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*Ingenuity for life*

# Rail Service Center

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# Rail Service Center in Munich-Allach

Reliable service with longstanding tradition

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## Facts, figures, fascination

**2,000 sqm** of covered  
**service halls**

**3 working booths** for all types of  
**preventive** and **corrective maintenance**

**4 voltage testing units** for multi-system  
locomotives, additional examinations for train  
protection systems, adhesives and welding  
certification

United in one **location** with **24,500 sqm**  
**of covered production area**

# Range of Services

Preventive and corrective maintenance in the Rail Service Center

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**Years of know-how in checks, scheduled inspections and revisions**

**Expert Accident Repair of the damage assessment, from repair to commissioning and acceptance**

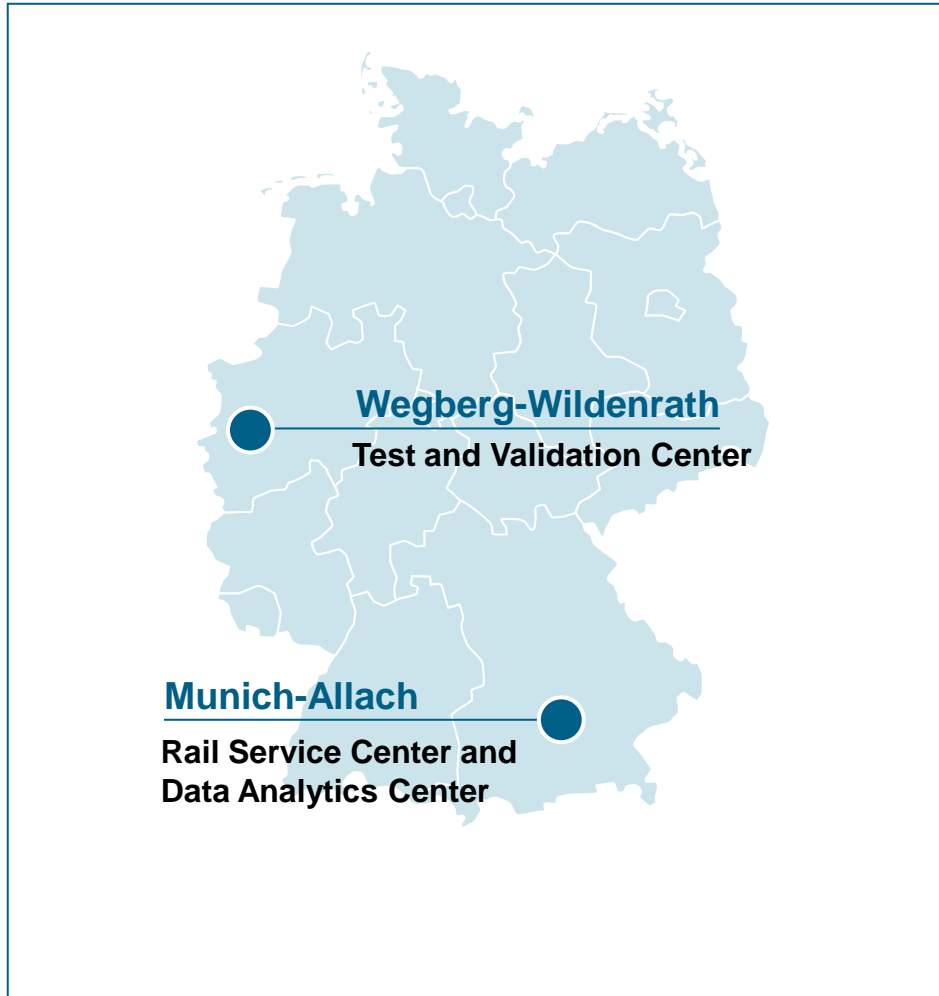


**Expert Refurbishment activities extend the service life of railway systems through customized solutions**

# Siemens Mobility Service Network

Complemented by additional depots in Germany and Europe

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## Rail Service Center in Munich-Allach

- Preventive and corrective maintenance activities
- Refurbishment activities
- ▶ **Three working booths, independent of the manufacturing plant**

