


# TMR

OCTOBER

YOUR CLEVER  
BOGIE PROBLEM  
ELIMINATOR







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THE MATURING OF OUR KNOW-HOW

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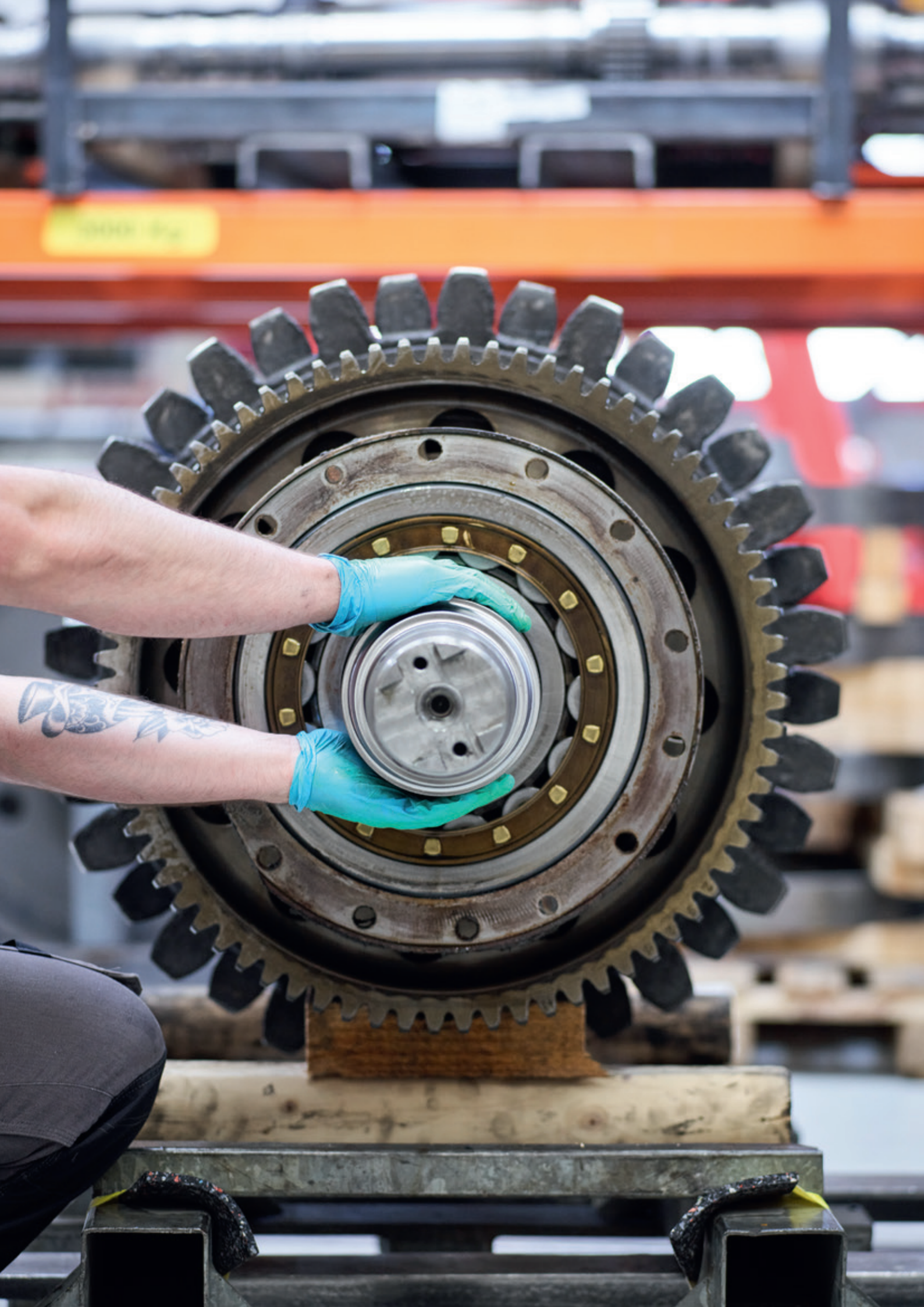
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# OUR HISTORY – THE MATURING OF OUR KNOW-HOW







