PREVENTIVE MAINTENANCE

dMT ECOTECH



CRANE PORTFOLIO

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Why dMT Ecotech®

Sustainable technical solutions for crane systems

Reduced Wear

Our coating systems reduce wear on
wheels and rails.

Less Maintenance

Reduced downtime, lower costs, and better system availability in 24/7

More Sustainability

Longer service life lowers resource use and helps protect the environment.

dMT Ecotech® GmbH is an internationally active specialist for **preventive maintenance of crane and rail systems** with a focus on **ports and container terminals**. The core focus lies on technical solutions for optimizing **RTG, RMG and STS cranes**, where **high loads, continuous operation and limited maintenance windows** place maximum demands on reliability and cost efficiency. The objective is the systematic reduction of wear and consistently high **system availability in 24/7 operation**.

The core of the portfolio consists of **SPC® anti-wear systems** for highly stressed **wheel/rail pairings**, complemented by technical services such as **wheel and rail reprofiling**, installation and maintenance of protection systems. We see ourselves as a technical partner: solutions are **readjusted** according to requirements and combined with the necessary specialist expertise.

The decisive benchmark is always **uninterrupted, economical terminal operation**. In addition, dMT Ecotech® supports other industries with continuously operated systems. The headquarters are located in Grasbrunn near Munich.

Quality Meets Experience

For 25 years, dMT Ecotech® has been developing **quality solutions from Germany** that reduce resource consumption through targeted **wear reduction, extend life cycles** and contribute to the sustainable operation of crane systems.

OUR SERVICES

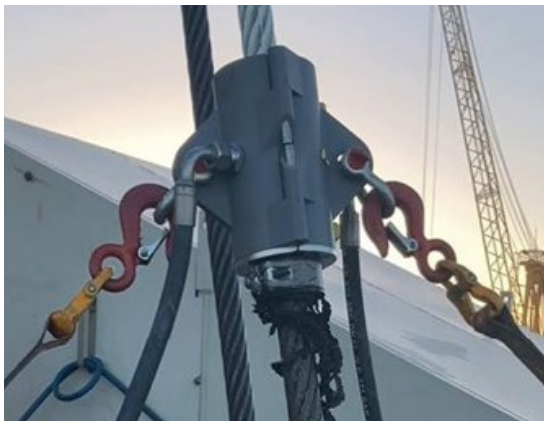
Independent Quality for Your Systems

Our portfolio **comprises coordinated solutions** for crane operation in terminal environments.The following components are functionally interconnected and address key interfaces of **wear, maintenance and operational safety** – with the objective of holistically supporting **availability and cost efficiency**.



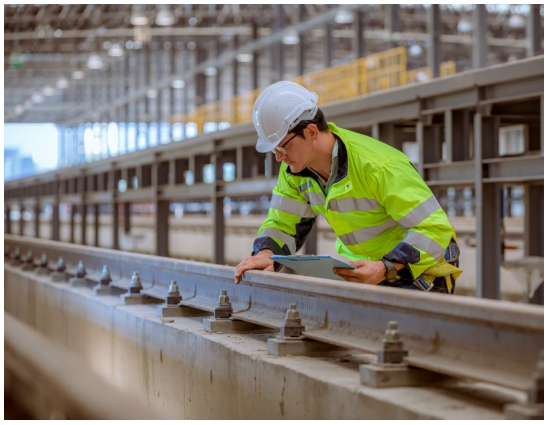
SPC® Wear Protection

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CHALLENGE



What is the remaining service life of your crane wheel?

Crane wheels and their components do not have an unlimited service life in terminal operation. **Wear and material fatigue** result from load cycles and usage, not from time. H**igh wheel loads, continuous operation and geometric deviations** increasingly cause wear, especially on running surfaces and flanges.

Did you know ...

... that the life cycle of a crane wheel in intensive terminal operation is often only a few years and strongly depends on wear management?

With increasing utilization, **maintenance effort, disruptions and costs rise**. Without targeted **wear and life cycle management**, availability and economical **24/7 operation** cannot be ensured permanently.

80%

Wear Reduction

Reduces **unplanned downtime**, lowers **maintenance costs** and supports reliable **budgeting and maintenance planning** during ongoing terminal operation.

