

# WE SPEAK LOW FLOOR



**TRAMS AND LRV's**



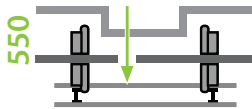
**GHH-BONATRANS**  
Pioneers of wheelset solutions

## Complex solutions for Light Rail Vehicles

GHH-BONATRANS is the world leading supplier of wheelset solutions for low-floor applications. From driven wheelset to the independent wheel unit, we design, engineer and manufacture each element of the wheelset system. From development and engineering to production, assembly and maintenance/overhaul, the complete wheelset system is the core of our expertise. We have established long-term partnerships with the major manufacturers of Light Rail Vehicles in order to gain excellent knowledge and provide the best possible expertise and consultancy already in the early stages of product development.



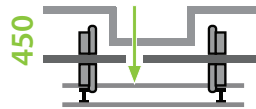
## Solutions for all floor levels



**Drive and brake between the wheels, but with limited height**

**Our solution:** driven and non-driven wheelsets

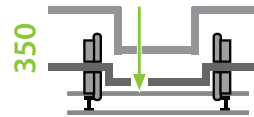
**Result:** Floor level of 550 mm



**No drive nor brake between the wheels**

**Our solution:** driven and non-driven wheelsets

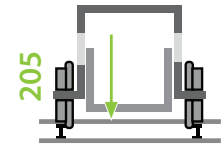
**Result:** Floor level of 450 mm



**No drive nor brake between the wheels, independent wheels**

**Our solution:** independent wheels on the axles

**Result:** Floor level of 350 mm



**Running gears with portal frame**

**Our solution:** swivel-mounted independent wheel units, fixed on portal frame

**Result:** Floor level of 205 mm

## Selected customers



## Innovated wheel and axle portfolio

### GHH®ULTRA-S

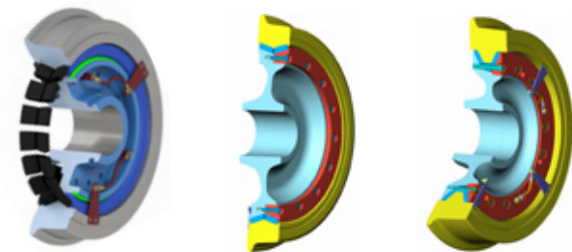
GHH Radsatz GmbH has developed a new Super-Resilient Wheel for 12.5-ton axle loads. The wheel meets all requirements for a Resilient Wheel with nominal diameter down to 600 mm new / 520 mm worn. The design of all components has been enhanced and the rubber elements have been completely reshaped. Excellent strength of the **GHH®ULTRA-S** was verified by applying the German quality standards (FEM analysis and assessment of stresses by application of FKM-guideline).

## Next generation of independent wheel axle

The new 12.5t independent wheel axle is based on the proven and reliable **GHH®V60** wheel type. Its modern upgrade for high axle loads is based on a one-piece, die-forged portal axle design and a pair of tapered roller bearings, adjusted optimally during assembly.

## Resilient wheel product range

### Resilient wheels



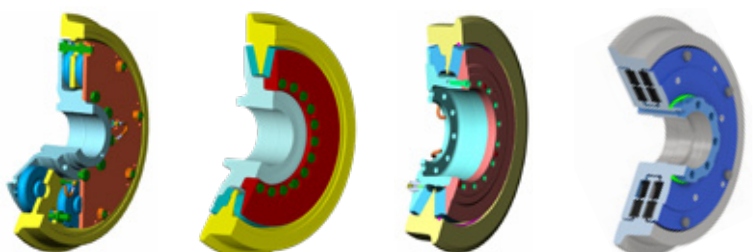
**BONA-E-LOCK®M**

**GHH®V15**

**GHH®V60**

**Splitting design:** One or two rubber rings or a number of rubber elements between wheel tyre and wheel body are mainly loaded by compression respectively shear and compression.

### Super-resilient wheels



**GHH®ULTRA-P**

**GHH®ULTRA-S**

**GHH®ULTRA-R**

**BONA-E-LOCK®L**

**Splitting design:** A number of rubber pads or two rubber elements are pre-stressed between wheel tyre and wheel body by means of pressure disc respectively wedge ring. The rubber pads / elements are loaded by shear – low radial stiffness of resilient wheel!

## EN 45545 Compliance

GHH-BONATRANS is the first resilient wheel producer to comply with EN 45545 protection standard on all components of a resilient wheel.

## Czech Republic

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