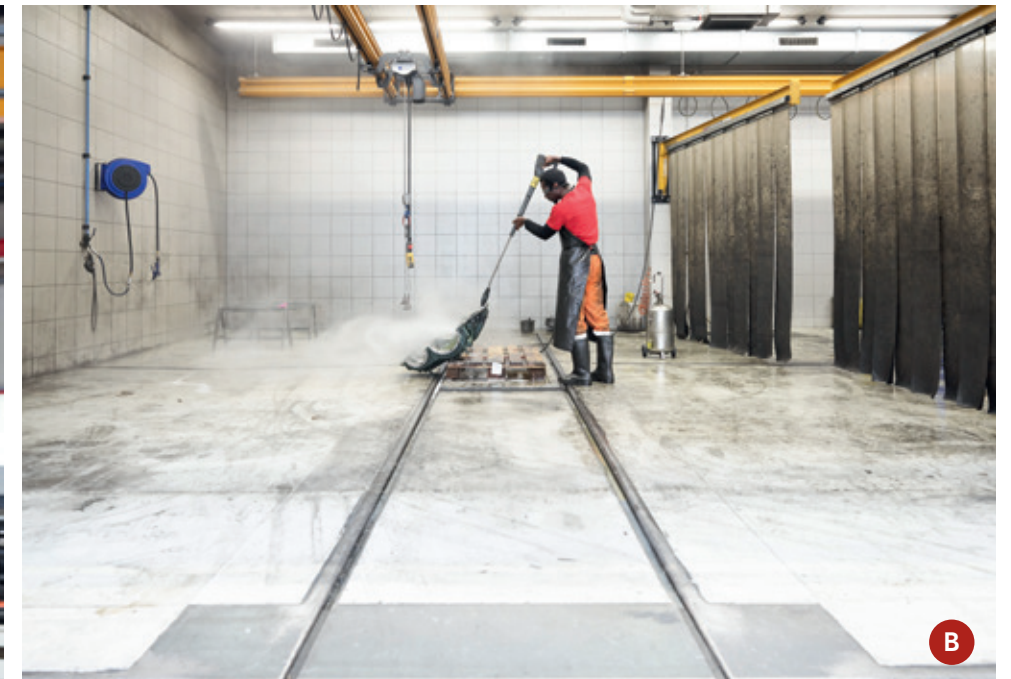
## OUR SKILLS AND EXPERTISE

- ⚙️ TMR SA is anticipating the challenges that constantly arise with the evolution of laws, standards, and machining technologies.
- ⚙️ Since March 2021, TMR SA has been ECM-certified, functions 1 to 4, thus proving its ability to maintain bogies and their components for any rolling stock.
- ⚙️ TMR SA is the only SNCF approved service provider for narrow gauge bogie overhauls, including components, especially wheelset shafts in compliance with the EN 13261 standard.
- ⚙️ TMR SA is certified at CL1 level of the European rail vehicle welding standard EN 15085.
- ⚙️ The practical apprentice training programme, which extends over 4 apprenticeship years, represents for TMR SA a sustainable investment in the future of its employees and the development of their skills.
- ⚙️ By means of its own truck transport department, TMR SA offers delivery of the goods just-in-time and door-to-door at any time on request.

