

Case Study: Magnomatics Limited – ROBOMAG

Background

Magnomatics had previously designed, manufactured and successfully tested a 500kW wind generator, using its proprietary Pseudo Direct Drive® (PDD) technology.



The PDD showed a significant increase in efficiency to the wind turbine, but during build of the permanent magnet generator we encountered some manufacturing challenges, including handling of high-strength magnets

Magnet Placement Manufacturing Challenges

- Prohibitively time-consuming placement of high-strength magnets
- High cost of manufacture due to labour-intensive process
- Additional safety risk for magnet placement of larger magnets as technology is scaled up to 5MW and higher

Business Case

Despite having received enquiries from several wind generator OEMs, Magnomatics was unable to internally fund the necessary improvements to the manufacturing process that would enable us to make the generator more cost effective for potential customers and scalable for future development for the Offshore Wind industry.

OWGP Support

Magnomatics received funding from the OWGP under the call for supply chain improvement projects for the offshore wind industry.

With the funding received from OWGP, we were able to design and, with the assistance of project partner the ARMC, create the ROBOMAG magnetic pick and place machine and so to automate a vital part of the manufacturing process.

Result

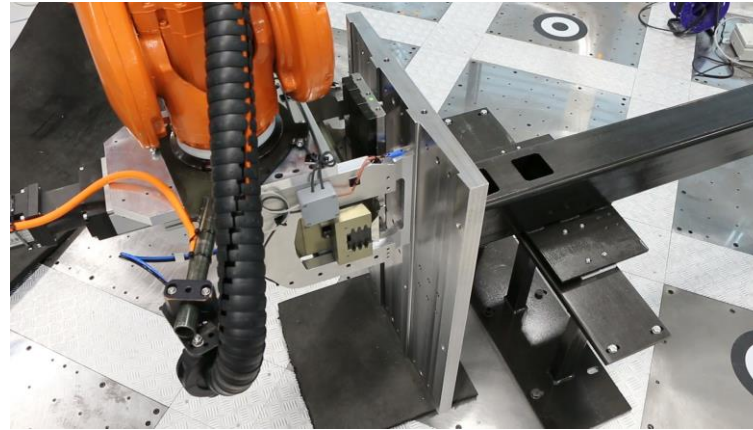
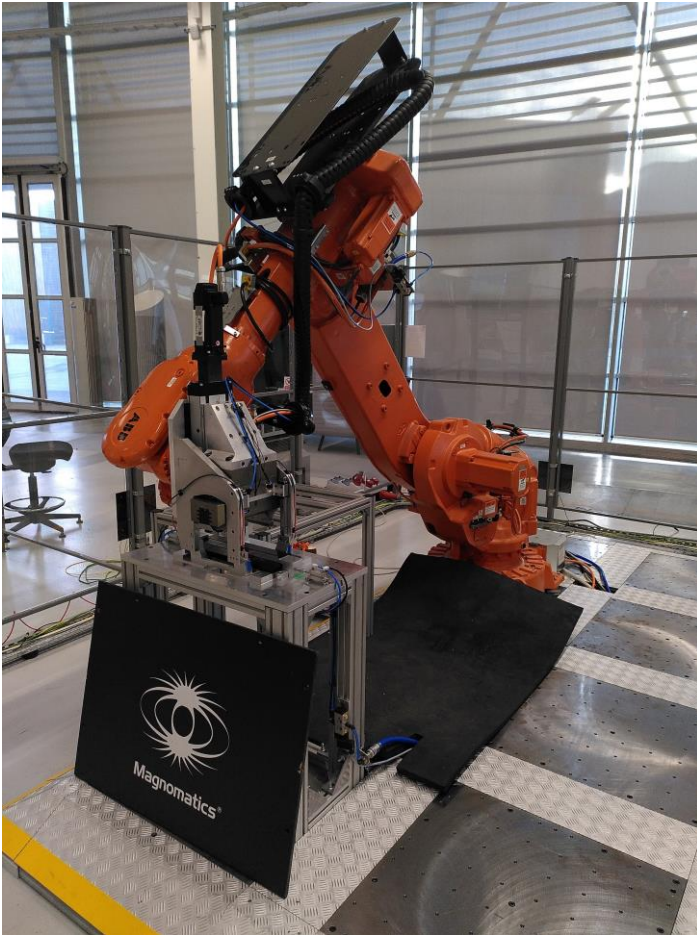
- Drastically reducing the timescale needed to place magnets from 55 minutes to 55 seconds
- Improving safety features of magnet placement
- Reducing timescales of manufacture for future wind projects



Clean
Compact
Reliable

- Established in 2006
- 23 staff including 5 PhDs
- Commercialising novel products based on highly efficient proprietary magnetic gear technology
- Developing innovative and energy saving solutions for a range of applications including renewable energies and vehicle electrification
- Supporting the future of engineering by offering Apprenticeships and Year in Industry Placements

Case Study: Magnomatics Limited – ROBOMAG



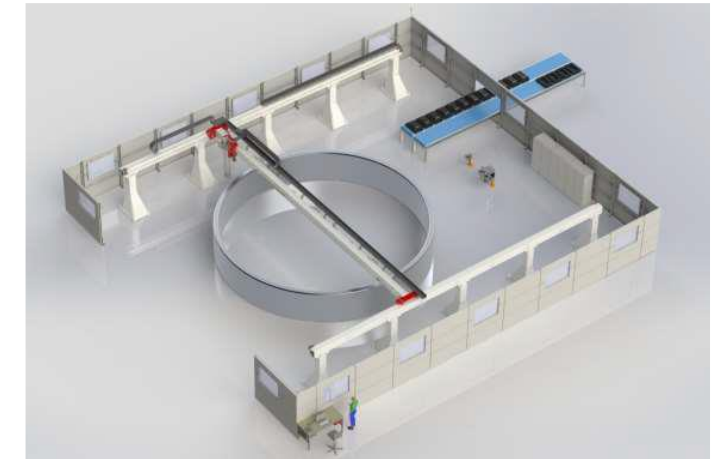
Outcome

The ROBOMAG cell can be programmed to build new rotors and different magnet combinations, resulting in faster manufacturing process development throughout Magnomatics' scaling-up process and machine build. It has enabled Magnomatics to respond to customer enquiries for larger wind generators from 5MW to 15MW, helping the company improve its offering, and helping the development of the offshore wind energy supply chain.



Post Project

- Magnomatics engaged Loop Technology to assess implementation cost of a manufacturing cell to produce a wider range of rotor diameters using the outcome of ROBOMAG project.
- Overhead gantry system which provides greater flexibility for a wider range of rotor sizes was proposed
- Magnet rotor manufacturing system cost shared with potential customer



“We are delighted with the outcome of this project. It is just one element of a series of developments all aimed at manufacturing large direct drive generators for wind here in the UK. This project places Magnomatics on the right track to develop bigger generators and attract big offshore wind OEMs to Sheffield and the UK.”

Dave Latimer, CEO,
Magnomatics Limited