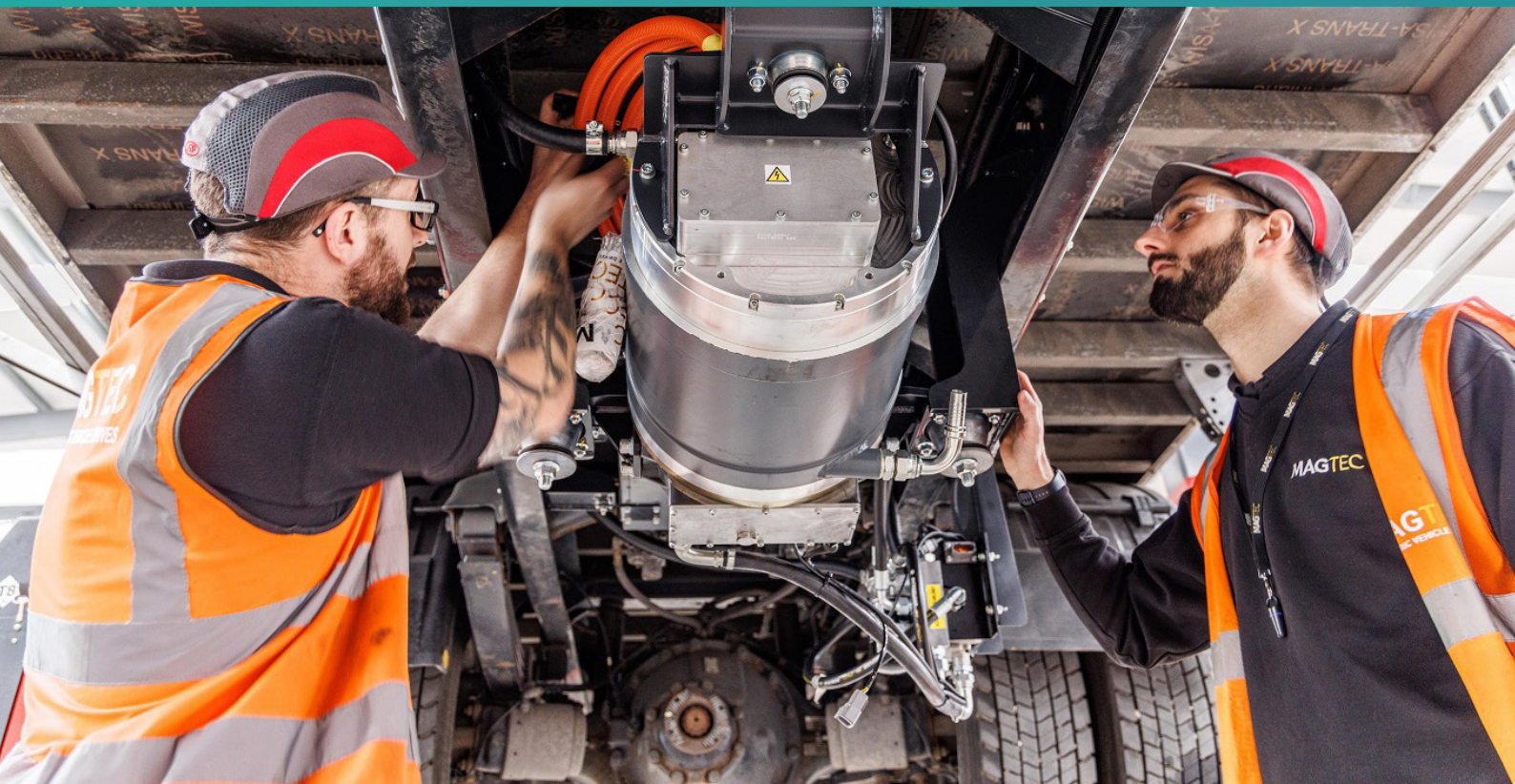


## UTILISING AUTOMATION TECHNOLOGIES TO ESTABLISH MAGTEC AS A TIER ONE AUTOMOTIVE SUPPLIER



As the leading supplier in this country of electric drive systems and specialist hybrid solutions, we knew that we needed to engage industry specialists to increase our influence on the global sector. By working with MTC, we have made integral process improvements and upgrades to our motors as well as maximising the floor space at our new facility to help us to scale up our production capability and put us at the forefront of the high-tech design and manufacturing of electric drive systems and specialist hybrid solutions.