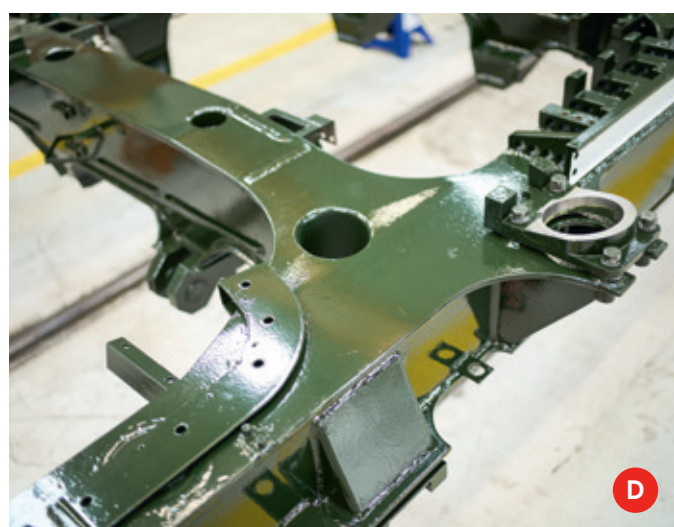
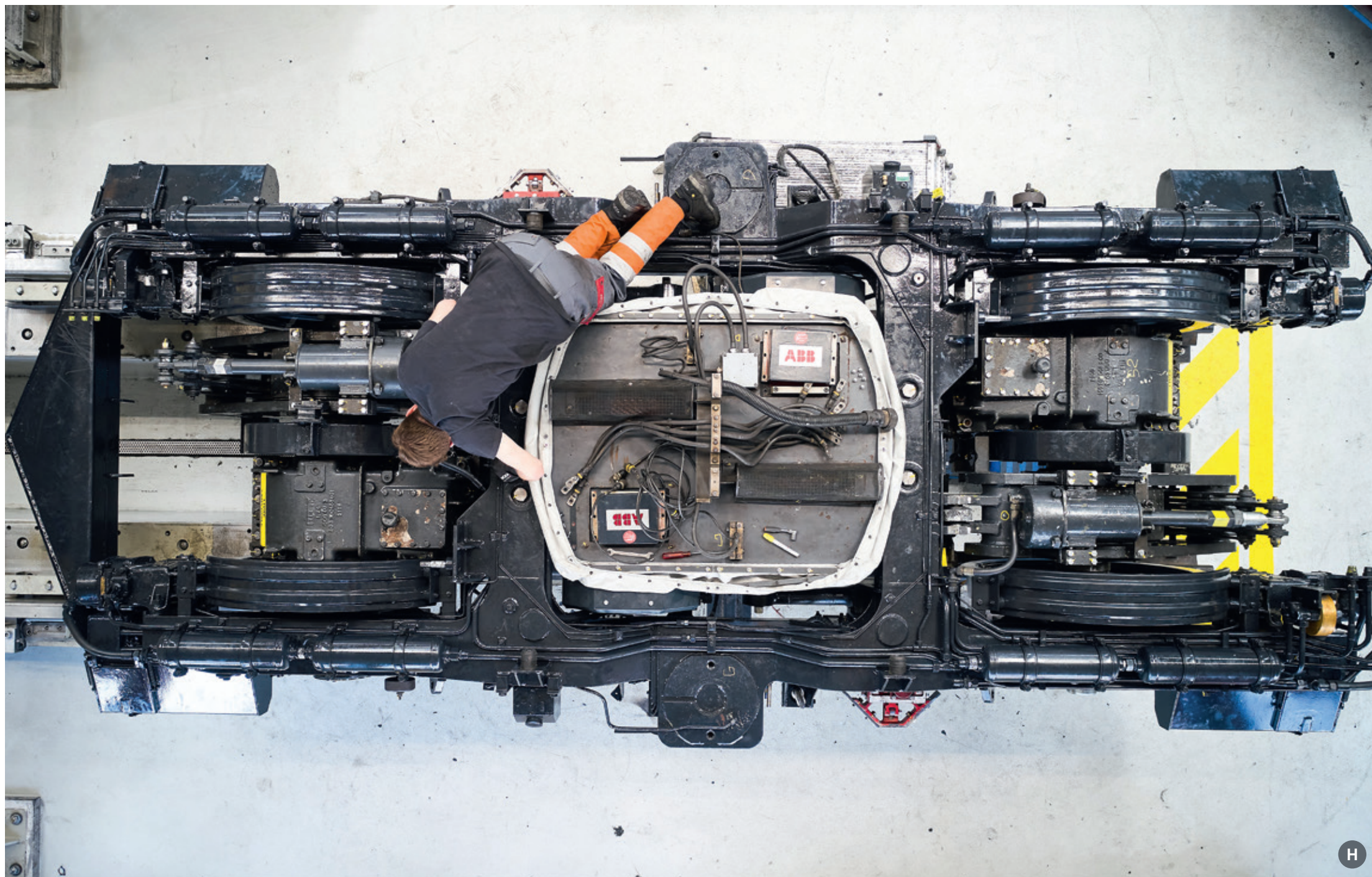


## OUR CUSTOMISED PRODUCTION PROCESS - MACHINERY AND TOOLS

The workshop was designed and set up by our most experienced employees themselves. With the experience they have gained in revising a wide variety of bogie types and production depths, they decided on a modular arrangement of production according to its technological flow. It features the logical sequence of the workstations, each dedicated to a precisely defined production stage:

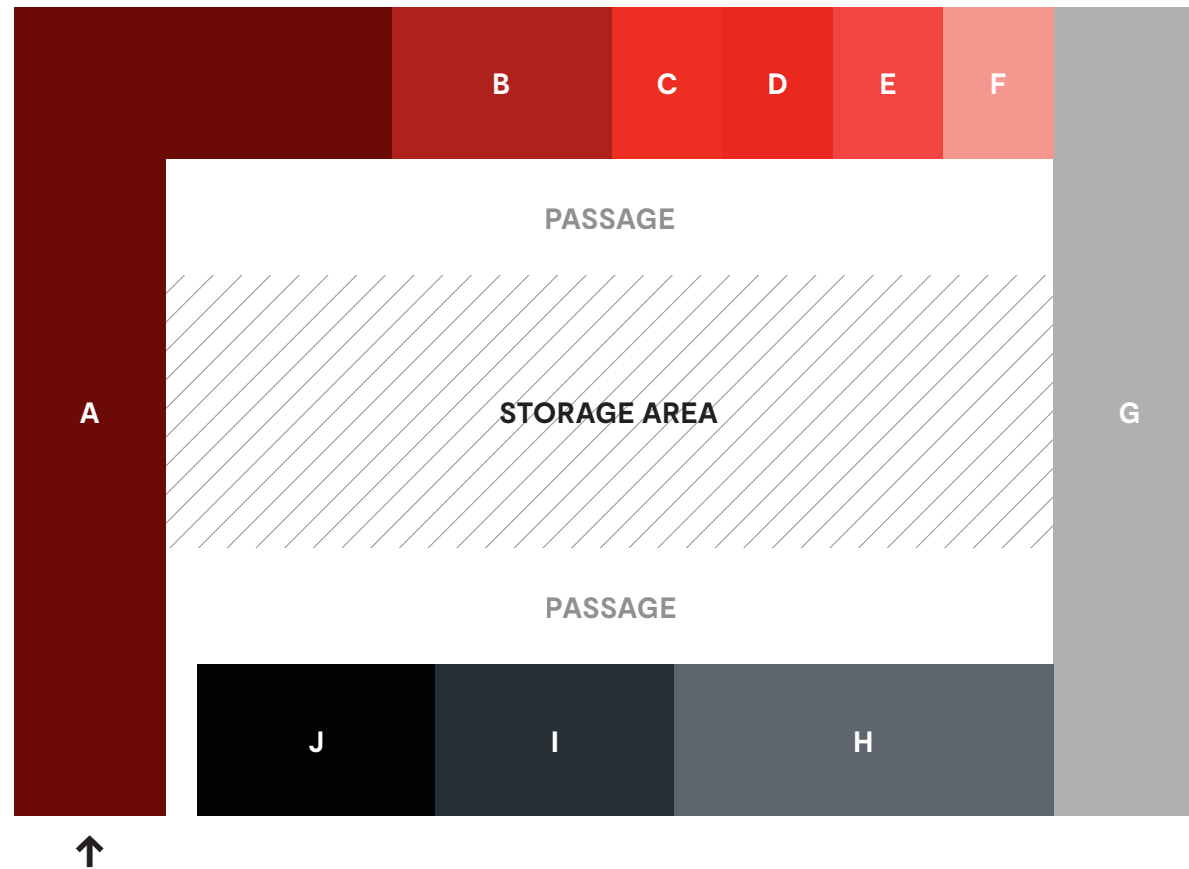








## TECHNOLOGY FLOW DIAGRAM WITHIN THE OCTOFER WORKSHOP



### A) RECEPTION AREA – ARRIVAL OF THE BOGIES TO BE OVERHAULED

- Unloading of the bogies by means of a crane bridge, placing them on a rack, to dismantle them according to the vertical production range ordered by the customer
- The pit under the rack allows the technicians access to the assemblies located underneath the bogie frame
- Adapted for track gauge 1000 mm and 1435 mm

### B) PRE-CLEANING / CLEANING

- Pre-cleaning: bulky components such as the bogie frame or the wheelsets are fed to the wash on a trolley set up for this purpose on tracks along the workshop; in front of the wash chamber there is a hydraulic turntable by means of which the trolley is turned by 90 degrees to feed the good to the wash. A high-pressure lance is used to rinse off coarse impurities

- Cleaning: In a separate chamber, sensitive components such as bearings, wheelset shafts, brake callipers, are cleaned according to the manufacturer's instructions

### C) SANDING:

- Those components that are to undergo in-depth non-destructive material testing must first be sanded to obtain a homogeneous surface, free of impurities and coating residues. They are fed to the sanding chamber by means of a crane bridge and then treated by the technician in such a way that no dust enters the workshop thanks to the sand separators

### D) SURFACE COATING

- The surfaces are coated depending on the component function, the applicable standard, the customer specification or according to our recommendations
- We provide with water-soluble or solvent-based paint structures as well as powder coating

### E) BEARING ASSESSMENT

- Depending on the vertical range of manufacture, the bearings are systematically replaced or relocated
- If a shallow vertical range of manufacture is required, we inspect the bearings and detect any defects in their individual parts. A reference system determines whether and how the bearings may continue to be used until the next intervention
- During main revisions (R2), all bearings are replaced without exception