3x to 5x

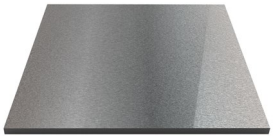
Extended Service Life

Increases **system availability**, extends reprofiling intervals and sustainably improves the **overall cost structure** throughout the life cycle of crane systems.



Before

Microscopically small contact areas at the wheel-rail interface create high pressure loads and lead to material fatigue.

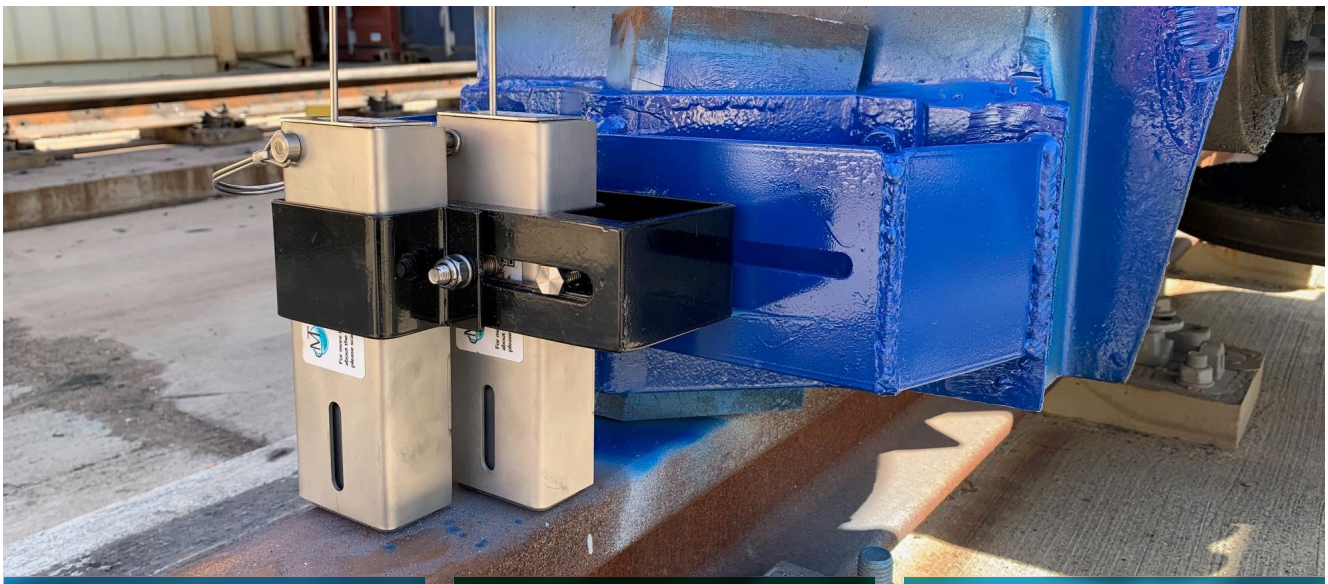


After

The wear protection element bonds evenly to the metal surface, gradually fills it up, and distributes the pressure uniformly.

TRACTION COATING

SPC® adhesion blocks address applications where force transmission, traction and running stability are the primary focus, particularly under high loads and changing operating conditions.



Application

SPC® adhesion coatings are used wherever high **acceleration, braking or lateral forces** must be transmitted reliably. Typical applications include **running surfaces of drive wheels and the rail head**. The objective is stable force transmission with **a controlled increase in the coefficient** of friction to sustainably reduce slip, unstable travel movements and wear-intensive load peaks.

Friction

The coefficient of friction modification achieved by SPC® adhesion blocks to **0.35µ increases** the effective coefficient of friction in a controlled and reproducible manner. The objective is not maximum friction, but **stable, uniform force transmission**. This reduces **micro-slips**, uneven load distribution and localized peak loads, which typically lead to increased wear on running surfaces and wheel flanges.

Advantages

SPC® adhesion blocks provide **an effective anti-slip characteristic** and ensure stable force transmission even under high loads. They are **pressure-resistant** and create a **permanent, continuous coating** that builds up evenly during operation. The solution is **environmentally friendly** and supports reliable, predictable system operation.

