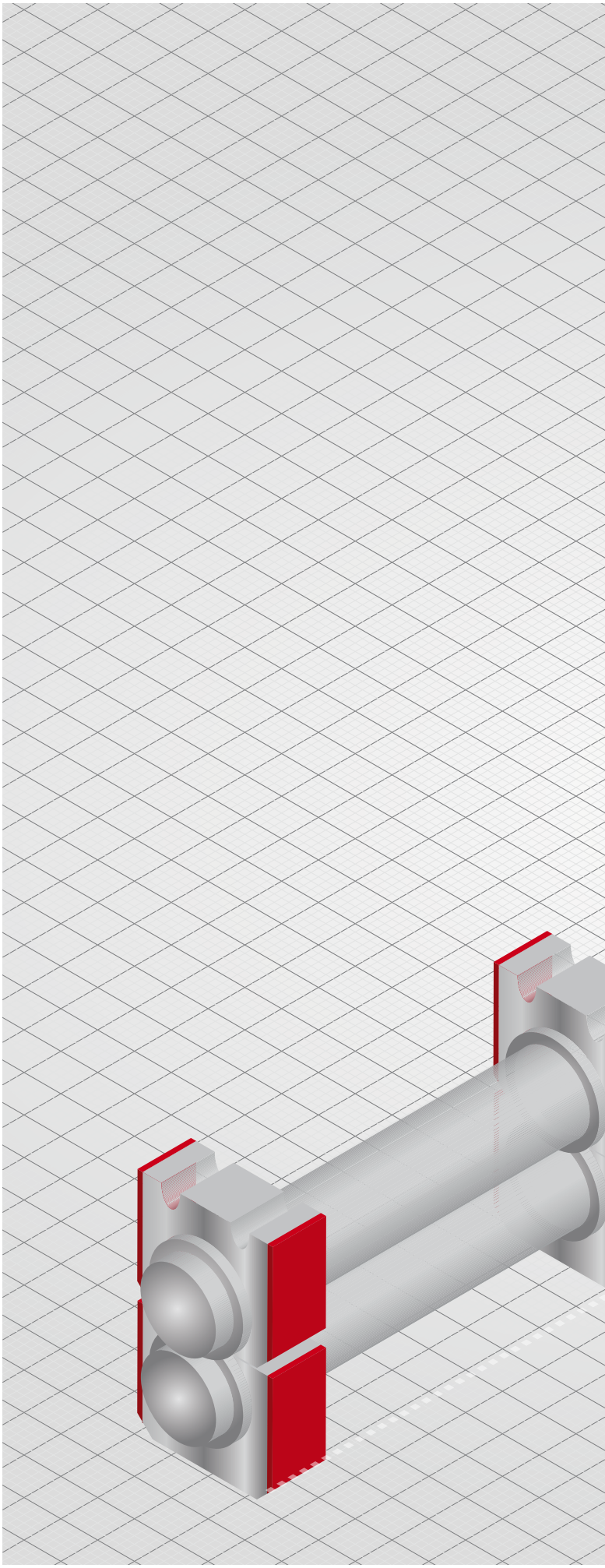
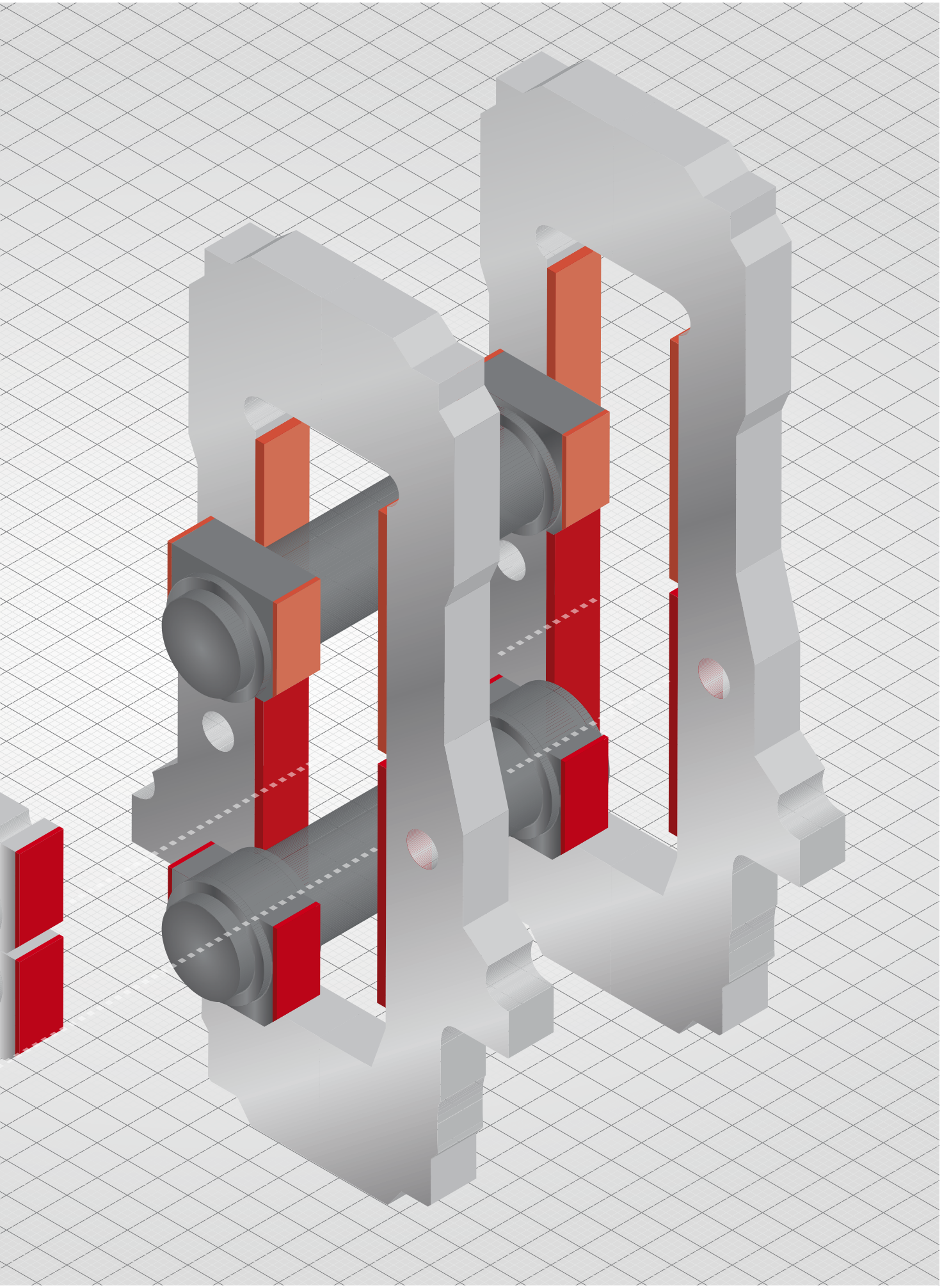
Precision flat bearings

