MINERAL COATING TECHNOLOGIES

MICOTECH

Coating technology

Kaluga

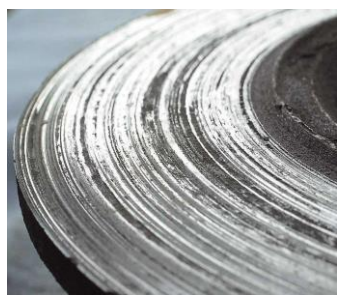
2025

PROBLEMS - SOLUTION


Twist friction


Friction


Corrosion


Wear


Aggressive environment


Adhesion

Micotech mineral coatings increase the service life of parts in case of adverse effects

Up to **13x**

Up to **6x**

Up to **5x**

Up to **12x**

Up to **5x**

Up to **150x**

History of MICOTECH technology

MICOTECH technology is based on the idea of V.I. Vernadsky on the influence of minerals on the properties of metals. The idea was developed by Soviet scientists, but only in 1999 engineer Valentin Grigoryevich Kislov began work on creating wear-resistant coatings.

2009

Issuance of a patent No. 84280 "Installation for applying combined mineral coatings"

2011

Issue of patent No. 2421548 "Method of forming a combined mineral surface layer on metal parts, protecting them from the effects of aggressive environments and with specified tribotechnical properties."

2014

Establishment of the Research and Production Center "Mineral Coating Technologies"

2018

The first orders for European industrial enterprises were completed

2024

SILVER MEDAL

For the project "Method of protecting the propeller and shaft from corrosion"

XXVII Moscow International Salon of Inventions and Innovative Technologies

Types of MICOTECH coatings

MWRAFC

Wear-resistant combined mineral coating is formed on the surface of the product to increase strength characteristics and reduce abrasion by abrasive particles.

MAFC

Anti-friction mineral coating is formed on the surface of the product to reduce friction and has anti-scuff properties. In some cases, operation in limited lubrication or "dry" friction mode is possible.

MAACRC

An anti-friction mineral coating with increased corrosion resistance is an inhibitor that protects the surface of the product from the effects of aggressive environments, such as salt fog, steam with hydrogen sulfide.

MAADHC

Wear-resistant anti-adhesive mineral coating forms a layer that prevents the substance from adhering to the surface of the part (welding spatter, copper plating, lead plating, carbon deposits, etc.), prevents the gluing of sedimentary dust particles on the surface.