SLIDING COATING

SPC® sliding blocks are designed for applications where **wear reduction and material protection** under controlled low coefficients of friction are the primary focus.



Application

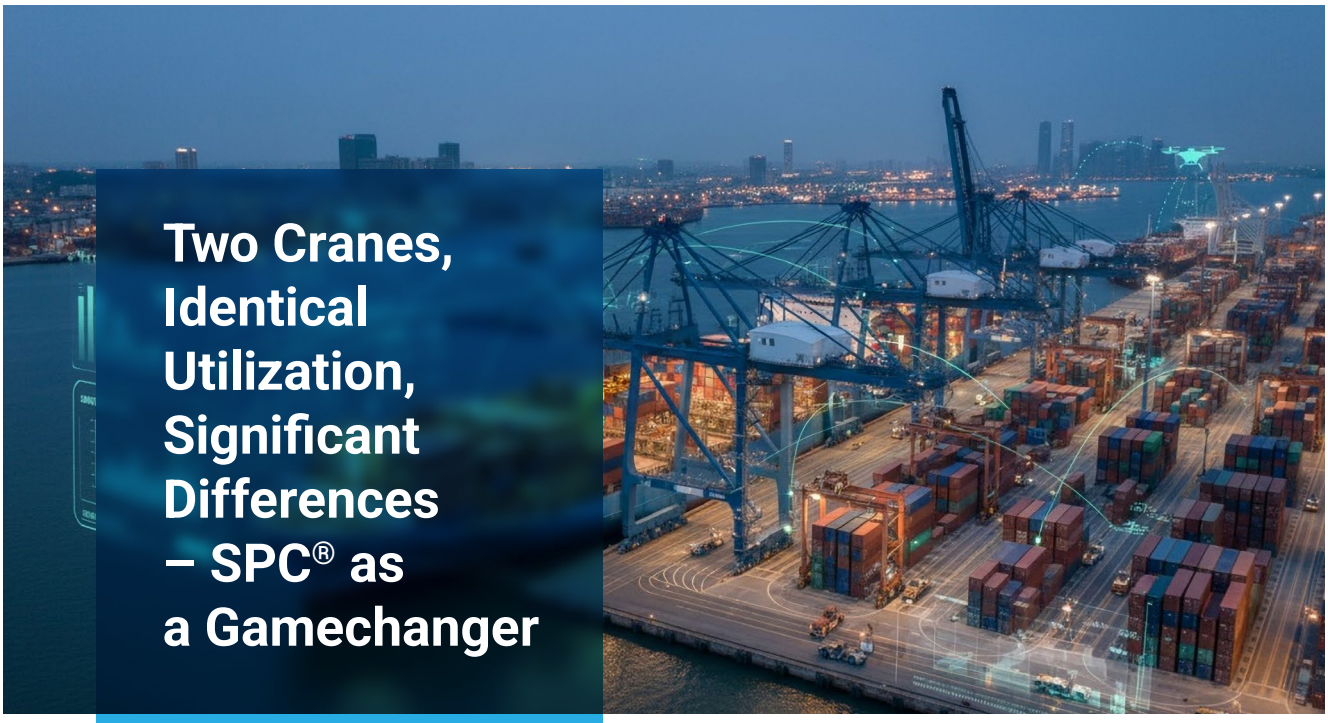
SPC® sliding coatings are specifically used in areas where **material fatigue, friction and lateral contact forces** dominate. These include **guide wheels, wheel flanges and rail flanks**. By reducing the coefficient of friction, contact stresses are distributed, abrasion minimized and the conditions for lower wear and extended service life are created.

Friction

By specifically reducing and stabilizing the coefficient of friction to **0.04µ**, SPC® sliding blocks reduce **surface stress, abrasion** and localized heat generation. The coefficient of friction modification is controlled and uniform, **distributing contact stresses** and slowing harmful wear mechanisms. This supports uniform consumption of the design life across all involved components.

Advantages

SPC® sliding blocks are **graphite-free, metal-bonding** and weather-resistant. The coating does not migrate and remains effective even under **high surface pressure**. This reduces friction and material fatigue without negatively affecting the contact geometry. The solution is also **environmentally friendly** and designed for demanding operating conditions.