CORTS
Präzision seit 1835

Minimal wear.
Maximum efficiency.

Contents





The family business CORTS

Jochen Corts the CEO and his son Alexander Corts of CORTS Engineering GmbH & Co. KG

Runar Corts the CEO and his son Willem Corts of Josua CORTS Sohn GmbH & Co. KG

CORTS is the leading international specialist for plant efficiency with a special focus on rolling mills and sintering plants: Our precision wear parts and guiding elements guarantee minimum wear and maximum precision thanks to our original CORTS compound steel and over 90 years of know-how in the field of wear protection and production.

As your partner for engineering services, we are pleased to offer you advice and assistance. We specialize on problem solving for spare parts and full turn key solutions.

The family business CORTS stands for precision “made in Germany” with a history of over 175 years. Founded by a tool smith, today we serve customers all over the world from our location in Remscheid. Our focus lies in steel and aluminium rolling mills and the mechanical engineering applications related to them. Our strength lies in optimizing the mill stand and chock geometry and increasing the efficiency of the rolling process and production.

We rely on approximately 100 experienced and skilled employees and a close-knit network of international sales partners. Together we offer a wealth of experience and a solution oriented relationship to our customers.

Precision since 1835

1835

From a one-man company to the global market leader. From wood to steel. From product manufacturer to consulting and service-oriented solution provider. The central focus: Precision.

1905

With the rise of the industrial revolution at the beginning of the 19th Century the craftsman business expanded into the CORTS enterprise.

1925

The industrial revolution was in full swing. CORTS laid the foundation for a steam engine, an industrial production, which in turn led to their ascent as the global market leader.

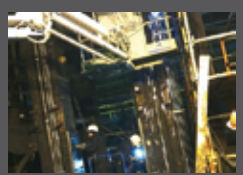
1957

In the course of the reconstruction after the 2nd World War, CORTS turned its attention to the aspiring steel industry, which experienced a boom in the course of the reconstruction and economic growth.

