

LINSINGER

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COUNCIL

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SAFETY COUNCIL

"Reshaping Railways in an Uncertain World"

CAPE TOWN, OCTOBER 1 - 6, 2023

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INTERNATIONAL

RAIL SAFETY ON THE RIGHT TRACK

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LINSINGER Rail Milling Technology for Excellent Maintenance of the Railways in South Africa









Introduction of LINSINGER ,Rail Defects & Situation in South Africa **Technology Comparison**

Comparison between Milling & Grinding

<mark>2</mark>2

IDC

Product & Maintenance

Linsinger Truck and Maintenance strategies - corrective vs preventive

32 Benefits

Summary of the main advantages

35 Service

Customer Service & Spare Parts





CURRENT SITUATION













Industry solutions



RAIL PROCESSING

WIND TOWER OFFSHORE

TUBE & PIPE MILLS



AUTOMOTIVE

FORGING

SHIPBUILDING









Non visually visible Rail Defects

"Not visually visible defect" on the surface of the rail head

Cracks can grow deeply under the surface without any noticing.





IRSI

Negative Influences of Rail Defects



ExistingSouth Africa1067 mm Gauge1435 mm Gauge







Comparison 1067 mm gauge and South Africa Standard gauge

	South Africa 1435 mm gauge	Existing 1067 mm gauge	
Railway network	Gautrain network	Transnet network(Ore Line, Coal Line, Core Networks,etc.)	
Gauge	1435 mm	1067 mm	
Maintenance Strategy	Preventive approach / Corrective approach	Corrective approach	
Rail Defects	Corrugations	Wheel burn, Belgrospie, Corrugations	
	Wheel Burn	Squats, Head Checks	
	Head checks	Non visualy visible Rail defects	





TECHNOLOGY COMPARISON





The Linsinger Rail Milling Technology



Milling

One pass

removal of

0,1 – 1,2 mm



Milling & Polishing



Switches and Crossings

Continuous process without stops

- All check rails can stay in place
- Complete switch processing in two treatment steps







Rail Reprofiling









Massive Spark spraying

High Risk of Fire

Change of Metallurgical Structure





Linsinger Rail Milling Technology

Conventional Rail Grinding



Surface Quality (finished track)







Iron-Carbon Diagram



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Grinding

822.1

10

822 °C

900

Milling & Grinding Comparison

	Linsinger Rail Milling	Rail Grinding
Metal Removal	0,1 – 1,2 mm per pass (SF02-Truck)	Up to 0,05 mm per pass
Fire hazard	No Sparks no Risk	Risk of Fire
Grinding debris	Dust & Chips sucked of, can be sold as scrap	Spread all over the track
Removal of Defects	Only one pass, and therefore higher productivity	In case of 1,2 mm defect, up to 25 passes required
Profile restoration	Can be done in one pass	Multiple passes required
Change of Metalurgical Structure (blueing)	No Change, all heat stays in the metal chip & carbite tip, not in the rail	Blueing





Milling Technology

Grinding Technology



PRODUCT & MAINTENANCE STRATEGIES







No risk of fire

Very low Cost per finished No Change of metallurgical structure metre of track





2 Sizes of Gauges



LINSINGER

Linsinger Milling Technology is Gauge Convertable



Crack Growth



2

Crack Origin After 5-10 MGT

Flat Growth 1-2 mm/ 100 MGT

3 Vertical Growth ~ 1 mm/ 1 MGT







Rail Breakage







Preventive Approach for South Africa SGR







Corrective Approach for Existing 1067 mm gauge





Rail Life Extension









Linsinger Milling Result

Noise Reduction up to 4,2 dB

New Railhead Profile Restored

EN ISO 3095





Sustainability

Removed material can be recycled

Worn Carbide Tips, Slide plate are also recyclable

Eco-friendly processing









BENEFITS





Benefits



Cost-Effective

Low costs per completed meter track



Processing Depth

Material removal of 0,1 - 1,2 mm in ONE PASS



Eco-Friendly

Recycling of milling chips & carbide tips & no pollution



No Fire Hazard

No sparks & No metallurgical structure change



Dry Processing

No coolant needed



Aim Profile Accuracy

Longitudinal +/- 0,01 mm Transverse +/- 0,2 mm



Milling & Polishing

Surface Quality < 10 μ m required & < 5 μ m reached



Every Railway Track

For all maintenance strategies & railway systems







Benefits

Maintenance of existing 1067 mm gauge rail and Maintenance of SGR

No Re-Railing needed and therefore significant cost savings

Significant Rail Life Extension



SERVICE





Tools 24/7 Service LinVision









Thank you for your attention!





