

Mobile wheelset reprofiling system

Typ **MOBITURN[®] 2**



The first and only mobile wheelset reprofiling system



MOBITURN^{®2} - reliable technology in a new concept

Hegenscheidt-MFD a member of the NSH Machine Tool Group introduces approved technique with a new revolutionary concept for the mobile wheelset maintenance as the answer to the escalating costs applicable for providing qualified maintenance.

Hegenscheidt  MFD

Task

In the compulsory process of maintaining rail vehicles, the reconditioning of wheel profiles represents a high cost factor. So vehicle maintenance is subject to a permanent process of minimising

cost, while still ensuring the required maintenance quality. Improving Fleet operators competitiveness, therefore, requires new concepts for maintenance processes and technology.



MOBITURN[®] - the mobile wheel set reprofiling facility

Solution

On the basis of proven underfloor wheel lathe technology, Hegenscheidt-MFD has developed the innovative concept of a mobile wheel lathe, comprehensively tested it and brought it to series production readiness.

The result contributes towards improved, demand-oriented vehicle maintenance with short rolling-stock

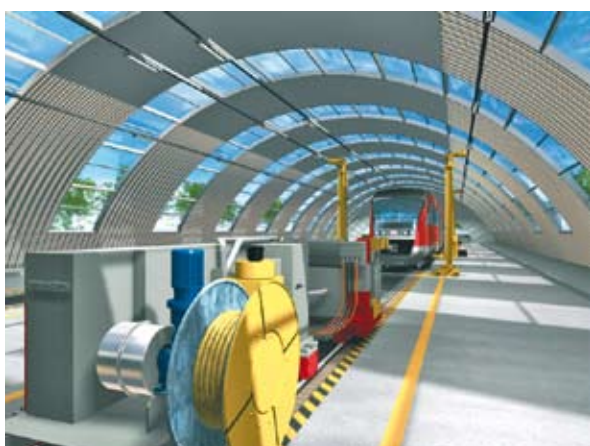
downtimes and high rolling-stock availability, for considerably higher economic efficiency in maintenance.

In comparison to the development of the first Underfloor wheel lathe in 1959, the development of MOBITURN^{®2} represents a quantum leap in wheelset maintenance technology.

MOBITURN[®]2 comes to meet the rolling stock

MOBITURN[®]2 is world wide the first and only wheel-set reconditioning system that comes to meet the rolling stock.

MOBITURN[®]2 has been especially designed for machining profiles of wheel set wheels and brake disc faces in situ or within a bogie detached from vehicle or on single wheel sets.



MOBITURN^{®2} flexible utilisation

MOBITURN^{®2} might be moved via rail or road transport to various locations of need. All that's necessary for loading and unloading the machine from its means of transport is a crane with a 14-tonne lifting capacity.

Once positioned within the track system of the maintenance facility, MOBITURN^{®2} can simply be moved, as needed, from a stand-by position to its required location by any kind of shunting vehicle.

MOBITURN^{®2} is equipped with its own shunting drive and thus independently approaches the wheel sets to be machined on a vehicle or vehicle unit.

MOBITURN^{®2} is highly flexible and considerably reduces setting times for machining individual wheelsets.

An important feature of the MOBITURN^{®2} concept is the integrated power unit and control board, with its own cable reel and standard connection for plugging into the shop electrical system.

While machining wheelsets the vehicle is lifted up and is being held in the lifting jack anchor points.

Here through MOBITURN^{®2} itself remains free from any load generated by the vehicle. The proven friction roller principle of underfloor wheel lathes is used to drive the wheelset. The required friction force between wheel and drive roller is generated by a closed force train between wheelset and machine.

A coupling device connects the machine with the axle bearing box in such a way that optimum friction force is generated without any forces being transferred into the vehicle once the drive rollers have been applied to the wheel.



MOBITURN[®] in standby position

MOBITURN^{®2} enhances usability of rolling stock



MOBITURN[®] in operation

MOBITURN^{®2} has been designed for the in situ machining of all types of wheelset configurations for rail vehicles such as standard locomotives, passenger coaches, multiple units or set train units - up to a four-coach unit of 80 metres or more in length.

MOBITURN^{®2} is able to handle wheel sets in a bogie detached from a vehicle as well as wheelsets detached from a bogie.