2005

Based on decades of experience increasing the efficiency of rolling mills, it was a logical step to establish CORTS Engineering GmbH & Co. KG, which develops pragmatic problem solving from spare parts through to complete turnkey solutions as your partner for engineering services.

2010

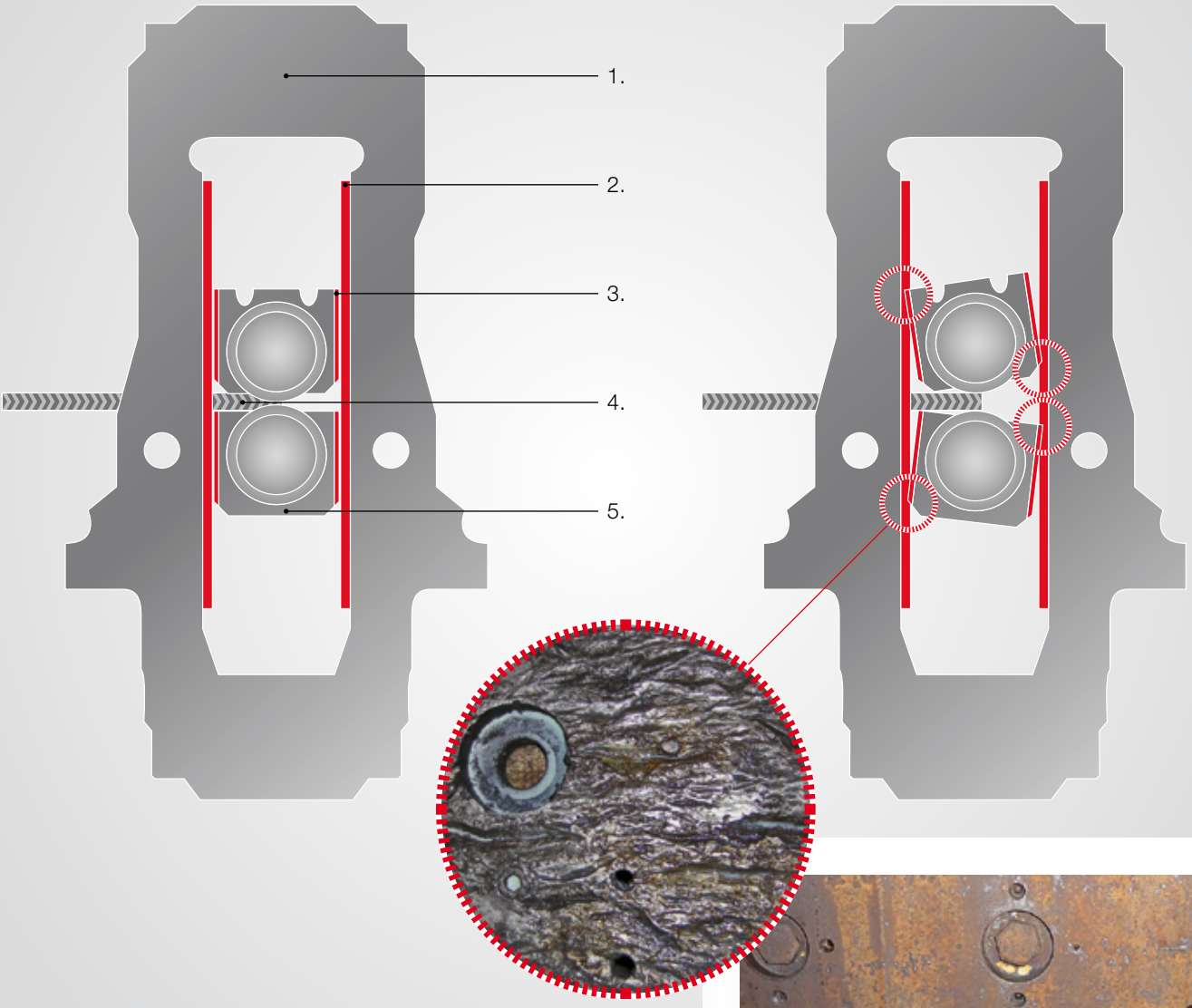


From the drawing-board to reality – The goal of CORTS Engineering is the detailed analysis and optimization of the mounting areas of CORTS products. CORTS has successfully conducted numerous turnkey refurbishments of mill stands and the related chock fleet. This creates the base for an efficient rolling operation with higher quality products lower maintenance costs and increased profits.

