lubrication (mobile)	rhenus BDG 02	-30°C to 100°C	Biodegradable, contains graphite, no spinning off from the wheel flange at speeds up to 250 km/h
	rhenus CBG 03	-30°C to 80°C	Contains graphite, Rebs approved
	rhenus LDU 02 GR	-40°C to 120°C	Approved by SKF, Lincoln, Baier & Köppel, Delimon, Rebs
Buffer heads and couplings	rhenus BAC 0	-50°C to 100°C	Biodegradable, approved by Deutsche Bahn
Locomotives			
Traction motor bearings	rhenus LKZ 2	-40°C to 140°C	ABB approved
	rhenus LKR 2	-30°C to 150°C	Used by the Dutch railway
Brakes	rhenus MCK 2	-30°C to 180°C	Non-drip, very good adhesion
Wheel set gears	rhenus OGS 24	Pour point: -55°C	CLP gear oils according to DIN 51 517
Drive shaft joints	rhenus LKI 2	-35°C to 140°C	Low friction characteristics, minimal abrasion
Bogie			
Bolt and screw connections	rhenus CAZ 2	-35°C to 110°C	Assembly paste also for bearings that come into contact with water
Wheel flanges	rhenus BDG 02	-30°C to 100°C	Biodegradable, no spinning off from the wheel flange
Other applications			
Doors, seals, etc.	rhenus LZN 2	-30°C to 130°C	Universal grease for standard applications
Air compressors	rhenus OVS 23 rhenus OVS 24	Pour point: -55°C	Long re-lubrication intervals
Pantographs	rhenus LKO 2	-45°C to 150°C	High-performance grease, extremely low friction coefficient
Trackside signals, service equipment	rhenus CAZ 2	-35°C to 110°C	Protects against corrosion, makes it easier to unscrew fittings, water-repellent, very adherent

The **top 7** requirements to lubricating grease in the rail industry – from tracks and switches to trains and bogies

1 A lubricating grease must always do its job

Be it in cold conditions involving snow and ice or in the event of agitation as a result of impact and vibrations: lubricating grease must always be reliable in extraordinarily challenging situations and do its job. Lubricating greases from Rhenus Lub ensure your operations are always as secure as possible – whatever the external circumstances.

2 Reducing operating costs

How can a lubricating grease reduce your operating costs? As well as purchase costs, operating costs also have a significant effect on your total costs. A lubricating grease with a long service life ensures long maintenance intervals and low consumption. Pay careful attention when choosing your lubricating grease and remember to feed this into your calculations when you determine your total costs.

3 A lubricating grease that is tailored to its intended place of use

Universal solutions are inadequate for special applications in rail traffic. Instead, you must use the correct lubricating grease for your precise application – this is the only way to achieve optimum results. We can develop this lubricating grease just for you.

4 For the environment – biodegradable!

The environment doesn't make compromises, so neither should you! For outdoor applications around tracks and switches, you should always ensure that your lubricating grease is biodegradable. By doing this you stay a step ahead when it comes to environmental issues and don't have to worry about legal regulations. In this process, it is crucial to make sure your lubricating grease is quickly biodegradable and its effects must be just as efficient as with a conventional alternative. Not many are up to the job, so you can also rely on Rhenus Lub in this context.



5 Reducing wear, protecting against corrosion

One of the basic characteristics of rail lubricating greases is that they effectively reduce wear on components and protect them against corrosion. This is done by using high-quality raw materials, developing a good composition and using a top-quality manufacturing process. Achieving the ideal combination of these three parameters is the only way to ultimately get the result you want: less effort required for maintenance.

6 Approvals and references

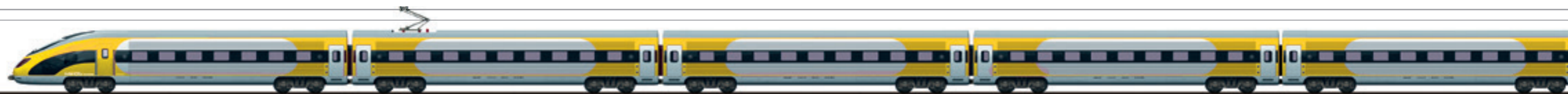
Lubricating grease primarily convinces with its performance. If this is also backed up by approvals and references, then it offers the maximum level of security for users. The reason for this is that if something has been tried out and approved, then this creates reliability and trust. Lubricating greases by Rhenus Lub are used and have been approved by major rail operators and OEMs (e.g. Deutsche Bahn, SNCF, ÖBB, NedTrain, GMH Group, Delimon, Rebs, Vogel Centralised Lubrication).

7 Lubricating grease as operating material and design element

A lubricating grease must meet the requirements for a reliable and cost-effective operating material. Equally, the grease that is used is often a high-quality design element and has to be modified with special characteristics in a new development process.

As we have our own research and development department, we are a strong partner to have at your side. During the development process, we regularly bring together all the involved partners, such as developers, users and system suppliers to ensure an efficient and results-oriented development process for your ideal lubricating grease.

References and approvals



Rhenus Lub GmbH & Co KG
Hamburgering 45
41179 Mönchengladbach, Germany

Telephone +49 2161 5869-0
Fax +49 2161 5869-93

vertrieb@rhenusweb.de
www.rhenuslub.com

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