

Bogies from Graz – Yesterday, today, tomorrow – Comitted to tradition

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KONECRANES

MO RS SC BG

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1854 – 2019 165 years mobility expertice

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Ingenuity for life

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# Facts and Figures on the Global Competence Center





Bogies Graz is a "one-stop shop" for bogies within Mobility

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# Reliable and competitive engineering partner and stable in-house supplier



# Our business, bogies ...

Research, development, manufacturing and support of marketing bogies and their subsystems (e.g. bogie brake system) and bogie technologies (e.g. bogie diagnostics and monitoring, wheelset) globally

# ... have significant influence on ...

- Driving safety (stability, derailment safety)
- Driving comfort
- Noise emission and compliance with clearance
- Life cycle costs (LCC>40% for the bogie)

# ... and face the competition alongside the PUs

- With regard to competitive prices and flexibility
- Adapting the portfolio to strategic requirements together with the PUs
- The competition likewise has bogie in-house competence



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# The BG Global Competence Center is embedded in a strong region





### Mobility Graz Project highlights FY 2017/2018

- A new logistics hall went into operation
- Successful implementation of the new steel construction and logistics concept
- Successfully obtained authorization for bogies for Cityjet, Thameslink and Vectron Finland
- Successful integration of pantograph production
- Recognition for "Inventor of the year 2017" following the last time in 2007 in the category Open Innovation
- Numerous patents for the next bogie generation in the Mireo and Velaro Novo
- 99% delivery reliability on installation deadline
- Innovative lightweight frame enables a weight reduction of >40%
- The 1,000<sup>th</sup> Vectron bogie delivered on schedule
- Successful commissioning of 2 innovative drilling machines Motion Control implementation 2020
- Successful product launches in implemented Sacramento (MUST, AAF, San Francisco)
- Implementation of the diagnostics and monitoring digital maintenance concept in the large-scale project RRX
- Successfully established the FIT & SAFE health and safety program

## Social responsibility

- Training of around 60 apprentices per year on average
- Partnership with the Graz University of Technology, one of the nine top universities worldwide, as part of the "Siemens Center of Knowledge Interchange" program for innovation management, talent development and technology transfer
- Siemens supports bringing "Light into the Darkness" each year

# The development of mobility in Austria 1854 – 2019: 165 years mobility expertise





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The megatrends of the mobility industry serve as the basis of our driving force behind the BG areas of innovations





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# **Global Competence Center for Bogies Graz**



- One of the world's largest sites for the development and production of bogies
- Around 55,000 bogies have been produced since 1998
- Approximately €120m invested in the site since 1998
- 240 highly-qualified engineers
- Capacity for approx. 3,500 bogies per year
- Highest level of automation
- 60 apprentices
- Operational experience is the key to innovation:
   >100bn kilometers in operation







# Global Competence Center for Bogies Graz "one-stop shop" for bogies





Management EN, IN, PM, P, QM, CS, PN	Logistics
Frame Production	Test facility
Assembly	RASMO wheelset assembly
Painting plant	Bogie Repair und Service Center
Mechanical production	Pantograph production

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# The world of bogies





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# Graz is a global supplier of bogies and components for modern rail transport





# From A to B – Mobility and transport solutions for people and goods





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## The bogie product portfolio at a glance





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# Formula 1 by rail – High speed bogies for maximum comfort, reliability and safety



# High speed and intercity



#### Distance traveled

30 billion km = 200x the distance from earth to sun

#### Speed

360km/h

#### Number of bogies

>6,000

#### Availability

>99%, general inspection every 3.3 million km

#### Reliability

Only 10 minute delay per 1 million km

#### Energy efficiency 0.33 liter fuel/100 km and passenger

**CO<sub>2</sub> emissions** Up to -80% compared to passenger car

Vehicles Velaro, ICE 4, ICE 3

Bogies SF500





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# The carrying capacity of metro systems is unrivaled





**Metros** 



Number of bogies

>9,000

#### Availability

>99%, general inspection every 1 million km

#### Requirements

Inhomogeneous requirements (axle load, clearance, platform height, ...)

#### **Carrying capacity**

Up to 75,000 passengers/hour (every 2 minutes up to 2,500 passengers)

#### Vehicles

Inspiro Midcap, Inspiro Highcap

**Bogies** SF1000, SF3000





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# Proven technology that is flexibly configurable to the various needs of our customers in regional transport



## Regional trains, commuter trains, passenger railcars





#### Distance traveled

20 billion km = 500,000 times around the earth

#### Speed

120 – 160km/h

#### Number of bogies

- >10,000
- Train and bogie platforms allow for configuration according to customer requirements (e.g. length, drive power, etc.)

#### Availability

>99%, general inspection every 1.5m

#### **Energy efficiency**

Use of conceptional light weight construction and new materials to reduce mass and thus increase transport capacities

#### Vehicles ÖBB Cityjet, Thameslink, Mireo

**Bogies** SF6500, SF7000, SF7500





# Trams and light rail vehicles contribute substantially to alleviating traffic congestion in city centers



## Trams and light rail vehicles, VAL



Speed



# 70 – 120 km/h Number of bogies Approximately 5,000 High degree of standardization despite varying track widths Vehicles Different vehicle concepts Floor height Low-floor tram 350mm up to high-floor tram 1,000mm Vehicles Avenio, Avenio M, S70, S200

SF35, SF30, SF40, SF70





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# With our locomotive bogie, we cover the entire spectrum ranging from freight transport to intercity transport









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The quality of the contact is essential for frictionless and efficient operation!

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# **Close working relationships and partnerships**





# **Occupational safety and compliance are non-negotiable**





The safety of our employees and compliance are the foundation of our business and are non-negotiable

BG management



# In line with our Siemens production system, our health program "fit&safe@BG" is based on 4 key pillars





The aim of this pillar is to maintain, improve and strengthen the psychological well-being of our employees on site. Responsibility: AMED, medical personnel



#### 2 | Occupational safety and healthy working environment

The aim of this pillar is optimized healthy and safe working conditions in each working environment beyond the legal requirements. Responsibility: Safety professionals, safety officers and AMED



#### 3 | Psychological well-being and mental strength

The aim of this pillar is an optimized working atmosphere to improve the psychological well-being of our employees

#### 4 | Fitness, exercise and healthy nutrition



- Long-term involvement in the safety and health culture of the company
- Promote health awareness
- Improve communication
- Increase the attractiveness of the working environment









"He who knows his destination will find his way"

Laozi

# Safety information for visitors





Please follow the instructions of your contact person.

Please stay on marked routes and stay with the group.

If you wear a pacemaker you should necessarily inform your contact person.

Pay attention to fork lift trucks operating and truck traffic on the entire factory site.

Pay attention to audible signals (continuous sounds). Leave the building through emergency exits and make your way to the assembly point.

Do not stay or stand under a suspended load.

Please use the personal safety equipment that is provided. In certain areas wearing ear protection is compulsory.

Keep sufficient distance from running machines, grinding or welding works.

Do not watch the arc lights.

Smoking and taking photographs is strictly forbidden.

# Thank for your attention





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