Two Cranes, Identical Utilization, Significant Differences – SPC® as a Gamechanger

A measurement series was conducted in a direct comparison between two identical cranes that completed the same number of operating hours over the same period. The only difference:

- **Crane A continued operating unchanged**
- **Crane B was equipped with SPC®**

Subsequently, wear on **wheel flanges and rails** was measured and compared over time (see adjacent table).

Empirical Measurement Series Confirms an Average Wear Reduction of 85%

Within the first **4 months,** it became evident that the wear rate in the millimeter range decreased and that SPC® had a significantly positive effect on service life. Our wear protection system reduced average wear rates from **1.71 mm to 0.24 mm** during the test period.

	Wear protection without SPC®	Wear protection with SPC®
Wheel 1	0,33 mm	0,03 mm
Wheel 2	0,13 mm	0,08 mm
Wheel 3	1,13 mm	0,05 mm
Wheel 4	1,80 mm	0,40 mm
Wheel 5	1,80 mm	0,10 mm
Wheel 6	1,40 mm	0,50 mm

The direct comparison shows – SPC® stabilizes material loss by **optimizing the coefficient of friction** and sustainably prevents wear on contact surfaces. Achieve **measurably longer service life** and improve the **life cycle costs** of wheel and rail systems.

High Return-on-Investment

with an average of **30% per wheel replacement interval** and a reliable system amortization.

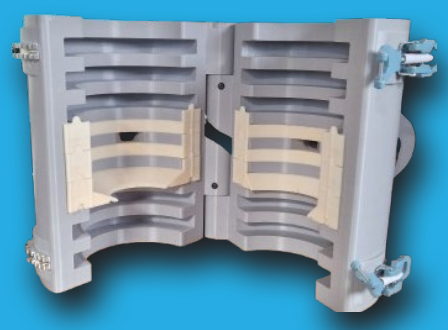
CHALLENGE

Hoist ropes in crane systems are exposed to high tensile forces, changing loads, and environmental influences, making wear, corrosion, and lack of lubrication critical issues.



The WRL system cleans and lubricates wire ropes in a single operation.

- 3D-printed threaded components for **100% precise fit**
- Modular design for cost-efficient spare parts
- Fast adaptation to different rope diameters

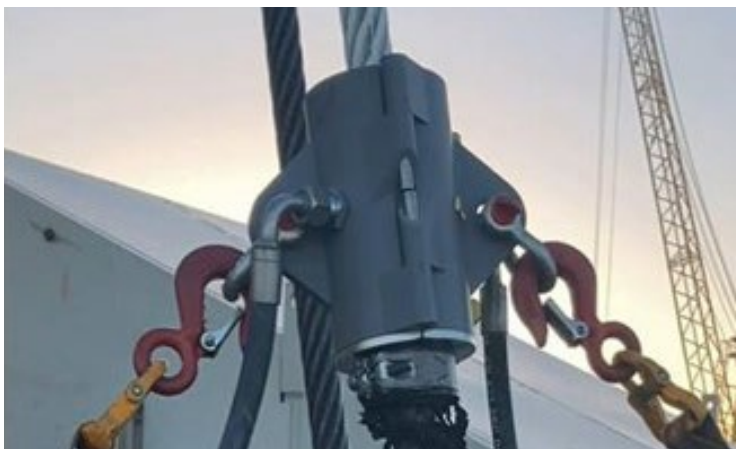


Performance that matters.

