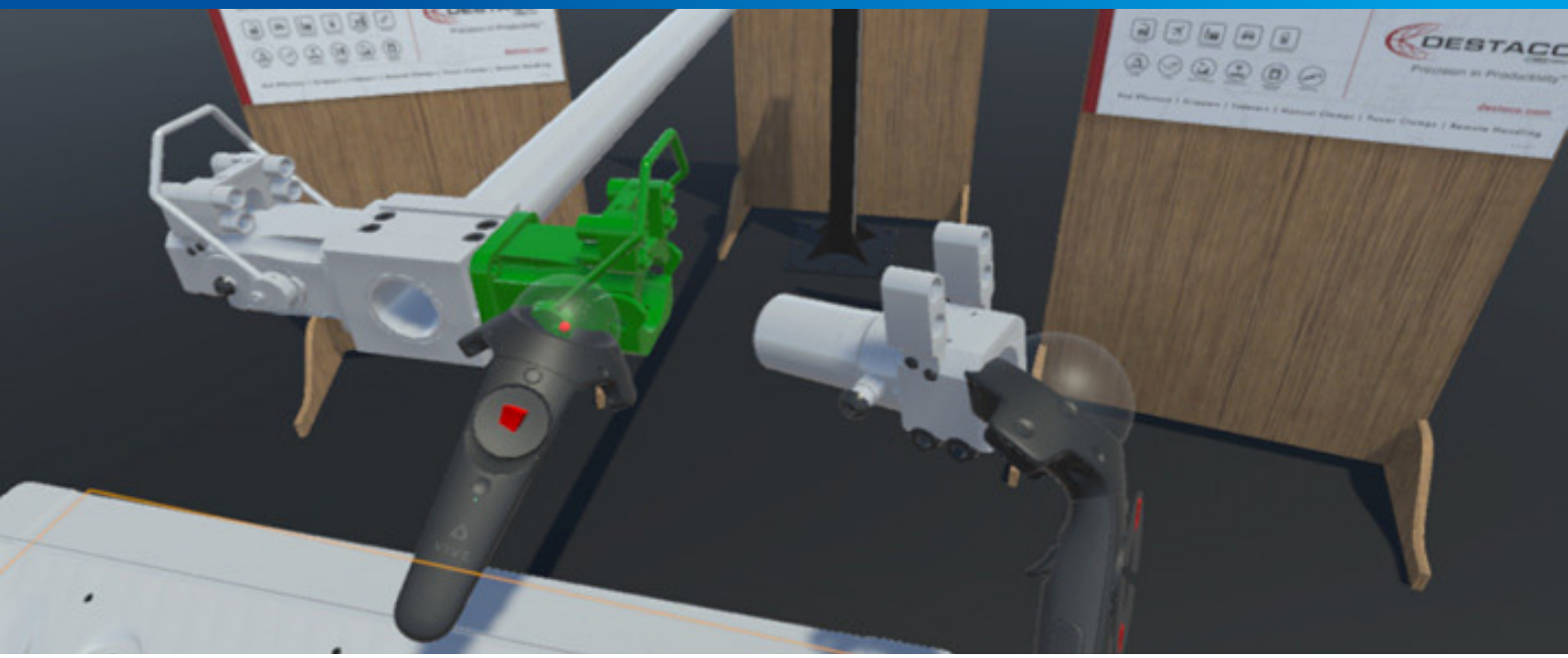
AMRC
ADVANCED MANUFACTURING RESEARCH CENTRE

The University Of Sheffield.

Integrated Manufacturing Group
Case Study

AMRC assist DESTACO in navigating the world of virtual reality



The Integrated Manufacturing Group of the Advanced Manufacturing Research Centre (AMRC) with Boeing has been working with DESTACO, a leading global supplier of high-performance automation, work holding and containment fixturing solutions to help create a virtual workshop to assist with pre-production and factory planning processes.