TECHNOLOGY APPLICATIONS

MICOTECH

Railway transport

Oil and Gas

Power engineering

Metallurgy

Mining

Shipbuilding

Constructions

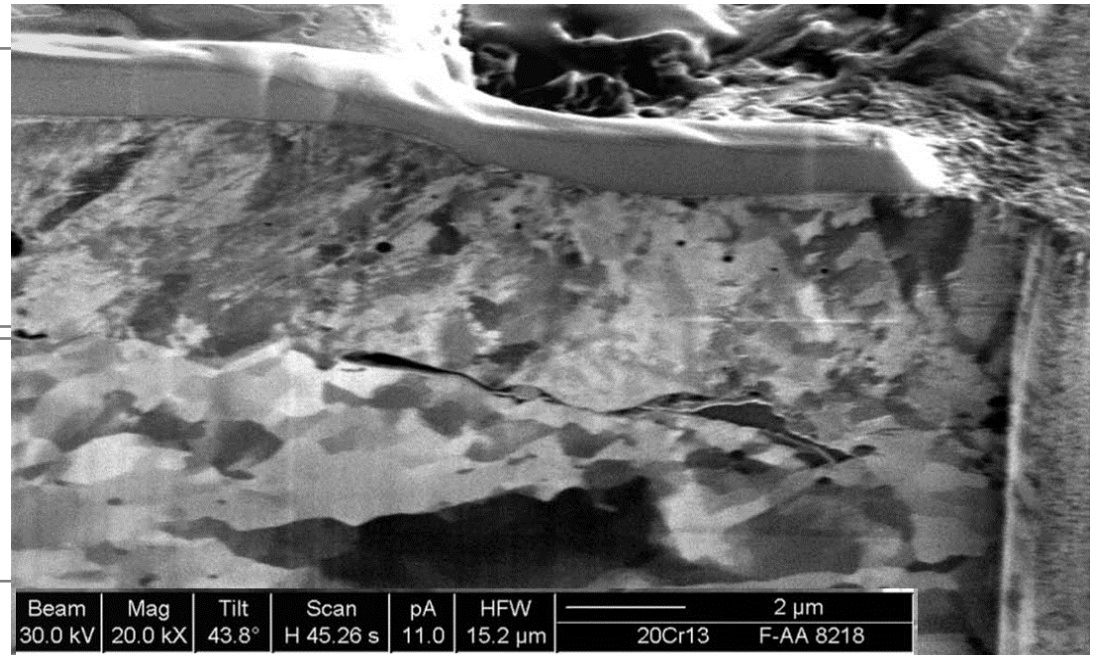
Automotive

COATING STRUCTURE

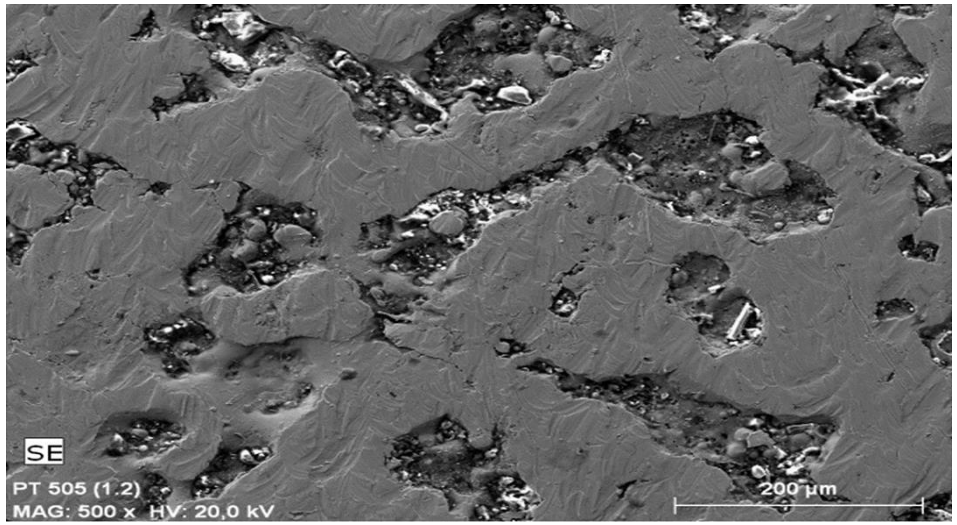
Modified layer

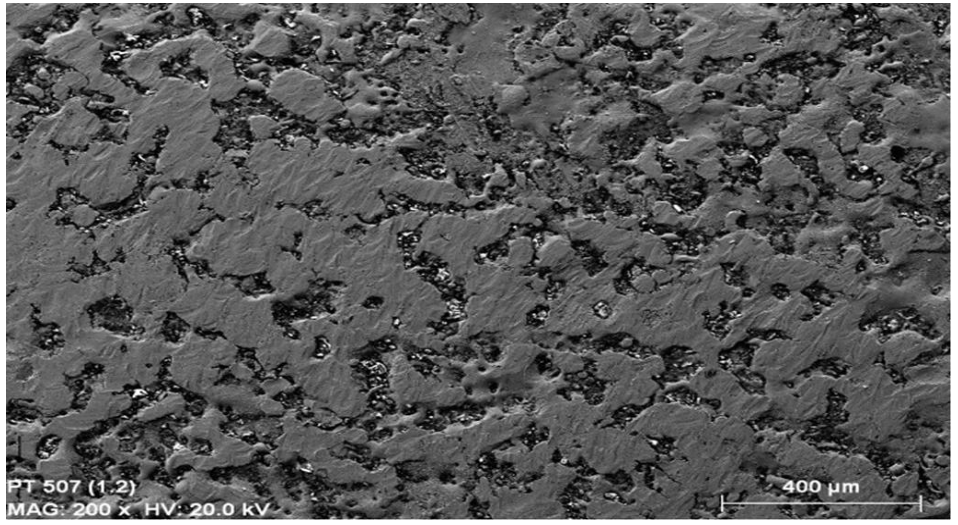
5-50 microns

Base metal



Modified surface closer view, in 500 times





Modified surface closer view, in 200 times

MICOTECH technology vs existing methods of coating

	Temperature of coating process, ºC	Part's deformation after coating	Size and shape limits of parts	Coating thickness, μm
MICOTECH	90	No	No	5-50
Nitriding	500	Yes	Limited by size of the bath	3 - 5
Carburizing	800	Yes	Limited by size of the bath	1 - 3
Electrolytic Coating	450	Yes	Limited by size of the bath	1000
CVD	800	Yes	Limited by size of the vacuum chamber	4 - 7
PVD	450	Yes	Limited by size of the vacuum chamber	2 - 4

MICROTECH environment policy

