

# EMR and University of Sheffield AMRC team up on depot simulation tool

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East Midlands Railway (EMR) is working with engineers from the University of Sheffield Advanced Manufacturing Research Centre (AMRC) to create a simulation tool that will help improve the efficiency and effectiveness of its depots.

The project, made possible by the Network Rail Performance Improvement Fund, has seen AMRC engineers work closely with EMR operations staff to record the rules, processes and timings of train movements to develop a representative model of its Nottingham Eastcroft depot.

Eastcroft provides the day-to-day maintenance of the EMR Regional fleet – a very complex operation as the fleet is split into three different types of train, known as Class 156, 158 and 170s.

The tools create a virtual simulation of activities taking place on the shop floor at the depot and gives the user the power to identify capacity constraints, model scenarios and rapidly visualise the impact on performance.

They will enable EMR to plan, stress test and simulate operational scenarios in a fraction of the time it

would take using conventional methods – hopefully improving train services for customers.

Richard Gardiner, AMRC senior innovation fellow and sector lead for rail, said the AMRC has relished the opportunity to work with East Midlands Railways (EMR) on a depot modelling project.

“We are collaborating to assess the application of state-of-the-art process flow simulation tools to assist the efficiency and effectiveness of rail depot operations.

“The AMRC is drawing on its manufacturing intelligence team’s significant expertise in modelling and optimising manufacturing production facilities using a range of tools. These tools create a virtual simulation of activities taking place on the shop floor and give the user the power to identify capacity constraints, model scenarios and rapidly visualise the impact on performance.

“The model incorporates the depot and local Nottingham station roads and accommodates a range of units. It provides a virtual representation of activities in a 24-hour period and assists the current ‘beat-rate’ exercise. This model will add a dimension of scenario planning that was previously difficult and time consuming to accomplish.”

Richard added: “Since usability is a key feature of the project, a user-friendly interface is being developed that allows users to adjust variables and model scenarios without detailed process modelling software knowledge. As a net result of all the features and components of the model, depot operations can be made more efficient with an improved unit availability and better service to the public.”

Neil Bamford, Fleet Director at East Midlands Railway, said: “We are always looking at ways we can embrace technology to help us run our services more effectively and are delighted to be working with the AMRC on this project.

“We hope this collaboration will result in a more detailed understanding of all the barriers that impact on running depot operations as efficiently as possible.”

*Photo credit: East Midlands Railway*