MOBITURN^{®2} is also able to machine brake discs located between the two wheels of a wheelset either axle or wheel mounted in various configuration. With its integrated wheel tread diameter measuring

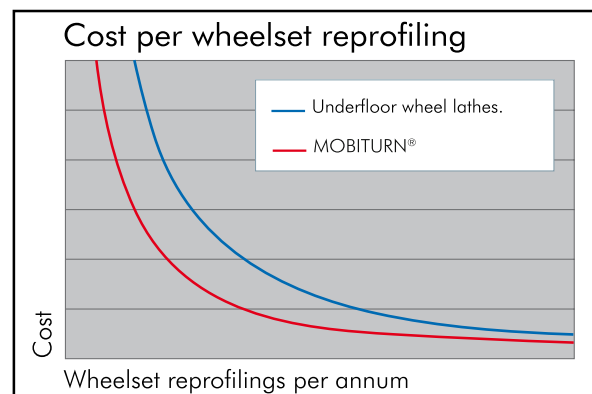
and wheel profile wear measuring device in combination with a modern CNC control MOBITURN^{®2} can be connected to a site wheelset data management system.

In addition, via remote diagnostic devices for recognising any functional failures, it is possible to support the machine user under real-time conditions, thus ensuring high machine availability and the utmost flexibility.

MOBITURN^{®2} leads to retrenchments in wheelset reprofiling in comparison to conventional Underfloor wheel lathes.



Wheelset reprofiling



MOBITURN^{®2} reduces reprofiling costs

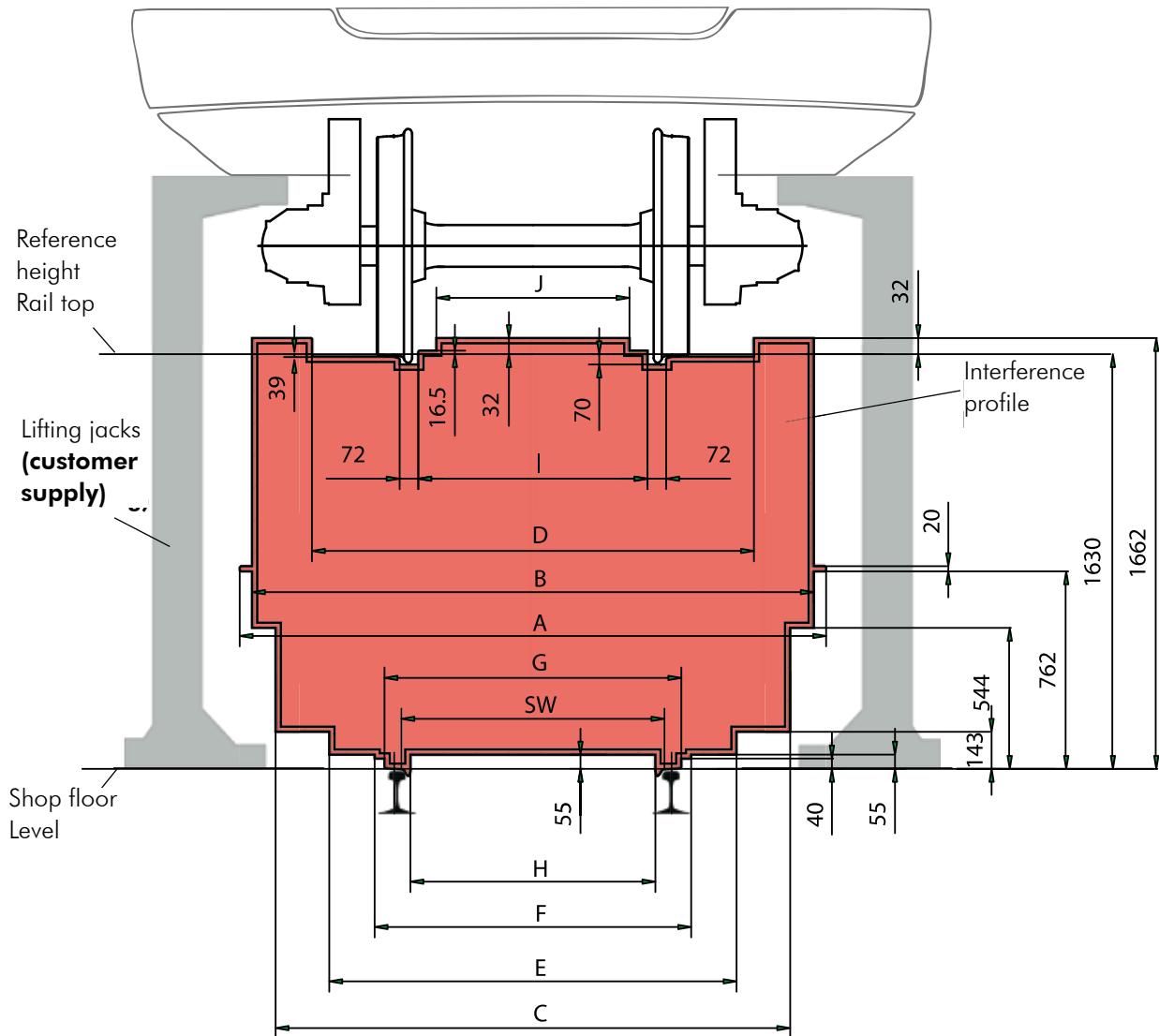
When planning new or additional capacity for wheel-set machining following aspects should be considered:

- No additional power supply and / or vehicle progressing system is needed when applying MOBITURN^{®2}
- No additional or new civil and track works are required (foundation, pit, building) when applying MOBITURN^{®2}
- Only half the required length of a building applicable for an Underfloor wheel lathe is needed when applying MOBITURN^{®2}
- Best utilisation of investments



MOBITURN[®] in use

MOBI TURN² technical data



| | SW= track gauge | | | | | | |
|----|-----------------|------|------|------|------|------|------|
| SW | 1000 | 1067 | 1100 | 1435 | 1520 | 1600 | 1676 |
| A | 2262 | 2329 | 2362 | 2697 | 2782 | 2862 | 2938 |
| B | 2167 | 2234 | 2267 | 2602 | 2687 | 2767 | 2843 |
| C | 1985 | 2052 | 2085 | 2420 | 2505 | 2585 | 2661 |
| D | 1705 | 1772 | 1805 | 2140 | 2225 | 2305 | 2381 |
| E | 1571 | 1638 | 1671 | 2006 | 2091 | 2171 | 2247 |
| F | 1221 | 1288 | 1321 | 1656 | 1741 | 1821 | 1897 |
| G | 1145 | 1212 | 1245 | 1580 | 1665 | 1745 | 1821 |
| H | 945 | 1012 | 1045 | 1380 | 1465 | 1545 | 1621 |
| I | 884 | 951 | 984 | 1319 | 1404 | 1484 | 1560 |
| J | 745 | 812 | 845 | 1180 | 1265 | 1345 | 1421 |

MOBITURN[®] 2

Technical data

| | |
|---|----------------------------|
| Deviation from radial tread roundness | ≤ 0,1 mm ^{3) 5)} |
| Max. Diameter difference of four wheels on one bogie | ≤ 0,3 mm |
| Max. Diameter difference of two wheels on one axle | ≤ 0,1 mm ²⁾ |
| Deviation from nominal profile geometry | ≤ 0,2 mm ⁵⁾ |
| Deviation from axial flange roundness | ≤ 0,2 mm ^{4) 5)} |
| Surface finish profile machining | Rz < 63 μm |
| Surface finish profile face | Rz < 100 μm |
| Range of tread diameter | 450-1450 mm ⁶⁾ |
| ²⁾ requiring identical stock material on both wheels, sharp cutting tools, precise and stiff clamping of the axle bearing box. Depth of cut < 4 mm ³⁾ requires measuring cut, rough cut or round wheels as well as perfect cutting tools, regular cutting conditions and correct centring of wheels ⁴⁾ requires axial flange roundness < 0,5 mm ⁵⁾ when turning resilient wheel sets an escalation of the given value up to 0,3 mm might happen ⁶⁾ depending on wheel set design | |
| Profile width | 85-145 mm |
| Required space below wheelset to be machined | app. 1.630 mm |
| Main drive capacity | 2x 22 kW |
| Feed force | 12,5 kN |
| Max section of cut | app. 6 mm ² |
| Max cutting speed | 305 m/min |
| Tool post feed in axial and radial direction | 0-2,5 mm/min ⁻¹ |
| Noise emission of the machine | 80 dB(A) |
| Total dimension including energy pack (Approx. length X width X height) | 2,62 x 1,65 x 8,45 m |
| Required length of track | ≥ vehicle length |
| Machine performance / shift (8,0 h shift) | app. 8-10 wheel sets |
| Required electrical capacity | 63 KVA |
| Weight - mechanical part | 17 t |

Advantages at a glance

- Certain reduction in wheelset reprofiling cost
- Considerable improvement of rolling stock maintenance cost structure
- Optimised utilisation of existing workshop area
- MOBITURN[®] 2 approaches the vehicle (wheelset machining takes place at the location of vehicle)
- Reprofiling of all known wheel sets in situ as well as detached from vehicle
- Low machine dimensions, low machine weight
- Low height clearance (passing lowest wheel set)
- Simple machine operation
- Machining of single wheel sets possible (axle bearing box must be fit to axle)
- High efficiency

THE TECHNOLOGY PROVIDER



THE NSH GROUP

NILES SIMMONS HEGENSCHIEDT

...technology in motion

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