No harmful emissions, drains, effluents or waste

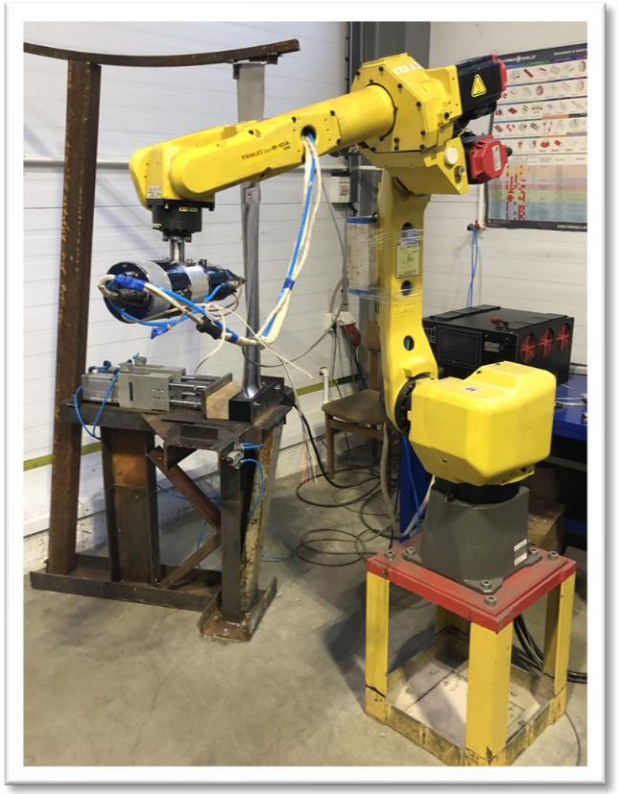
Raw materials - minerals of natural origin

MICOTECH – clean technology that saves!

The technology replaces harmful processes: galvanic, thermal, chromonitritization

The technology reduces electricity consumption by up to 37%

MICOTECH MANUFACTURING FACILITY



Implemented solutions of MICOTECH

Nozzle of welding machines

Period of use was increased in

150

times, from 1 to 150 days.

Place of operation – VOLKSWAGEN GROUP RUS

Manufacture of the parts – Fronius

Implemented solutions of MICOTECH

Roller conveyor of mill 700

Standard period of use - 8 months,
600 ktons of hire.

Lifetime was increased in

5 times

Period of use after Micotech coating -
40 months,
3 375 ktons of hire.

Place of operation – ОЭМК

Manufacturer of the part – SMS group

Implemented solutions of MICOTECH

Loop roller

Period of use – 8 days,
19,87 ktons of hire,
wear – 2,4 mm.
Roller is broken.