90%

Reduces manual effort by up to **90 %.**

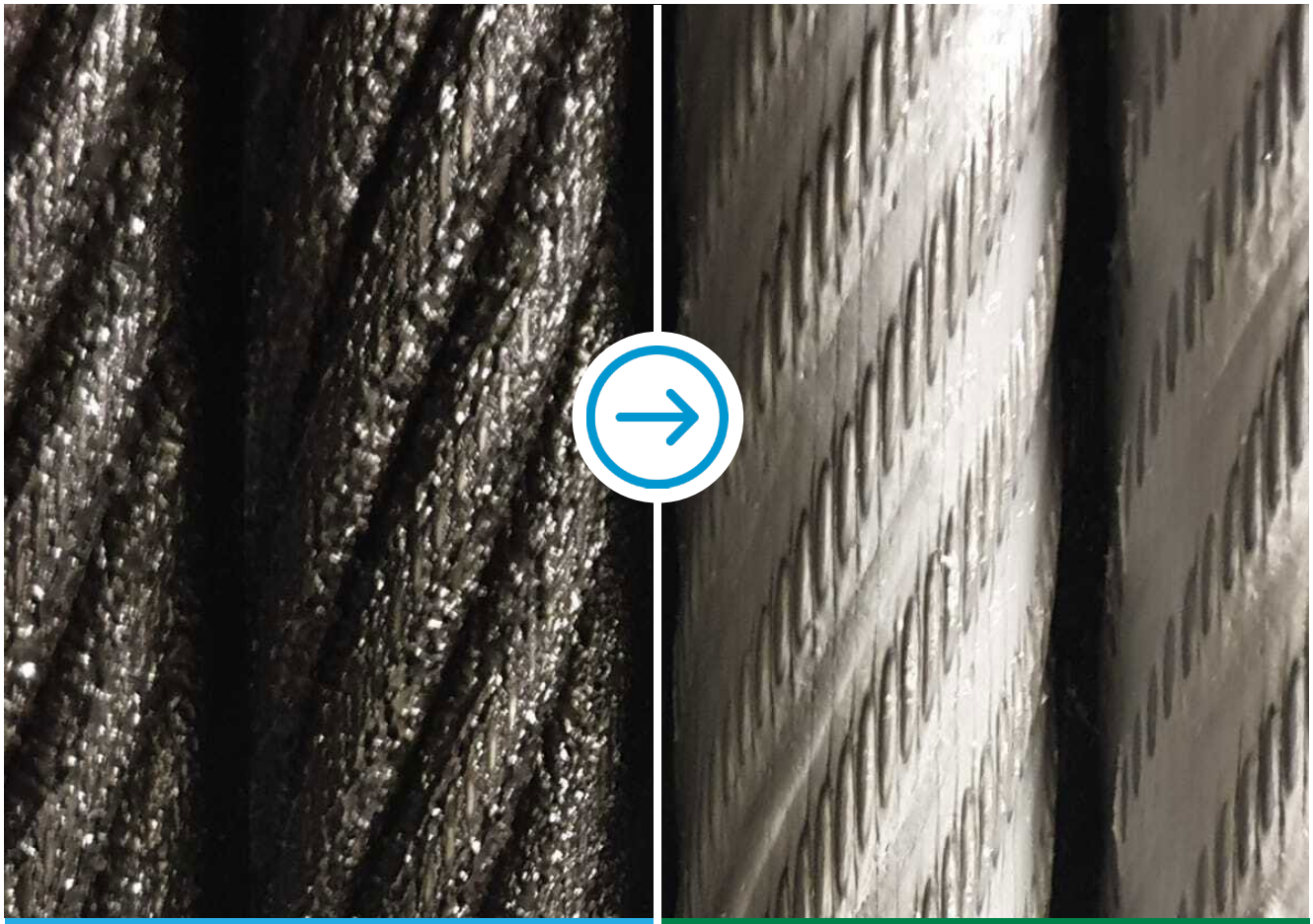
Significantly extends the service life of wire ropes during crane operation.



COMPARISON

Manual vs. Automatic Rope Lubrication

Manual lubrication predominantly reaches only the outer wire layers of the hoist rope, while the **rope core remains largely unprotected**. Effective lubricant penetration is often not achieved. The process is **time-consuming**, inefficient and associated with increased occupational safety requirements. Automatic lubrication systems provide clear added value here: they enable **uniform, controlled lubrication, reduce wear** and increase both safety and service life during operation.



Before

The image on the left shows a hoist rope in an advanced operating condition with pronounced **dirt deposits** and adhering particles in the outer rope area. The surface appears dry, uneven and heavily stressed. These characteristics indicate insufficient **lubricant penetration** and are a typical indicator of increasing **maintenance risks**.