## Close cooperation with Test and Validation Center

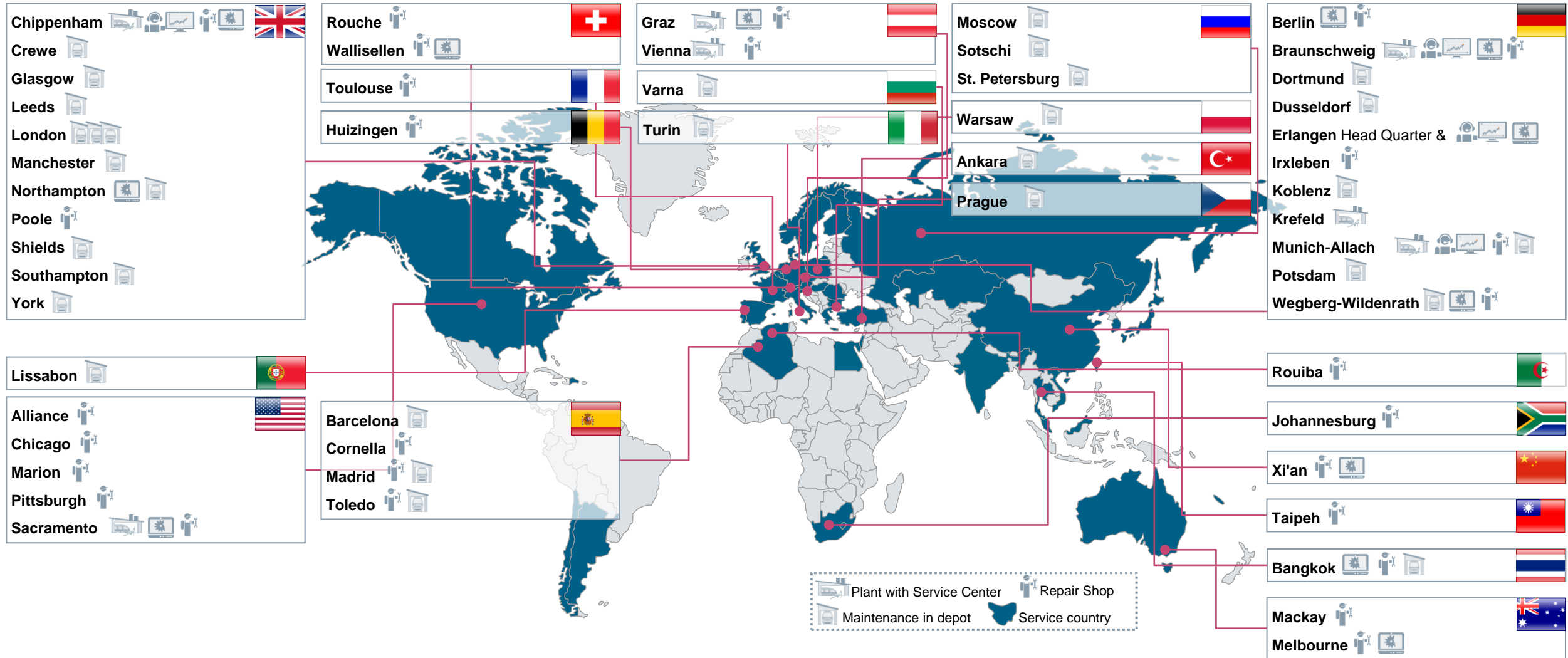
- Specialized workshops and 30 km railway tracks
- Unique range of services for testing, validation and authorization
- ▶ **Cooperation in case of special orders**