The challenge of wear

a) optimized mill window with tighter tolerances

b) inefficient mill window with increased gap through liner wear



1. Mill stands
2. Housing Liner
3. Chock Liner
4. Rolled material (Kinetic energy f.r.t.l.)
5. Chocks

Abrasion and corrosion increases the total mill clearance between chock and housing. This bearing gap is further compromised by point loads and damaged surfaces.

Rusted wear plates conventional quality

In today's competitive global markets, Rolling mills are faced with the challenge to guarantee the highest quality of the rolled product. Maintaining tight mill window clearances enables long term rolling mill efficiencies.

THE PROBLEM: If mill stands and chocks are equipped with conventional wear plates made of C45, tool steel or bronze, the effects of abrasion, impact loads and corrosion lead to accelerated wear of the liner. This decrease in liner thickness increases the gap between chocks and housing which in turn damages other components and creates axial forces.

Competitive advantage through precision

25 % hard steel
protects against corrosion, abrasive and impact wear

CORC-g-Standard
62 +-2 HRc

CORC-g-Stainless
54 +-2 HRc

75 % soft steel
protects the housing and chocks' machine surfaces

CORC-g-Standard
400-500 N/mm²

CORC-g-Stainless
300-400 N/mm²

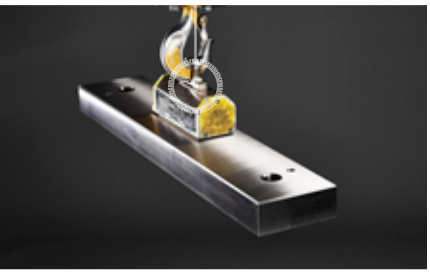
Precision flat bearings
by CORTS

These wear issues lead to tilting, oscillation and displacement of the chocks, horizontally and vertically (cross rolling). The work and back-up roller bearings, chock clamping mechanism and the chock bodies are exposed to excessive strain. The results are high repair and spare part costs along with unscheduled downtimes and rolling errors in the final product quality (chatter marks, ripples, skid marks, strip breaks, cobbles etc.).

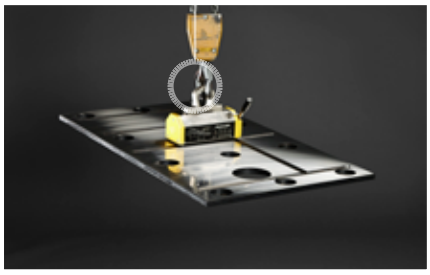
THE CORTS SOLUTION: Precision flat bearings made of CORC-g compound steel. The wear is significantly minimized as a result of the hard, abrasion and corrosion-resistant guiding surface. A decisive competitive edge for every rolling mill.

CORTS compound steel

Surface-hardened
pressure plate



Standard
precision flat bearing



Standard
precision flat bearing

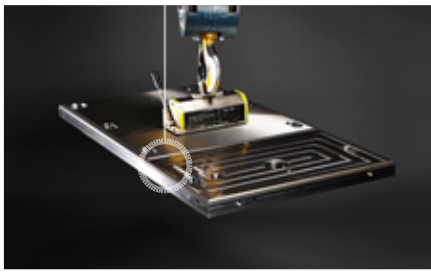
In contrast to conventional hardened wear parts, our precision flat bearings are made of original CORTS compound steel. Here the advantages of two different materials are united: The solid, hardened gliding surface is comprised of high quality bearing steel, optionally available in stainless and corrosion protected grades. The base material or shock absorbing portion is a low carbon ductile material. This unique material combination acts as protection against wear and corrosion – and offers protection of the mounting surfaces.