After

The image on the right shows a freshly lubricated hoist rope with a clean, **uniformly coated surface**. The lubricant is evenly applied to the rope and effectively protects the outer wires. This improves contact conditions, reduces **friction** and extends **service life**.

SERVICES



Consulting

With sound consulting expertise, we create the basis for **efficient and economical solutions**. Together, we identify **optimization potential** and develop customized concepts for your system.

Analysis

Precise measurement creates transparency regarding the **condition of your system** and identifies required action at an early stage. This establishes a reliable basis for **targeted optimization** and sustainable improvements.

Repair

Our repair services ensure that critical components are quickly and professionally returned to operation. This reduces **downtime** and ensures **smooth system operation**.

Prevention

Preventive measures enable **wear and consequential damage** to be minimized at an early stage. This increases the availability of your system and sustainably reduces maintenance effort and **operating costs** over the long term.

Optimization of Crane Systems for Higher Availability and Lower Costs

All previously presented solutions and services pursue one common objective: sustainably optimizing crane systems, **reducing wear and increasing availability.** This **minimizes downtime**, improves processes and lowers costs over the long term.

Whether wear protection, lubrication systems or technical services – every measure contributes to protecting components, specifically reducing wear and **sustainably lowering maintenance effort**. In this way, operating processes can be stabilized, **unplanned downtime avoided** and maintenance measures planned far more effectively. This not only ensures greater **operational safety** and longer service life, but also significantly improved **cost efficiency for the entire system**.

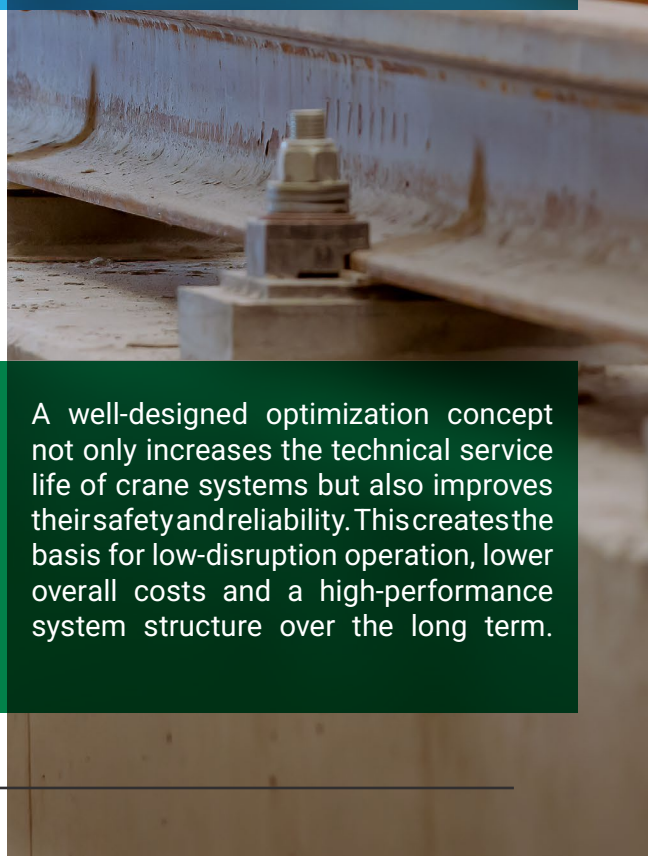


Higher Efficiency During

Optimized crane systems operate more reliably, consistently and with lower wear. As a result, operating processes are stabilized and downtime is reduced to a minimum. At the same time, the effortrequired for unplanned maintenance operations and short-notice repairs decreases.

Fewer Failures. Higher Cost Efficiency.

The reduction of wear has a direct impact on the **cost efficiency of a system**. Longer component service life and reduced maintenance effort ensure that **operating costs can be permanently lowered**.



Long-Term Security for Your System

A well-designed optimization concept not only increases the technical service life of crane systems but also improves their safety and reliability. This creates the basis for low-disruption operation, lower overall costs and a high-performance system structure over the long term.

LET US OPTIMIZE YOUR CRANE SYSTEM TOGETHER.

Customized solutions for reducing wear, extending service life and increasing availability during ongoing crane operation.

ANALYSIS. OPTIMIZATION. PREVENTION.

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