



**GOLDSCHMIDT**

Smart Rail Solutions

# FOR RAILWAYS IN TOP FORM

PREDICTIVE MAINTENANCE  
OF RAILS AND SWITCHES





# FOR A LONGER SERVICE LIFE OF RAILS AND SWITCHES

High axle load – often every few minutes and in all weather: rails have to withstand a lot. Goldschmidt ensures a longer service life for your track systems with reliable and perfectly coordinated services.



## SAFE, COMFORTABLE AND ECONOMIC

Safety, economic efficiency, travel comfort: the focus for all our services and products for the joining of rails and maintenance of railways. At Goldschmidt, we are constantly developing new methods, materials and equipment. This is appreciated by our clients and their customers, who transport their goods as freight forwarders or reach their destination as passengers – safely, comfortably, economically.



## FLEXIBLE AND FAST

Thanks to our highly mobile equipment, our teams are particularly flexible. They can carry out all relevant welding and grinding work on rails, switches and on installed tracks where access can be difficult – and that particularly quickly.



# JOINT WELDING OF TRACKS AND SWITCHES

With the welding processes we have developed, practically every type of rail and switch type around the world, of various profiles and grades can be continuously welded. This guarantees a safe joint whilst, at the same time, increasing travel comfort and the lifetime of the rails. As an end-to-end supplier, we develop, manufacture and supply all components for our different welding processes.



## THERMIT® WELDING

Thermit® welding is and remains the most flexible, most reliable and most economical welding process for continuously welded rails and contributes significantly to a longer track life and greater safety in rail traffic. Therefore, the process is also predestined for high-speed and heavy-load routes.

As the inventor and global market and technology leader in the field of Thermit® welding, Goldschmidt has been setting standards for continuously welded tracks for 125 years. With our Original Thermit® welding processes, Goldschmidt enables the excellent joining of vignol, grooved and crane rails. Benefit from on-site services at the track construction site by highly trained and efficient welding teams. For internal quality assurance we use our digital Dari® systems, such as the Q-Weld app. This also allows us to provide our customers with quality data on completed welds on request.



## ELECTRIC JOINT WELDING

For joint welding Goldschmidt also offers the E/111 process using rod electrodes and E/114 with self-shielded flux cored wire electrodes. These processes are mainly used for grooved and flat bottom rails on behalf of municipal rail operators or are used where Thermit® welding is not possible due to structural or physical constraints.

### YOUR BENEFITS

- Connection of almost all rails and large switch parts of different profiles and grades
- Guarantees the safe joining of rails while at the same time increasing travel comfort and the lifetime of the rails
- Execution of Thermit® welding as well as electric joint welding with the highest possible quality standards by welders with many years of experience



# REPAIR WELDING OF RAILS AND SWITCHES

Wheel-bearing track elements on subway, tram, light rail and mainline railways, especially in track curves, are subject to high loads. As a result Goldschmidt is frequently commissioned to carry out maintenance work by welding. A large part of this welding work is the reconditioning of switches and frogs and the removal of operational damage.



## FOR A LONG RAIL LIFE

We use mobile working units for the necessary welding work. This also allows work during normal operations without significant restrictions.

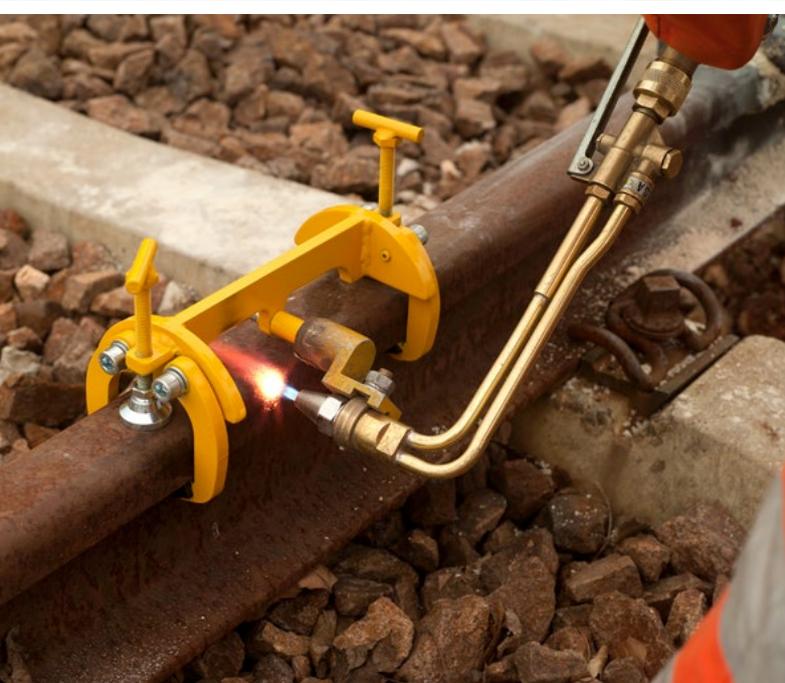
We carry out the work on your track systems using the following welding processes, which we are constantly optimising:

- Submerged arc-welding
- Manual arc-welding
- Flux-cored wire welding
- Repair welding process Thermit® Head Repair

Depending on your requirements, we use special machines to recreate the original profile or the profile you require on the welded rails after the welding.