Lifetime was increased in

8 times

Period of use after Micotech coating – 80 days,
172 ktons of hire.
Roller is used.

Place of operation – NLMK

Manufacturer of the part – SMS group

Implemented solutions of MICOTECH

Roller

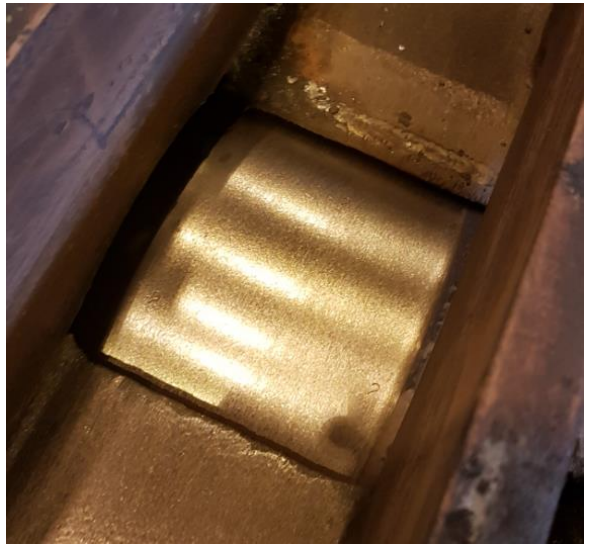
Period of use was increased in

3

times, from 3 to 9 months.

Place of operation - ОЭМК Manufacturer - SMS group

Mill roller 250



Period of use was increased in

5

times, from 3 to 15 months.

Place of operation - Severstal Manufacturer - SMS group

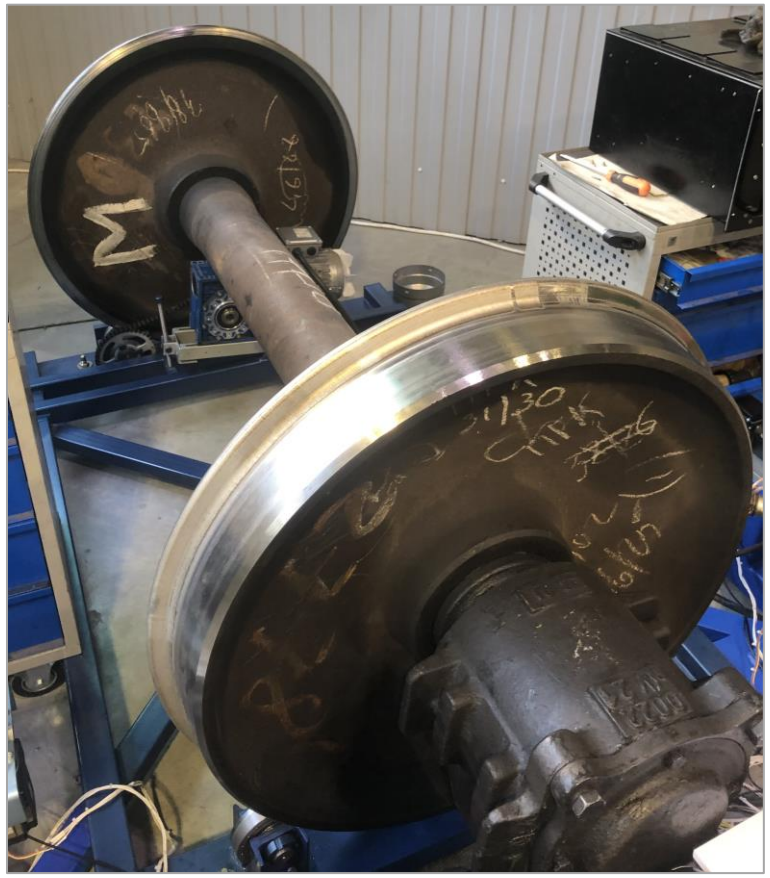
Implemented solutions of MICOTECH

Wheelsets of a railway vehicle

Period of use was increased in

2,4

times.



