

**WE WILL  
NOT STOP TO  
ACCELERATE**



**HIGH-SPEED**



**GHH-BONATRANS**  
Pioneers of wheelset solutions

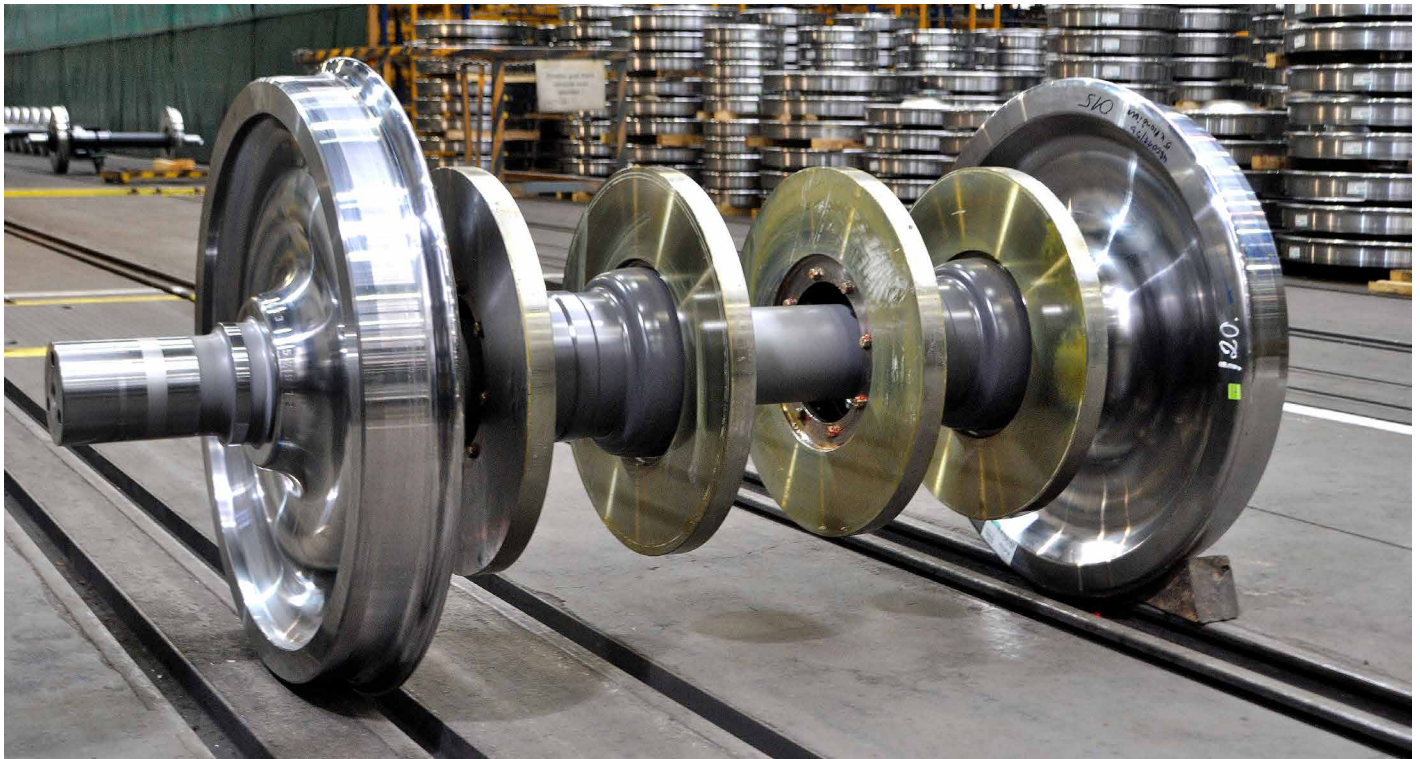
# WE WILL NOT STOP TO ACCELERATE

## For the future generations of high-speed trains

We are capable of capitalising on the extensive experience we have gathered in various fields of wheelset applications to offer optimized, innovative products and solutions also to high-speed segment.

We always strive for solutions that will provide our customers with the best quality and value as well as the best possible ratio between acquisition/operation costs and the utility value of the products.

We are supplying wheelsets, wheels and axles to the most demanding clients across the world. Our products are applied by the global leading high-speed train manufacturers, such as Alstom (TGV rains), Siemens and Bombardier (German ICE trains), among others.