## YOUR BENEFITS

- Decades of experience
- Flexible and experienced welder teams
- Rapid repair of worn track curves without costly construction measures
- Extension of the service life through the use of highly wear-resistant filler metals
- No restrictions in network availability due to flexible working during regular train and traffic breaks
- Reduction of noise pollution by restoring the original profile



# GRINDING OF TRACKS AND SWITCHES

Use our professional grinding services to maintain your tracks and switches to benefit from considerably reduced rail life cycle costs and lower noise emissions from train operations.



## THE RIGHT SOLUTION FOR EVERY NEED

Using manual and semi-automatic grinding, reprofiling and deburring machines as well as road-rail grinding vehicles, Goldschmidt maintains the quality of your railway tracks – quickly, efficiently and with precision. Our highly trained grinding teams act flexibly and adeptly, and, thanks to our extensive fleet of vehicles, we can process your orders quickly and efficiently.



## OUR RANGE OF SERVICES

- Grinding of new rails for the removal of mill scale or damage from construction work
- Removal of corrugations
- Deburring
- Re-profiling
- Removal of rail defects such as head checks, squats and wheel burns
- Acoustic grinding for considerably quieter train operations
- Switch grinding

## YOUR BENEFITS

- Improved wheel / rail contact for lower wear
- Lower noise emissions
- Preventative rail maintenance
- Flexible use of different grinding processes and devices
- High availability through excellent availability of grinding devices and grinding vehicles
- Rail gauge variable depending on device
- Longer rail service life
- Lower maintenance costs





# WELD TEMPERING OF NEW RAILS

Railway tracks subject to heavy loads experience high wear after just a short time – our factory-tempered rails are perfectly prepared and last longer. Goldschmidt uses its many years of experience in maintenance also for new rails.



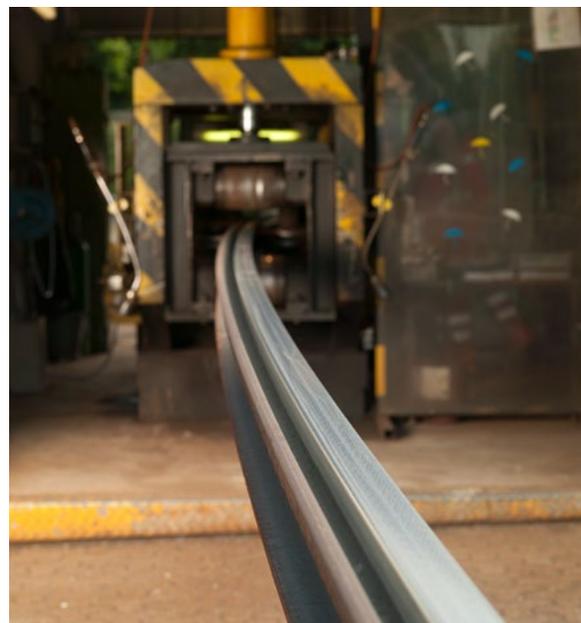
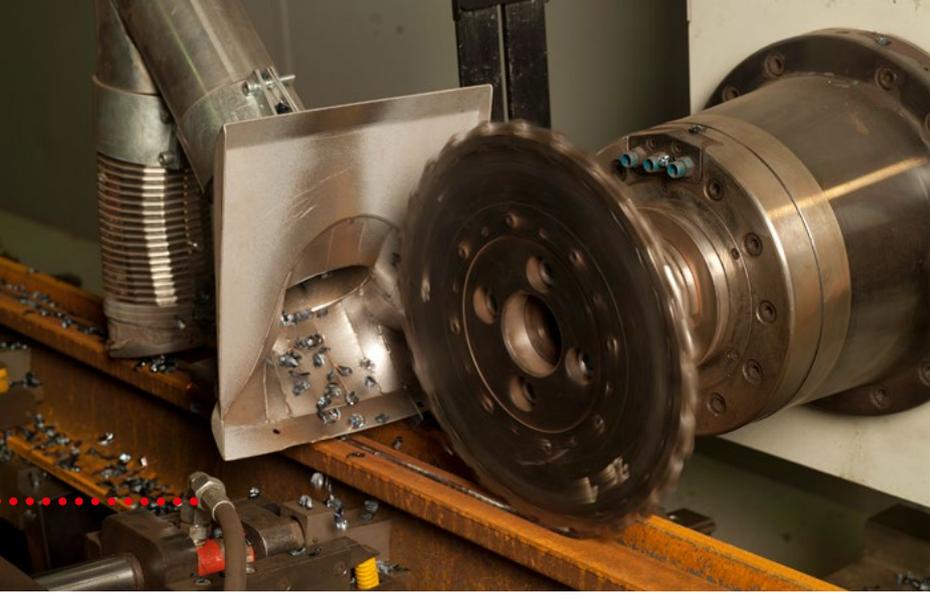
## FOR A LONGER SERVICE LIFE OF RAILS

