

PROJEKT SNOWFLAKE

LARGE MOBILE ROBOTIC SYSTEM

In Partnership with



- Highly Flexible Industrial Robotic System on AGV
- Automated Bolt Tensioning to Increase Productivity

SNOWFLAKE - MOBILE SYSTEM FOR BOLT TENSIONING

Area of Application

Project Snowflake integrates an automated bolt tensioning end-effector with an industrial robot system mounted on an autonomous guided vehicle to transform this manual task into a fully mobile integrated system.

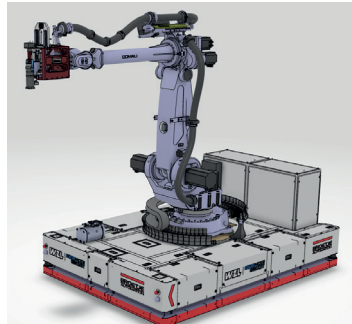
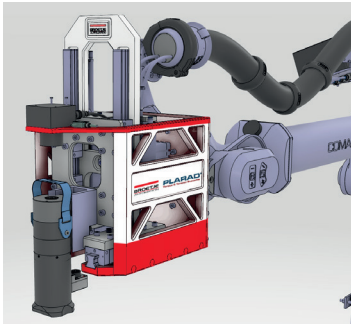
Snowflake follows our vision of using technology to improve quality and make work easier to deliver the world's most efficient, sustainable and pioneering production systems by automating bolting for the wind energy sector and other industries. The concept will contribute to the ambitious goals of the global energy transition. It enables the flexible manipulation of heavy payloads and has the potential to increase the productivity of manufacturing companies in the face of changing conditions.

The innovative large mobile robot was developed jointly by Broetje-Automation, the Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University and PLARAD - Maschinenfabrik Wagner.

Technical Data

Reachability Robotic System: 3000mm from the centre of the mobile platform (AGV)	System Accuracy: ± 3 mm for positioning, ± 0.1 mm process points with use of camera
Acceleration AGV: 0,6 m/s	Battery: Lithium 200Ah, internal charger
Speed AGV: 1,5m/s	

Compact Configuration



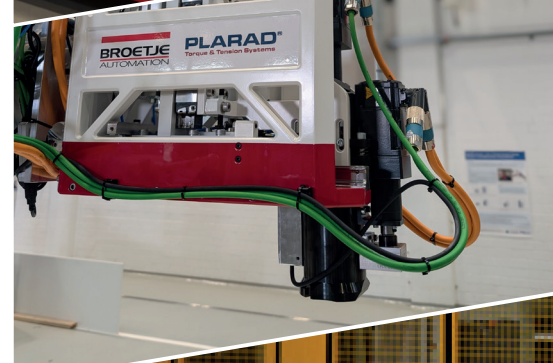
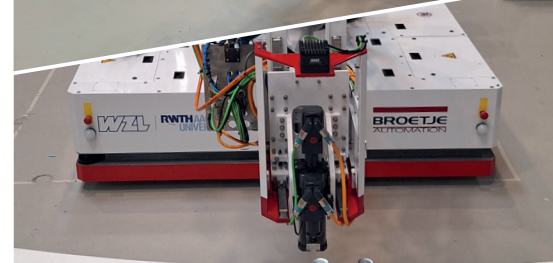
Special Features

Control and Navigation

- 360° wheel design - no angle of rotation limit, endless steering movement
- Simple design with standard off-the-shelf parts assure robustness
- Safe hand pendant operation
- Mapmanagement with LIDAR based path planning and SLAM (Simultaneous Localization and Mapping) for map teaching
- Monitoring and control can be done with mobile clients

System and Process

- Online and offline teaching of parts
- Camera based self centering on fastener
- Full Body Kinematics - AGV-kinematic and robot-kinematic integrated together
- Full integration - AGV, robot, camera, tensioner controllable by mobile clients
- Optimized Bolt Tensioning Process for an ergonomic working environment (in partnership with Plarad)



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