## Selected customers

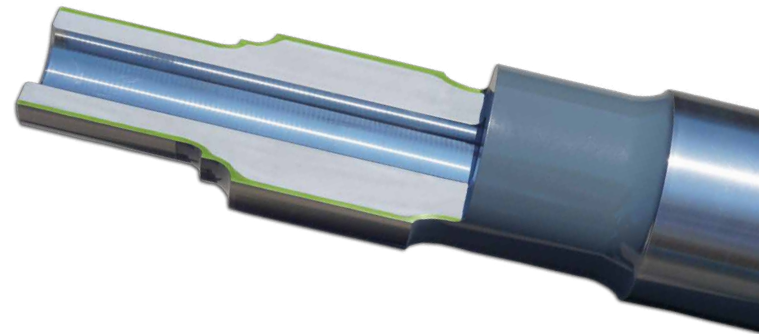


## Innovative induction-hardened axle

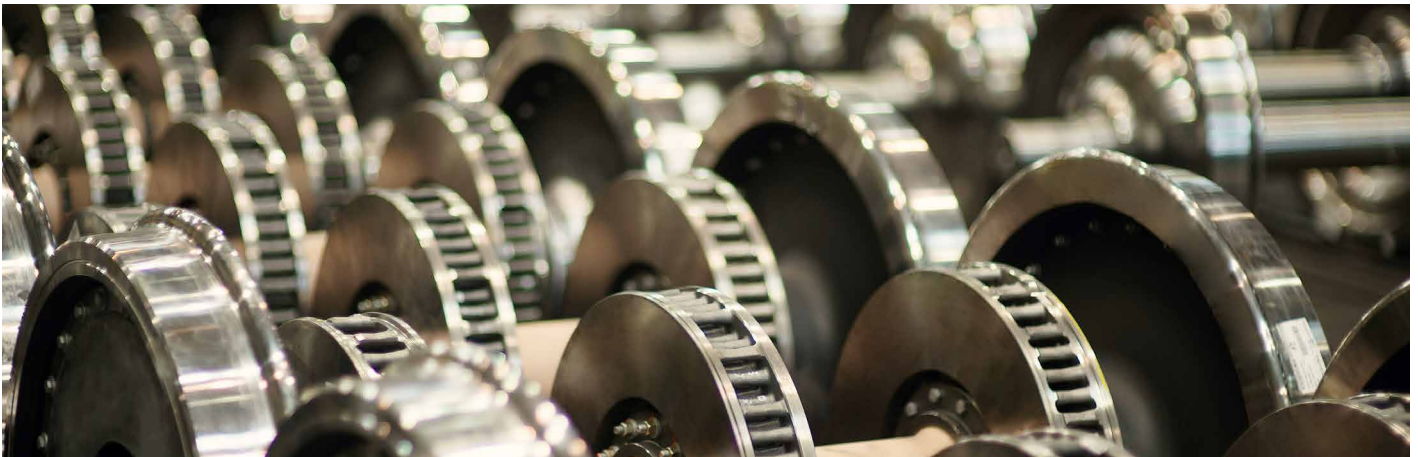
**BONAXLE®** is an innovative induction-hardened axle - our solution to the requirements of increased safety and reliability of high-speed trains. It also brings significant decrease of total life-cycle costs (TLCC). GHH-BONATRANS improved existing technology and adapted it to the conventional geometry and steel grades of EN 13261 axles. **BONAXLE®** is absolutely resistant against crack initiation and greatly increases resistance against crack propagation for all type of axles without modification of its geometry or steel grade. It has been fully proven for EA4T as well as for EA1N, and it is also applicable for other steel grades.

## Key features

- Higher safety and lower LCC
- Allows older platforms to comply with current safety requirements
- Increased NDT intervals thanks to no crack initiation
- No damage of axle shaft in operation, thus no repair of damaged paint, in fact no need for any coating
- No seizure during maintenance



## Extensive experience and unique expertise



- Long-term experience
- Tailor-made solutions for the most challenging projects
- Advanced technical competence with enhanced quality parameters
- Care for the whole product lifecycle
- Thousands of wheels, axles and wheelsets delivered worldwide
- Supplied most advance projects such as TGV, ICE, KTX-1, HEMU
- Wheels machined with tolerances from  $\pm 0.3$  mm and balanced even to 12.5 gm
- Unique and efficient coating system for long-lasting high-speed solutions

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