Depending on the field of application, our precision flat bearings are either made out of “CORC-

Unique quality, multiple applications

Wear plate for mill stand with collar

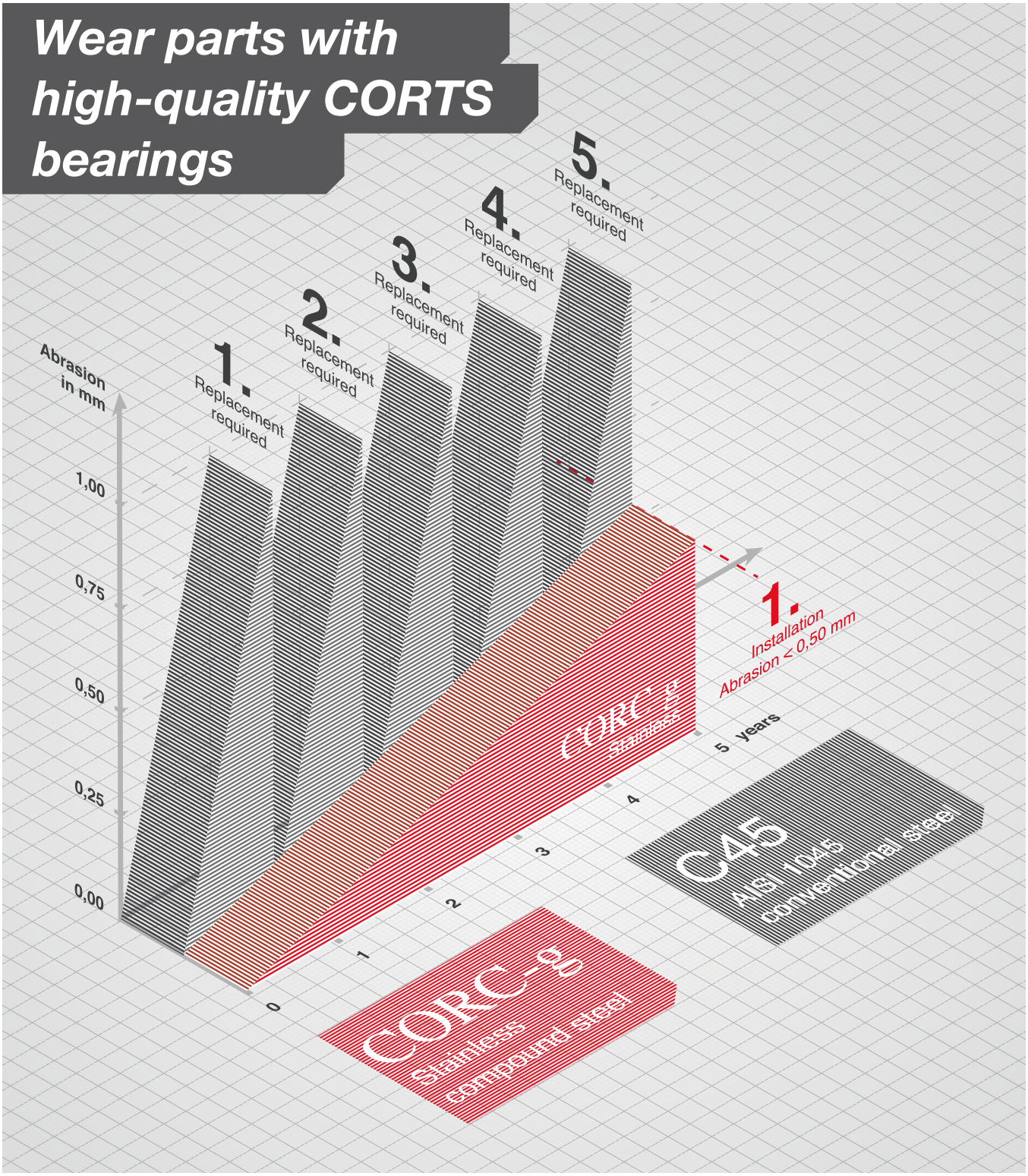
Wear plate with recess



g-Standard“, “CORC-g-Stainless“ or “CORC-g-Tool Steel”. “CORC-g-Standard“ is installed in applications where corrosions is not present. The wear surface is 60 to 62 HRc. “CORC-g-Stainless“ should be utilized in areas where corrosion is present. These wear surfaces are 56 to 58 HRc. We also produce a through hardened tool steel (available in stainless) for other bearing elements such as roll change rails or bed plates.

The hardness of the gliding surfaces ranges from 56 to 62 HRc, depending on the chosen material and the thickness of this hardened layer makes up 25% of the overall material thickness.