**Andrew Gilligan, Managing Director – Magtec**



### THE CHALLENGE

Magtec, based in Rotherham, South Yorkshire, was founded in 1992 and develops, designs, manufactures, installs, repowers electric drive systems and components for a wide range of vehicle types. As a major force in the UK's electric vehicle (EV) supply chain, Magtec saw its new facility and the increasing requirements for its products as the ideal opportunity to take on the global market and become a tier one supplier.

Magtec identified that its current operation, including manual assembly and manufacturing processes, was not viable for international expansion. A £2.6 million grant from the Advanced Propulsion Centre enabled Magtec to work with the MTC, utilising experts in automation, power electronics and business transformation to advise on how the business could accelerate production to meet the growing demand for electric commercial vehicles.



## MTC'S SOLUTIONS

Working in collaboration with Angel Trains, Dennis Eagle and the University of Sheffield Advanced Manufacturing Research Centre (AMRC), the MTC conducted the majority of the partner engagements using virtual conferencing due to the COVID-19 pandemic, utilising digital platforms to tour facilities, and conduct product and process workshops. This enabled up to 30 engineers at any one time to participate and advise, demonstrating the flexibility and cost effectiveness of digital solutions.

An important phase of the project was the discovery process with the MTC initially conducting a Technology and Manufacturing Readiness Level (TRL/MRL) assessment to gain an all-encompassing understanding of Magtec's current operation and to be able to identify what needed to be addressed to level up in the short and long term.

After identifying what could be done to automate current processes, the MTC also analysed the current motor and its assembly to advise on how to produce better quality and higher performing motors in a more automated fashion. This included upskilling stakeholders on more appropriate material choices and the assembly of the power electronics. This helped Magtec to recognise short

term fixes as well as starting the business on its journey to a fully automated assembly and manufacturing solution that could produce more motors in an efficient manner.

To support with this and utilising its vendor agnostic approach, the MTC worked with Magtec on a thorough supply chain analysis to assess suitable, UK based suppliers of new materials and systems. This included vendor trials to analyse product effectiveness for each part of the new processes being implemented at the facility.

Aware that Magtec were in the process of moving to an all-new facility, the MTC also worked with partners to optimise process flows and drive design for manufacture to streamline the design and production solution.

The MTC created a digital factory environment which mapped the assembly process flows and visualised the full production line prior to transition from a manual to a fully automated facility. The digital factory environment also enabled the team to better maximise the floor space in Magtec's new facility and prepare for future production goals.



Our project with Magtec demonstrates the full breadth of the expertise that is available at the MTC for UK businesses, especially as we push towards a greener economy. In particular on this project, we have shown great flexibility in our approach and still been able to achieve the goals of the project and set another UK manufacturer on its way to a brighter future. Magtec are now better prepared to embrace future challenges from an operational and a skills perspective, while having products suitable for the international market.

**Dr. Marc Henry – The MTC**





## THE OUTCOME

- ▶ As a result of the ongoing project, Magtec now has the knowledge to produce over 2500 motors for electric and hybrid vehicles per year. This has the potential to scale up further towards the 5000 units per year target.
- ▶ Magtec successfully transitioned to its new 65,000sq ft facility with an improved factory floor layout that has also created a number of advanced manufacturing jobs as a result of the increased production requirements.
- ▶ MTC also supported Magtec to create a better performing and more easily manufactured power unit as a result of knowledge transfer work that encouraged Magtec to review some of its material choices and to implement new innovative automation technologies.
- ▶ The MTC worked closely with Magtec to upskill employees on the latest innovations in power electronics and automation to ensure they were ready to cope with the demand.

## BENEFITS TO THE CLIENT & INDUSTRY

- ▶ Magtec has increased its manufacturing productivity and is readying itself as a tier one supplier to the global automotive and transport industry. In doing so, it is levelling up the regional supply chain and strengthening the UK's position in the emerging global sector.
- ▶ For the wider UK electrification, transport and automotive sectors, projects like this are making a significant impact on the road to carbon neutral as UK manufacturing aims to meet the net zero goals set out by the UK government.
- ▶ Upgrading business operations and integrating new, innovative technologies throughout the wider supply chain also supports UK businesses to attract investment leading to improved employment opportunities and job development prospects for people living in the UK.



This collaborative research and development project funded by £2.6m through the Advanced Propulsion Centre aims to build capability and skills and enable scale-up of the electrified UK supply chain. We are pleased that the consortium led by Magtec brings together diverse cross-sector expertise and that each partner has made a positive impact. This project is part of our ambition to accelerate the transition to net-zero emissions.

**Zoe Hall, Head of Competitions and Projects – APC**