### F) NON-DESTRUCTIVE MATERIAL TESTING (NDT)

- The pickled safety-relevant components are tested non-destructively over the accessible surfaces using magnetic powder (MP)
- The inaccessible areas are verified using ultrasound (US). These techniques reveal invisible cracks on components, which may need to be rewelded, reworked, molybdenum clad or scrapped

### G) MACHINING

#### Geminis GT7:

- High-performance horizontal lathe for wheel profiling and shaft machining
- Wheel sets can be machined / reprofiled
- Technical data:
  - Centre distance = 5000mm
  - Swing diameter = 1600mm
  - Maximum mass within centre distance = 13t
  - Power consumption = 68kVA
  - C-axis on the main spindle
  - Special tailstock with rotating quill and chuck

#### Böhringer DUS 560-ti:

- Horizontal lathe for shaft machining
- Technical data:
  - Centre distance = 2200mm
  - Swing diameter = 570mm
  - Maximum mass within centre distance = 1t
  - Power consumption = 25kVA

### H) ASSEMBLY:

#### Mounting and removal press MD300/1

- Wheel pull off
- Wheel press-on
- Technical data:
  - Maximum force of the pressure cylinder = 3000kN
  - Maximum wheel diameter that can be mounted / dismantled = 1100mm
  - Maximum wheelset shaft length = 2500mm
  - Fast / slow speed of the pressure cylinder = 25mm/s / 0,5...5mm/s
  - Power consumption = 20kVA

#### Wheel extractor press

- To pull-off wheels from the wheel set and to execute wheel extraction tests
- Technical data:
  - Maximum force of the pressure cylinder = 800kN
  - Maximum mass of the wheelset = 3500kg
  - Maximum removable wheel diameter = 920mm

### I) LOAD TESTS

#### Bogie calibration bed

- This vertical press simulates the load of the car body on the assembled bogie
- The load distribution is measured by means of transducers at rail head height, with the aim of achieving equal distribution at tare and at gross load
- Technical data:
  - Track gauge setting = 1000mm to 1435mm
  - Maximum bogie mass = 20t
  - Wheelbase = 1500mm to 3500mm
  - Maximum load per cylinder = 150kN
  - Load tolerance per wheel = 100N

### J) ACCEPTANCE ZONE BEFORE BOGIE SHIPPING

- After 250 to 500 working hours, depending on the vertical range of manufacture, the bogies are reassembled and overhauled, ready for customer acceptance and subsequent delivery
- An acceptance protocol containing all the information needed to track the components is handed over to the customer either in paper form or numerically, as desired
- TMR SA's comprehensive service also offers delivery of the goods, carried out by our truck transport department. Loading or unloading can be carried out by a truck with a self-unloading crane mounted upon it, thus disburdening the customer from any logistical constraint



## TMR OCTOFER – YOUR CHOICE

- ⚙ Continuous growth of knowledge and skills
- ⚙ Individual and appropriate technical and commercial support targeting quality
- ⚙ Uncompromising quality
- ⚙ Competitive terms of delivery, not merely promised, but kept.
- ⚙ Transparent and interesting pricing policy
- ⚙ Comprehensive service

## REFERENCES

### FRANCE

SNCF Cerdagne, Etablissements du Mont-Blanc  
CMB (Compagnie du Mont-Blanc)  
PdD (Panoramique des Dômes)  
CFP (Chemin de fer de Provence)  
CFBS (Chemin de fer touristique Baie de Somme)  
Semitan (Société d'économie mixte des transports en commun de l'agglomération nantaise)  
Transdev Rail Rhône  
TCL (Keolis Lyon métro C)  
CFC (Chemin de fer de la Corse)

### SWITZERLAND

MGB (Matterhorn Gotthard Bahn)  
TPG (Transports publics genevois)  
TPC (Transports publics du Chablais)  
RA (RegionAlps)  
BLS (Berne-Lötschberg-Simplon)  
CFF (Chemins de fer fédéraux)  
LEB (Lausanne-Echallens-Bercher)  
Travys (Transports Vallée de Joux, Yverdon-les-Bains, Sainte-Croix)  
TransN (Transports publics neuchâtelais)  
NStCM (Nyon-St-Cergue-Morez)  
Josef Meyer Rail

### ITALY

Trentino Trasporti  
(Ferrovia Trento - Malé - Mezzana)

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