We weld-temper new rails with highly wear-resistant materials – and you receive a cost-efficient, comfortable and long-lasting product suitable for all new rail projects and renovation work. The reduced surface roughness of the used materials significantly reduces wheel tire wear by more than 90 %. We offer running surface welding for example on tight bends in dense residential areas, which substantially reduces noise emissions. The weld-tempering of new rails is made according to your requirements. For this purpose, we offer you various welding materials developed in-house for the running surface tempering – ET 2000® – as well as for the running edge tempering – ETEKA 5®.

This pays off for you in the long run with a longer service life for your rails, lower maintenance costs and lower noise emissions. And last but not least, it results in improved travel comfort and long-term reliability of rail operations.

## YOUR BENEFITS

- Economic thanks to high wear resistance of the new rails
- Longer service life of rails and wheels thanks to low rail and wheel tyre wear
- Improved rail surface
- Formation of short waves delayed
- Tempering of all common grooved, flat bottom and customized rail profiles
- Flexible adjustment of customised curve radii
- Just-in-time delivery to the construction site



# MEASURING AND TESTING SERVICE

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Higher speeds, heavier loads and increasing demands on travel comfort – the requirements for railway tracks are steadily increasing. Our measurement and testing services ensure that you are able to assess the quality of your railway tracks at any time, guaranteeing you safety and economic efficiency.



## THE RIGHT DEVICE FOR EACH APPLICATION

With the devices developed by Goldschmidt based on our many years of experience, we manage the comprehensive geometrical inspection and documentation of rails and complete railway tracks. In order to evaluate measurements and make them globally available, data can be transferred directly to one of our Dari® software or database solutions and analysed.



## OUR RANGE OF SERVICES

- Measurement and documentation of the track geometry
- Measurement and documentation of rail profiles e. g. for acceptance of maintenance work
- Detection of rail defects by means of ultrasonic or eddy current sensor technology

## YOUR BENEFITS

- Effective and efficient detection of rail defects and track geometry with application-specific measurement technology
- Evaluation and documentation with digital Dari® solutions
- Enabling predictive maintenance



# WE ARE GOLDSCHMIDT

The Goldschmidt success story begins with the invention of the Thermit® welding process which today still defines the worldwide standard for the welding of rails. A global company group was established based on this expertise and passion for innovation which together with you will shape the rail-bound mobility of tomorrow.



## FINDING SOLUTIONS TO BRING YOU FORWARD

Goldschmidt is a unique global network of experts for your railway track requirements and develops smart applications for the railway industry which are exactly matched to your requirements, ranging from the Original Thermit® portion to our digital Dari® products and systems.

Customers on all continents trust in the excellent quality, first-class engineering expertise and proven reliability of Goldschmidt, with the trams of the European transport companies running on the same know-how as the high-speed trains in China. Goldschmidt is your strong partner when it comes to the future-oriented planning and practical development of solutions for railway infrastructure projects according to your respective national requirements with local implementation.



## SMART RAIL SOLUTIONS

Goldschmidt offers a comprehensive range of products and services worldwide for the joining of rails, modern construction of railway track, and inspection and maintenance of your track infrastructure:

**Original Thermit® • Insulated Rail Joints • Welding  
Grinding • Inspection • Tools & Equipment  
Road-Rail Vehicles • Digital Solutions**



## SMART RAIL SOLUTIONS

Together with you, Goldschmidt masters the challenges of modern, railbound mobility – for safe, sustainable and long-lasting railways of premium quality. As with Thermit®, Goldschmidt is also a pioneer in maintenance, inspection and digitalization and continues to improve processes and extend the lifecycle of railway infrastructure. Goldschmidt benefits from its global expertise and cross-disciplinary thinking to create tailor-made local solutions for you. The global presence of Goldschmidt gives you access to its whole portfolio – with one goal: to lead your railway infrastructure into the future.