Place of operation – Russian Railways

Implemented solutions of MICOTECH

Gear-screw pair (Worm pair) 160*40

Period of use was increased in

5

times, from 2 to 10 months.

Place of operation – MOSLIFT

Manufacture of the parts - MOSLIFT

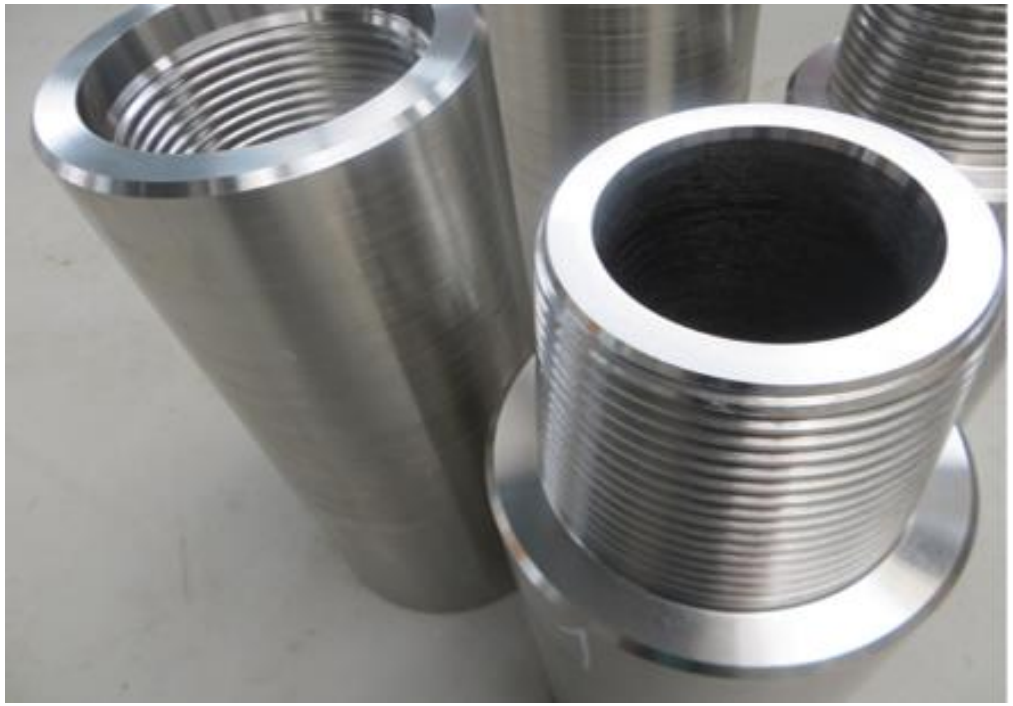
Implemented solutions of MICOTECH

Pipe coupling (Magnadur 501)

Period of use was increased in

13

times, number of twists - from 30 to 400.



Place of operation - GazNefteMash

Manufacture of the parts - GazNefteMash

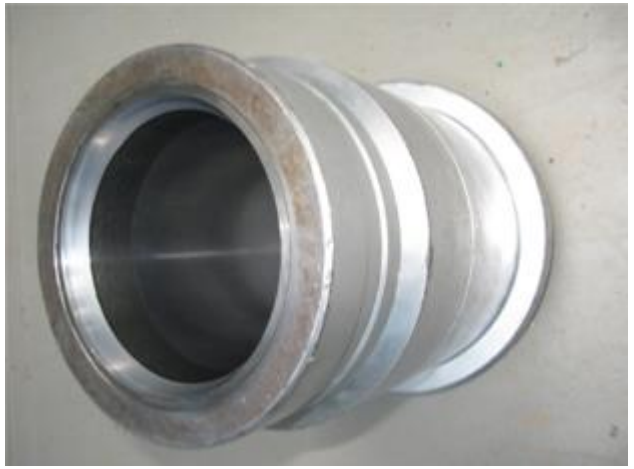
Implemented solutions of MICOTECH

Drilling pump bushing (jackets)

Period of use was increased in

5

times, from 250 to 1250 hours.