Wear parts with high-quality CORTS bearings

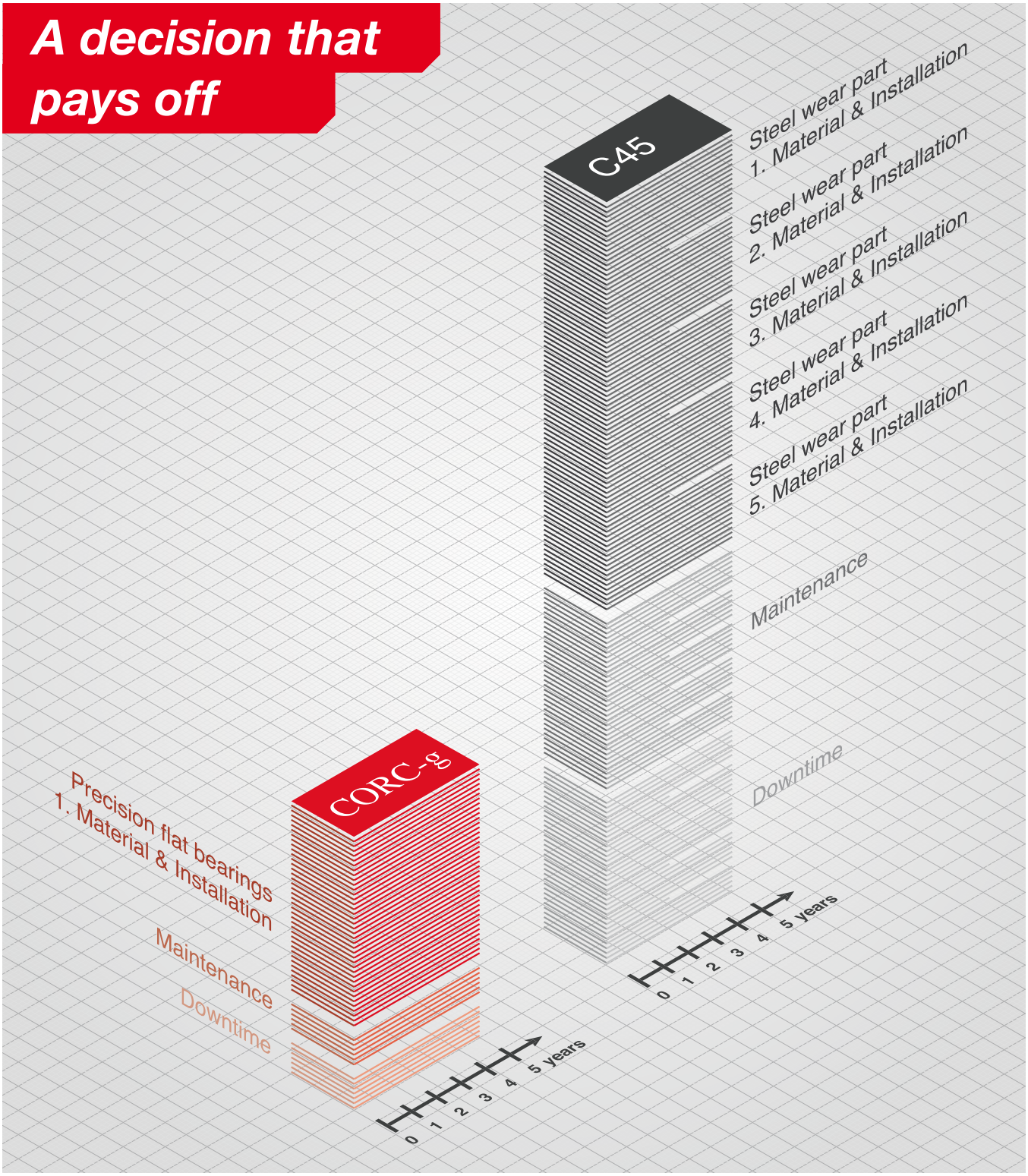


Wear is unavoidable due to the effects of abrasion and corrosion. The results are damaged components, plant shutdowns, less precision and lower levels of product quality. In order to control the wear in the past, different materials were used on chocks and housing so that the softer and worn components could be easily replaced. These wearing liners have to be replaced at regular intervals in order to guarantee the desired production precision and tight rolling mill window clearances.

However, every replacement leads to the standstill of the plant, production losses and ultimately high costs of the frequent liner replacement.

