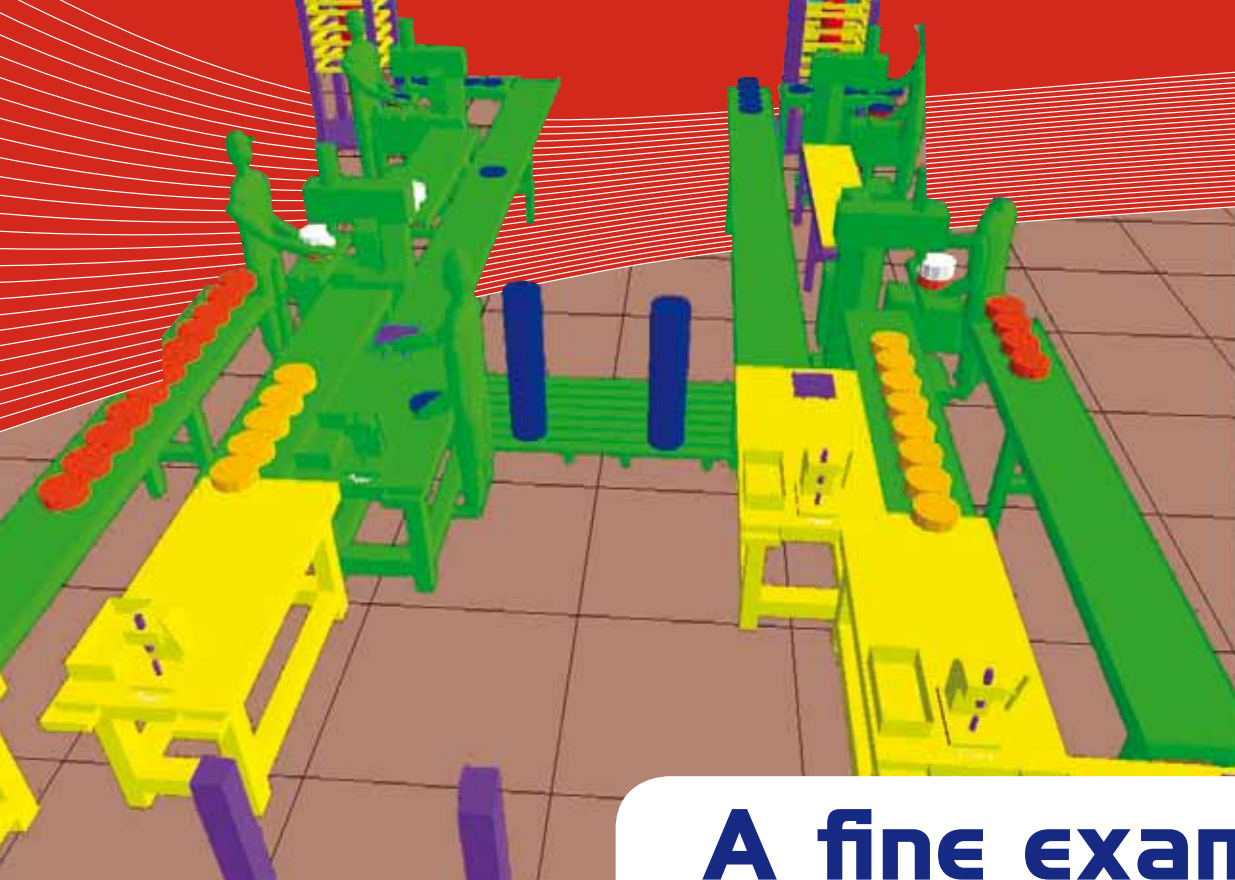




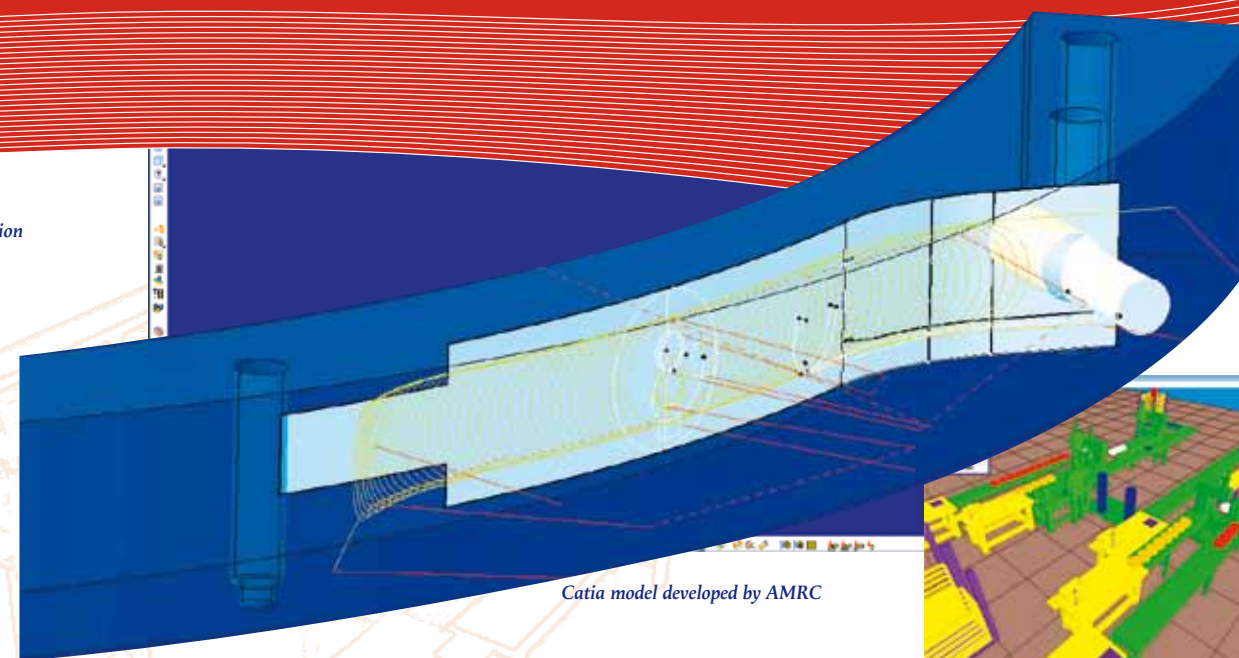
Applied

DELMI Quest production cell with digital mannequins

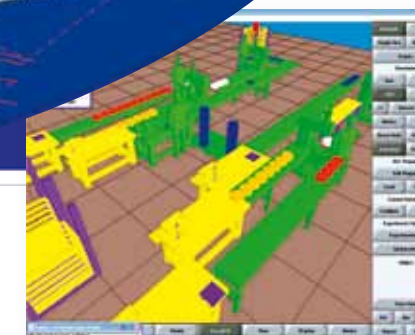
By Nick Lerner



DELMI Quest production cell simulation



Catia model developed by AMRC



A fine example to manufacturing industry

An advanced factory of the future and manufacturing research centre explores, develops and implements optimised production procedures for industry using Dassault Systèmes PLM solution to bring technical, environmental and commercial benefits.

The University of Sheffield's, the Advanced Manufacturing Research Centre (AMRC) with Boeing explores the use of new tools and techniques for advanced manufacturing for its industry-leading partners. With over 90 staff and availability of the remarkable Rolls-Royce Factory of the Future, the AMRC develops and consults on introducing optimised equipment and processes for industry.

Techniques are refined in the Factory of the Future using on-site advanced machine tools and Dassault Systèmes CATIA, DELMIA and 3DVIA technology. Solutions are found for industry that industry itself often does not have the time, expertise or capability to develop itself.

MAKING INTRODUCTIONS

Rab Scott, Head of IT at AMRC, explained the organisation's work: "Industrial partners come to us with problems because we have the culture, capability, capacity and commitment to investigate and resolve them. A recent example for a major aerospace undercarriage tier one supplier helped them to win a valuable contract. This was achieved using CATIA to digitally

examine potential production methodologies, and accurately calculate production times. Having helped win the contract AMRC subsequently helped implement the new methodology for the aerospace supplier with great success."

Rab continued, "Customers often present us with a blank canvas on which we create a methodology using our experience and tools. The best solution may involve a complete mindset change involving, assessment, and optimisation of processes and the appliance of best practices. We have achieved up to 95% process-time reductions which are initially proved out in the Factory of the Future then transitioned to industry."

BLANK CANVAS

AMRC uses DELMIA QUEST to digitally plan optimised factory layouts that calibrate and iterate process flow, health and safety, best use of capital equipment and robot simulation. Ben Kitcher Technical Lead, Factory Planning, at AMRC explained its usage: "There are always efficiencies to be made in any process because technology, materials and techniques move on. We use DELMIA to develop continual improvement

which is transferred to industry, once the strategy and tactics have been fully proven both digitally and physically."