Drilling pump bushing JVS-400 (CANADA)
works in the environment of pumped abrasive-chemical drilling mud.

Place of operation - SURGUTNEFTEGAS OPEN JOINT STOCK COMPANY

Manufacture of the parts - JVS-400 (CANADA)

Implemented solutions of MICOTECH

Wedge gate valve

Period of use was increased in

3

times , from 3 to 9 months.

Place of operation - RUSAL

Shut-off valves (fittings)

Period of use was increased in

5 times.

Place of operation – Penztyazharmatura

Implemented solutions of MICOTECH

Conical gear of turbine

Period of use was increased in

3

times, from 3 to 9 months.

Place of operation - MOSENERGO

Manufacture of the parts - URAL TURBINE WORKS

Implemented solutions of MICOTECH

Gear shaft BGV200

Period of use –
2 months,
62 ktons of hire.

Lifetime was increased in

6 times

Period of use after Micotech coating – 12 months,
385 ktons of hire.

Place of operation – NLMK

Manufacture of the parts – DANIELI

Implemented solutions of MICOTECH

Stopover fittings Ø10 и Ø12

Period of use was increased in

5

times, from 1,5 to 7,5 tons.

Place of operation - Holding company TEMPO

Wheel

Period of use was increased in

2

times, from 1 to 2 months.

Place of operation - Holding company TEMPO

Implemented solutions of MICOTECH

Wedge valve for tap DN 100 - 200

Period of use was increased in

3,7

times, from 8 000 to 29 676 cycles.

Valve «Butterfly»

Functional area: transportation of abrasive slip mass

Period of use was increased in

2,5

times, from 2 to 5 months.

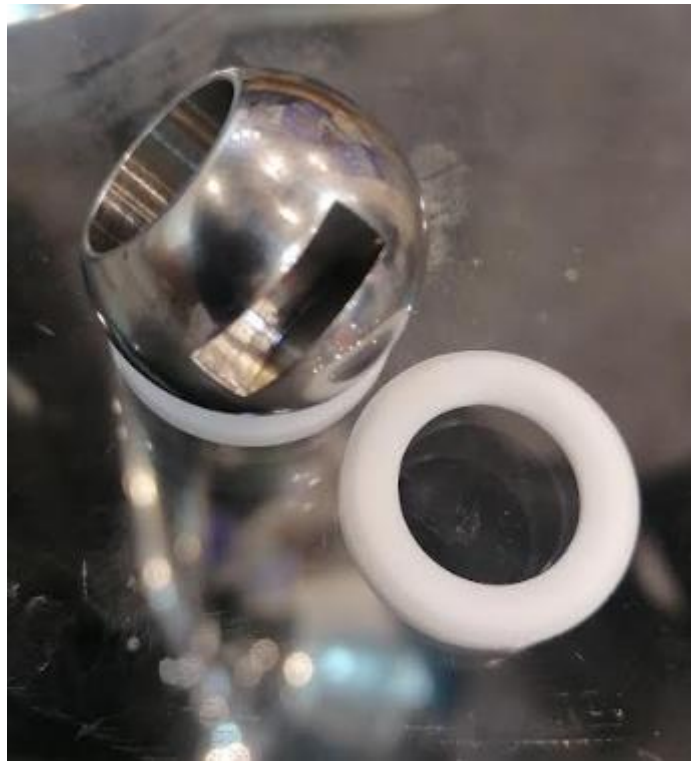
Implemented solutions of MICOTECH

Ball valve

Period of use was increased in

3

times, from 10 000 to 30 000cycles.



Functional area: Pneumatic transport of cement with nitrogen

Business interaction formats

Format 1

Coating service at MICOTECH site or at Customer site

Format 2

License - granting permission to apply coating to the customer in the production of their own products

Format 3

“White Label - providing the customer with the opportunity to place their brand on products manufactured using MICOTECH technology

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