In comparison to conventional wear parts made of C45, hardened tool steel or bronze, our tailor-made precision wear parts made of CORTS compound steel are significantly less prone to wear. Furthermore, CORTS' products and 90 years of production know-how guarantee maximum precision for very long periods, while the ma-

A decision that pays off



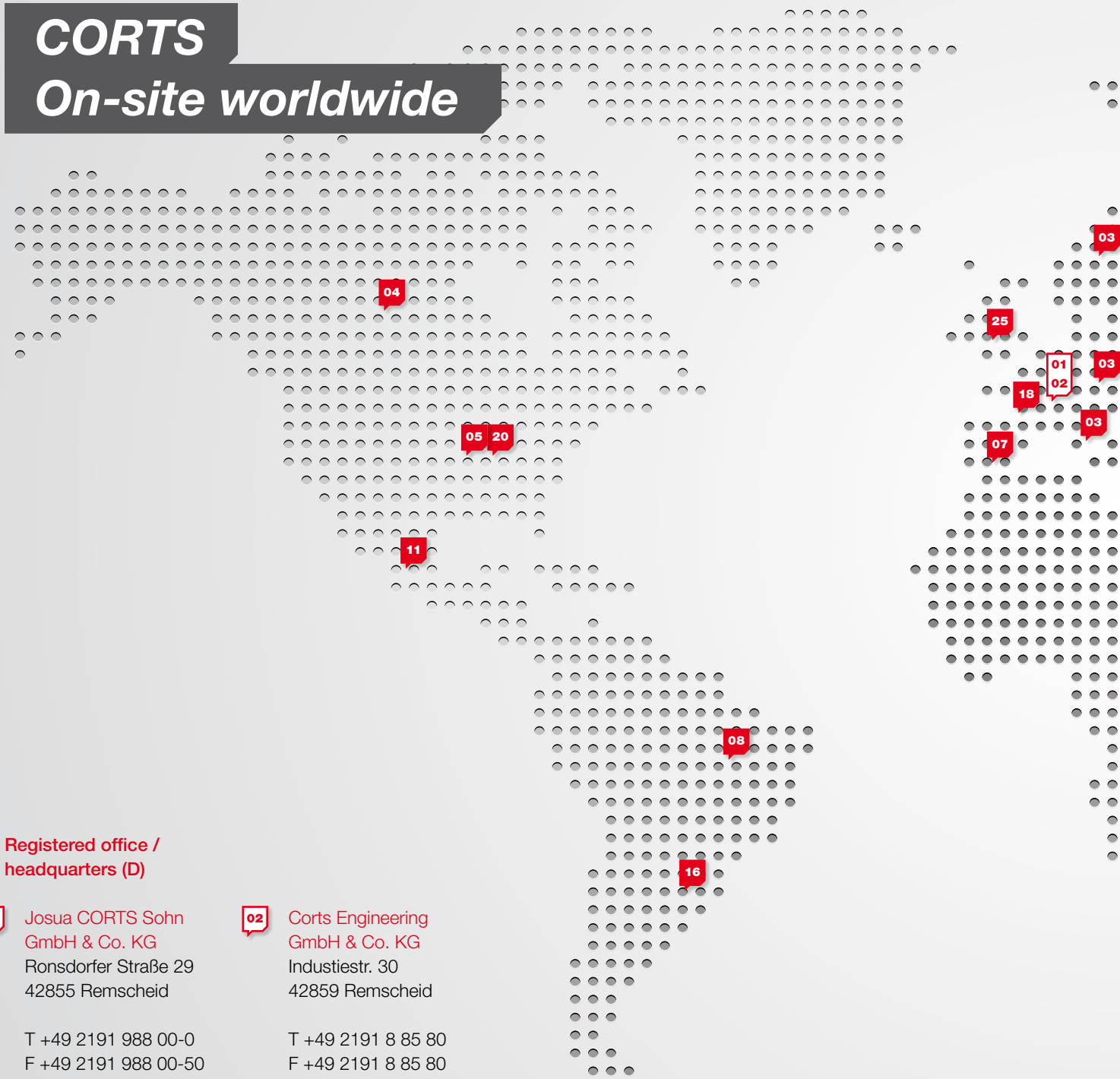
chine bodies of the plants are protected. Based on the absence of wear, CORTS produces precision flat bearings and gliding liner elements rather then the traditional wear liner.

Most mills which are outfitted with CORTS compound steel experience 5 times and in some cases up to 10 times the life of traditional liner materials.

The initial purchase cost of our precision flat bearings for rolling mills is slightly higher than conventional wear parts due to the high material quality and complex production process – mid-term and long-term the investment certainly pays off: Using components made from CORTS compound steel enables you to reduce wear, maintenance costs, and downtimes to a minimum.

