

“The KTP project with Fifth Wheel has been a very technically challenging project which has produced excellent outcomes to both the college and company”

Grwp Llandrillo Menai FE college unlocks capacity and innovation at The Fifth Wheel Company.

A luxury caravan manufacturer has unlocked capacity, increased productivity and profits, and created a culture of collaboration and innovation, after partnering with a Further Education college.

Through the Knowledge Transfer Partnership (KTP) programme the Fifth Wheel Company (Fifth Wheel Co.), based in Rhualt, North Wales, collaborated with Grwp Llandrillo Menai (GLM) and KTP Associate Charlie Small to implement new smart digital manufacturing processes which introduced advanced composite materials to the company's bespoke product range.

Mick Card, Innovate UK KTN Knowledge Transfer Adviser, who supported the KTP, said: “This is the second time Fifth Wheel has reaped the benefits of a KTP to further develop and embed world-leading manufacturing capability. This time the company has embraced the advanced manufacturing expertise available from Grwp Llandrillo Menai to fuel the next phase of growth and innovation.

“The KTP, which has been assessed as ‘outstanding’, shows what can be achieved through excellent collaboration between business and academia, and reflects the breadth and strength GLLM has as an FE college to support regional businesses.”

THE INSPIRATION

Fifth Wheel Co. is best known for its unique fifth wheel tourers and innovative touring caravan.

Antiquated attitudes towards digital manufacturing and a risk-aversion towards research and development meant Fifth Wheel Co. were missing out on opportunities to introduce new lightweight materials, and the advanced processes needed to manufacture

them, now emerging as the automotive industry switches to electric vehicles.

Gethin Whiteley, Technical Director, said: “While we had invested in digital manufacturing to improve efficiency, we weren't getting the best out of it. We were still organised as a traditional manufacturer where a product moves from A to B to C. We lacked innovation. As a result we couldn't meet the demand for our products and were increasingly reliant on third parties.”

Having seen the benefits of a previous KTP, Fifth Wheel Co. wasn't shy about looking for external expertise and support, and secured a two-year project co-funded by the Welsh Government and Innovate UK to work with Grwp Llandrillo Menai, a Further Education college, with expertise in advanced manufacturing, which it also had a longstanding relationship with.

THE INNOVATION

KTP Associate Charlie Small began working with GLM and tapped into academic support by looking at CAD, CAM, and state of the art manufacturing practices. The partnership designed a project which encompassed all areas of Fifth Wheel Co.'s business from point of contact with the customer, through design, production, and delivery.

It introduced new digital manufacturing processes, including enterprise resource planning (ERP) software, to replace the use of paper on the shopfloor and allowed real-time access to key information and drawings at each workstation.

Radical changes were made to workflow and cell organisation, improving the flow of information from the design team to the CNC operators, and the flow of parts to finishing and assembly.

The project also made the best use of existing CNC processes, introducing advanced 3D machining using Autodesk Fusion 360 to enable the in-house capabilities and capacity to create a new range of foam vehicle trim, improving panel building potential by replacing plywood with lighter materials.

The project also introduced the use of desktop 3D printing and CNC machining to improve research and development capability.

THE IMPACT

New manufacturing capability brought subcontracted components back in-house, giving Fifth Wheel Co. complete control over its production schedule and design variations, increasing flexibility and reducing lead times.

The introduction of standard operating procedures and better staff training has reduced rework and miscuts which in turn is helping to drive scrap parts down.

As a result Fifth Wheel Co. has increased its capacity by 50%, allowing it to increase production from 35 vans to 50 over a year. This is estimated to increase turnover by £1.3M.

The introduction of cloud-based data has eliminated paper from the production process, speeding up information transfer from the design office to the factory and increasing accuracy.



The project has put in place the foundations for further in-house manufacturing capabilities to use more lightweight composite materials to reduce the weight of the vehicles and align with the drive towards electric vehicles.

Charlie Small, KTP Associate, said: “Having a third party involved brought a new perspective to Fifth Wheel Co.'s production processes and mindset. It is no longer reliant on third party suppliers and has massively increased its in-house capability. There is a new level of trust, confidence and autonomy flowing through the business. R&D is now part of everyday life and everyone is striving to do things better. “The project helped show the art of the possible and changed hearts and minds.”

The project has also seen a dramatic shift in the culture within the business. Shop floor staff have been upskilled and empowered to problem-solve and collaborate with other departments.

The flexibility has given the production team a more positive attitude towards prototype work and experimentation.

Gareth Hughes, Centre Manager CIST & Innovation, Grp Llandrillo Menai, said: “The KTP project with Fifth Wheel has been a very technically challenging project which has produced excellent outcomes to both the college and company.”

Vaughan Gething, Minister for the Economy, Welsh Government, said: “Knowledge Transfer Partnerships offer real solutions to difficult problems for industry, and this example recognises their ability to help solve problems by having a real business impact. In Wales, industry and academia continue to collaborate so positively for the benefit of future generations and the Welsh Government will continue to support that.”