IMG have been using data driven, digitally assisted assembly technologies to create a package of programmes that give DESTACO a complete 'digital press shop' virtual environment to develop automation and fixturing tooling for manufacturers.

Fixturing tooling to hold automotive body panels in a press line is currently built around the physical component. This is usually only available shortly before production begins; so it can be difficult to develop a fixturing solution ahead of them arriving at a manufacturing facility.

CAD models of components may be available earlier but it is difficult to develop a fixturing solution from a CAD model that avoids clashes with equipment during production.

To give DESTACO a way to develop new tooling fixtures and automation processes without being reliant on the physical components, IMG have developed packages of work utilising a head-mounted full virtual reality system to create simulations of a press line, die press and develop CAD models of tooling fixtures.

"The simulations allow engineers to customise fixturing tooling and adapt them to the press shop environment in the pre-production stages to allow design revisions before physical models are built." **Michael Lewis.**

The digital press shop gives DESTACO the ability to design fixturing tooling with work instructions and develop shop floor manufacturing processes, without the need for the physical components. Press line and die press simulations of the working environment allow operators to see how the virtual tooling will operate within real-world environment before any physical materials have arrived on site at a DESTACO facility.

IMG created these packages by taking the CAD information from the entire catalogue of DESTACO components, importing those parts into the digital press shop environment and writing the simulations to show how these parts interact with each other and the real-world environment.

Michael Lewis, Augmented Reality Developer for IMG said that the packages reflect the conditions in a real life press shop environment:

"The simulations allow engineers to customise fixturing tooling and adapt them to the press shop environment in the pre-production stages to allow design revisions before physical models are built.

"Uniquely within the automotive industry, the digital press shop allows operators to see unused space within the die press environment, allowing them to reduce the working volume of the die press before production starts.

“The digital press shop will allow us to reduce downtime and improves processed parts per minute for clients.”

John Smith, general manager for DESTACO.

“This is significant as it will lead to DESTACO moving towards accurately predicting how many panels it can produce in a set time, giving clients’ certainty of the value for money they are getting.”

By using analytical tools to complete a process more efficiently in the virtual world, IMG are adding value to DESTACO’s existing CAD data by creating time and cost efficiencies in manufacturing processes.

John Smith, general manager for DESTACO at their Wolverhampton site, said: “The programmes give us the ability to ensure the data we use at the start of the process is equal to the data at the end of the process. The simulations are based on process knowledge and can be used for staged optimisation so we can easily eliminate errors or detect failure.

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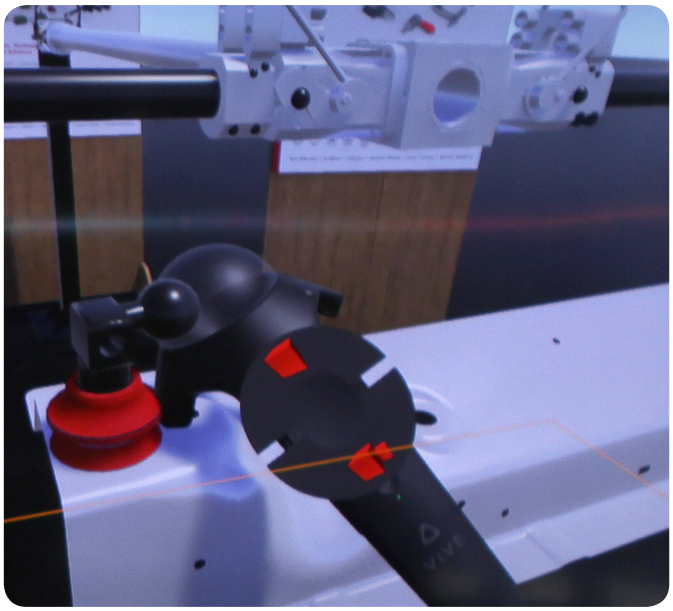

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