Mill operators and maintenance staff will benefit from permanent precision, optimal production quality and high plant efficiency while simultaneously reducing the Total Cost of Ownership.

CORTS
On-site worldwide



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Why CORTS?

Over 90 years
production know-how

Exclusive supplier
of CORTS compound steel

Specialist for
rolling mill plant efficiency

Consulting expertise and
solution-oriented

Why precision flat bearings made of CORC-g compound steel?

Minimal wear

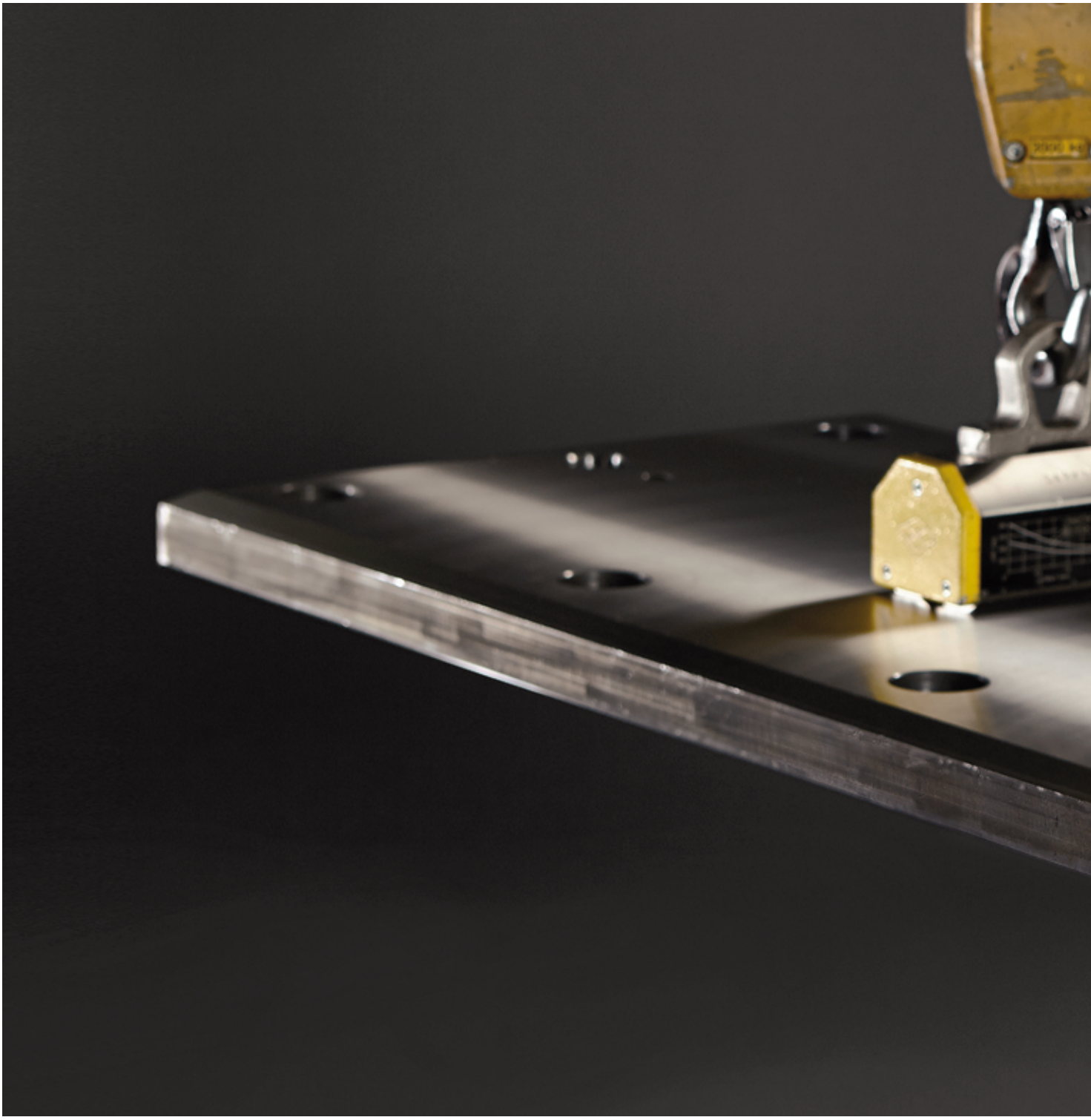
Long-term precision

Minimum standstill and downtimes

Significantly lower maintenance costs

Constant highest product quality

Improved efficiency



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