## Additional depots in Europe

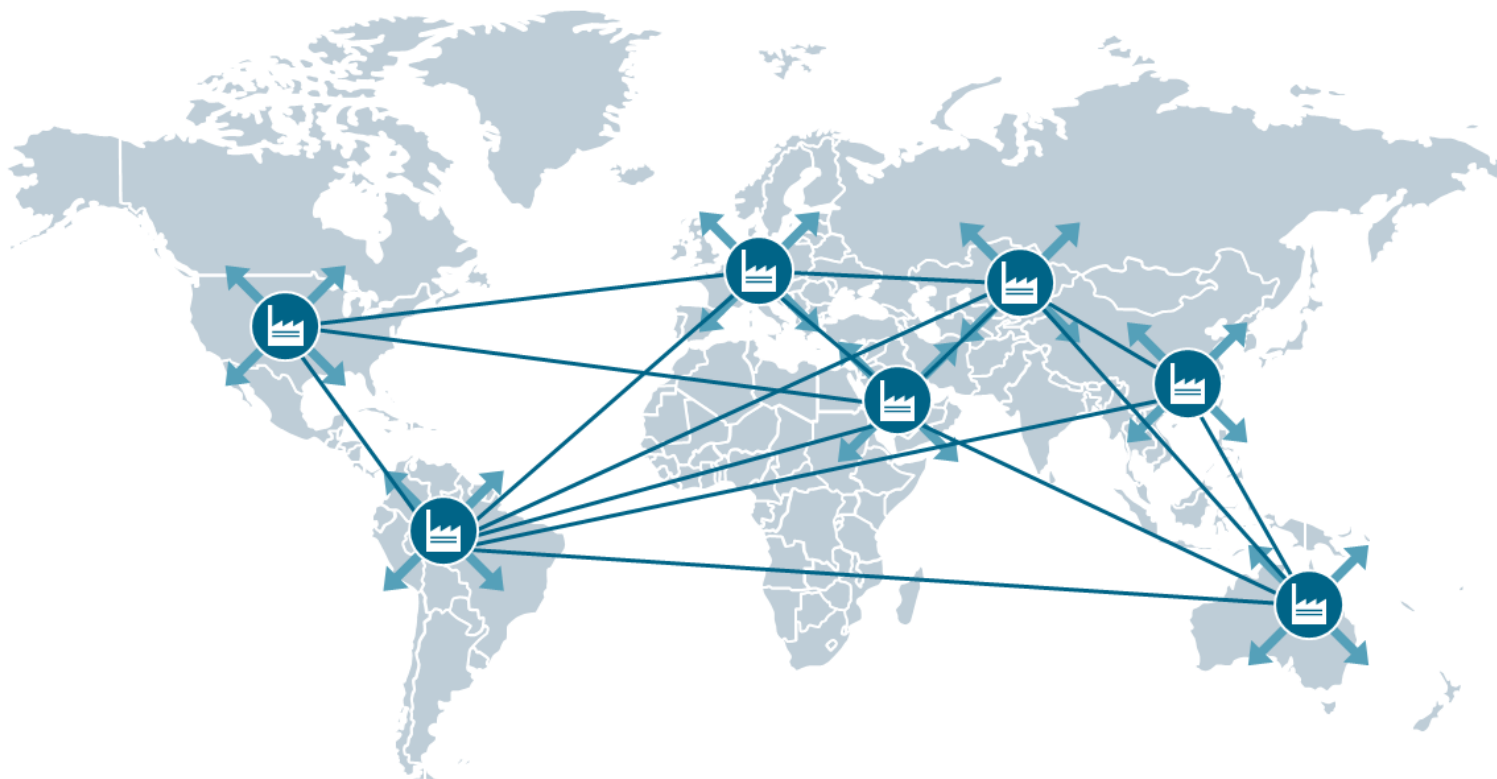
- E.g., Thameslink project: Depot Three Bridges, Crawley and Hornsey North London (investments of 417.6 million euro), UK
- Depot Saint Petersburg, Russia
- ▶ **European wide service network**

# Depots of Siemens Mobility Services

World's highest availability and customer satisfaction through our global presence



## Worldwide Siemens 3D printing network



### Service requirements

- Intelligent Siemens network of printer farms is needed to start printing in next 2 hours
- Reach any customer within 24 hours
- Eliminate customs borders

### Approaches

- Standardization in printers, materials and process is key for economical printing
- Only with Siemens-protected know-how Siemens will be the substantial partner for our customers
- Optimization of cost and lead time for the production of spare parts with independency from suppliers and partners

➔ **Already established in Germany, Sweden, Thailand and USA**

# Additive Manufacturing opens up new possibilities in spare parts supply



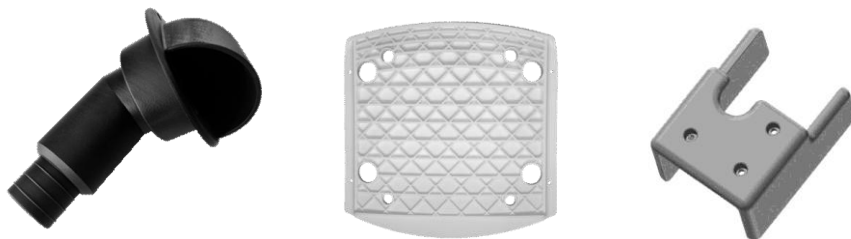
**Manufacturing small quantities cost-effectively**

**Customer specific solutions with technical improvements**

**Anytime availability of obsolete parts**

**Higher and faster availability**

**Re-engineered and manufactured by 3D-Technology**





# Siemens Digital Services

Highest customer value

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## Rail Transport

- Market drivers
- Rail operator challenges
- Rail user demands



## Trains/Locomotives

- Rail vehicle engineering
- Mechanical vibrations
- Sensor properties
- Maintenance operations



## Data Science

- Pattern identification
- Machine learning
- Automated alert generation

## Results

Improved asset availability

Avoidance of unnecessary maintenance

Reduction of maintenance costs

Domain know-how



Context know-how



Analytics know-how



Customer value

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# Through an enterprise asset management system maintenance can be optimized and maintenance costs can be reduced

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In all Mobility Full Service projects CORMAP® is used as a standard enterprise asset management solution for the support of commissioning and warranty periods.