Rob Carroll, AMRC Project Manager added, "CATIA is used at AMRC to create digital prismatic parts, thin wall five axis forms and large aerospace assemblies. We utilise CATIA to improve machining process strategy by optimising tool paths. Dynamic profiles of machines can be improved so that they cut and create surfaces faster. This is done using accelerometers and other equipment to find spindle speeds that reduce vibration and stabilise the machine. This allows tools to operate at maximum speed, optimum cut depth and greatest overall efficiency. Having done this work at AMRC we can quickly realise and implement the most beneficial whole system adjustments at our industrial partners sites, without the disruption that this would entail were it done in-house."

Using Dassault Systèmes PLM, AMRC is able to investigate theoretical, virtual and physical production scenarios by digitally modelling systems and processes. In many cases this saves industry the cost of buying new equipment because existing facilities can be made to work a lot more efficiently through better understanding their functionality and making appropriate modifications to it.

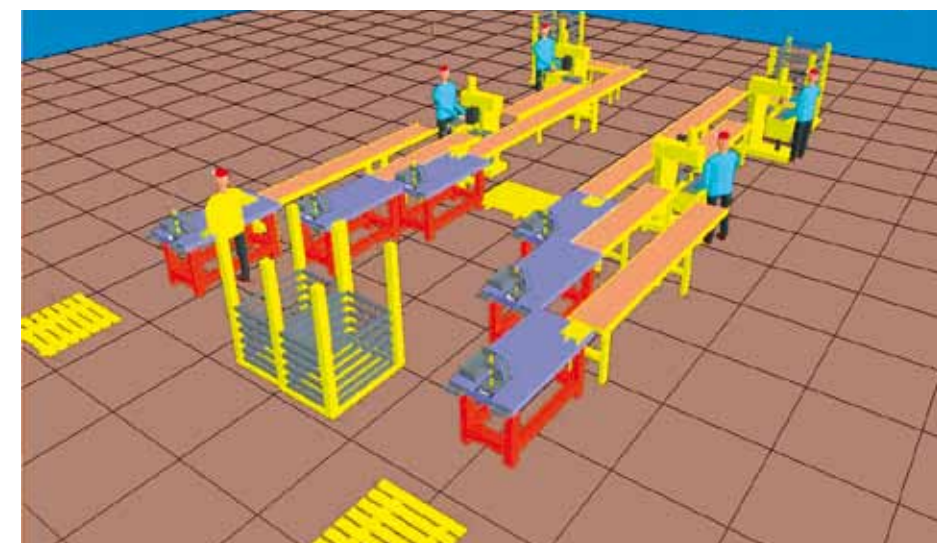
COMPOSED PRESENTATION

AMRC makes great use of Dassault Systèmes 3DVIA Composer finding its facility to develop training and other scenarios of very high value to its work. Rab Scott described the benefit of its use: "3DVIA Composer enables us to look at single parts and assemblies in context and to consider in 3D their assembly procedure and its optimisation. It also allows us to find design faults that could adversely affect other operations and to correct them before the damage is done. 3DVIA Composer's manipulation

capability allows us to design for assembly and maintenance as well as providing very high levels of digital 3D communication interactivity in 3D."

This is possible because 3DVIA Composer is able to provide secure but accessible 3D digital models in a format that allows stakeholders to manipulate and mark them up. In this role it greatly helps with training, simulated manipulation and moving views from single parts to final assembly.

DELMI Quest production cell Simulation



Instrumental in the development of AMRC has been the involvement of Dassault Systèmes Value Added Reseller, Applied PLM Solutions. Applied introduced and has provided training and support for AMRC's Dassault Systèmes PLM installation and also consults on its best use and development. Applied trains AMRC staff, runs seminars and trouble shoots as well as advising on new software and the value of its implementation. Rab Scott commented: "It is sometimes difficult to stay up to date with all the latest advances and developments in PLM but with Applied on the team we know that software to improve our facilities will be properly evaluated for its suitability and potential benefits."

AMRC is an exemplar of best engineering practice providing experienced guidance to major global enterprises. They are strong advocates of Dassault Systèmes PLM and through close involvement have been influential on PLM developments by providing valuable feedback based on the deep knowledge that has developed from working with their industrial partners •)

For more information:

www.amrc.co.uk
www.appliedgroup.co.uk