## Benefits and range of use

- **Improved data quality**  
Avoidance of transcription errors from paper-based notes
- **Warehousing**  
Reduced inventory  
Improved delivery
- **Reduced effort for data acquisition**  
Direct field data analysis  
Documentation of all maintenance activities

## First locomotive from the new Rail Service Center in Munich-Allach

After a collision, the Vectron locomotive was hauled with special low-floor auxiliary undercarriages to Munich-Allach.

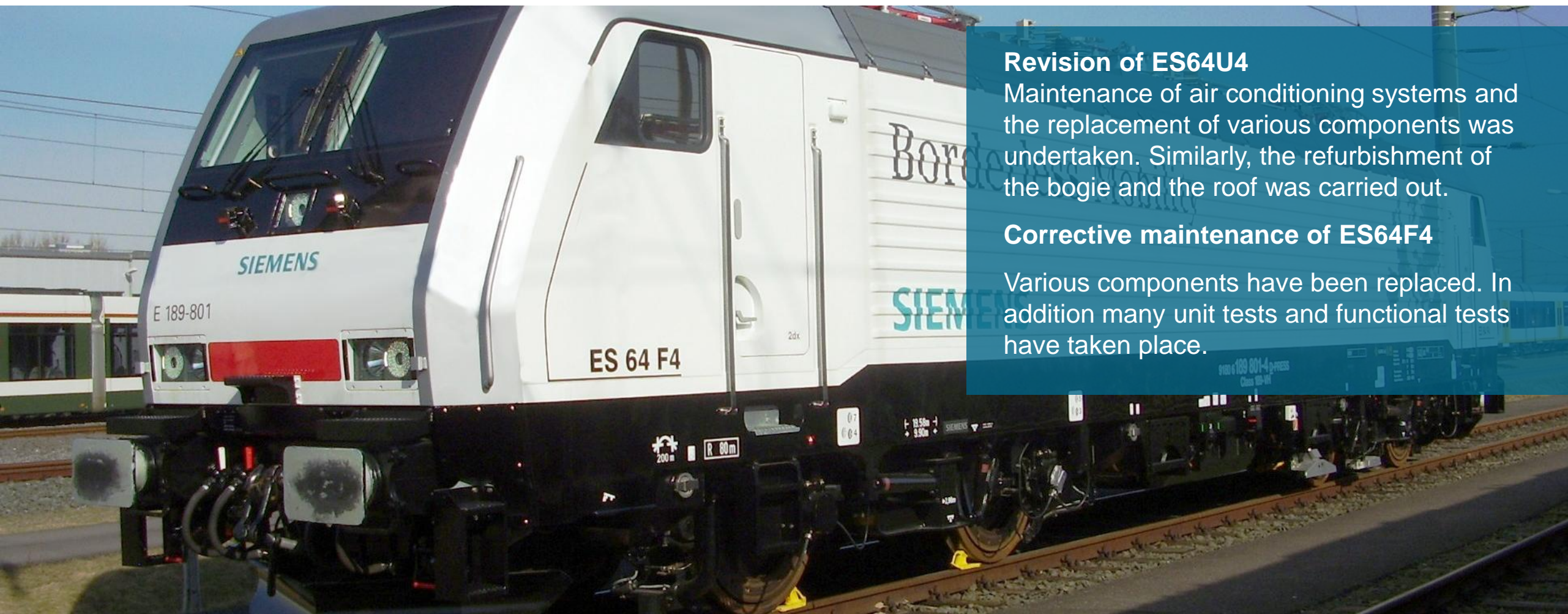


## Maintenance of Vectron

Corrective activities such as the replacement of discs or gears as well as oil changes were carried out repeatedly in the various models of Vectron.



## Maintenance of ES64U4 and ES64F4



### Revision of ES64U4

Maintenance of air conditioning systems and the replacement of various components was undertaken. Similarly, the refurbishment of the bogie and the roof was carried out.

### Corrective maintenance of ES64F4

Various components have been replaced. In addition many unit tests and functional tests have taken place.

## Customer statement

Rainer Beller – Chief Technical Officer Mitsui Rail Capital Europe

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*“**Data analysis is our focus** because we know that our customers, especially those who lease locomotives, are highly interested in all maintenance activities being as predictable as possible. In doing so, they can avoid being surprised by sudden failures and can ultimately plan their operational requirements in a time-effective manner.”*

*“In terms of the future, this means that we need to **combine all our vehicle expertise** – from the point of view of the operator, maintenance and even the vehicle manufacturer – if we are **to guarantee that the data is analyzed effectively.**”*

# Rail Service Center Allach