

Final Report Summary Rapid Painting Feasibility Study



MM1 Limited

www.justlikethereathing.co.uk/mm1/diesels.htm

Heriot Watt University

www.hw.ac.uk

THE PROJECT

This project investigated the feasibility of applying an experimental photographic painting system to the products (model trains) manufactured by MMI Ltd.

MM1 LTD is a high precision manufacturing company which specialises in the production of model trains for the elite train collector. They currently commission designs which are manufactured and retailed both as finished products (i.e. fully painted and assembled models) and in kit form with precision cast Resin and Brass components.

The primary research interest for the Digital Tools Group (DTG) at Heriot-Watt University was the method used to paint MMI's models, as a novel rapid painting technology is the subject of an on-going research project within the DTG. MMI currently manually paints its models; a process (that even with highly skilled and experienced staff) can take several days for a single model. However, as a relatively small company they must keep staffing to a minimum and currently they outsource some aspects of the painting of detail to a sub-contractor.

The DTG have created a rapid painting system that is designed to be driven by 3D CAD data and surface texture images. This information is supplied to a robot, which directs a laser to exposes the surface of a physical model which has been coated in a photographic emulsion. Once the 3D surface is fully exposed it is then developed in a similar fashion to a standard photograph.

The project aimed to investigate the feasibility of applying this optical painting system to MM1 's components and establish the finish attainable by the process.



THE KEY AIMS

1. The project aimed to investigate the feasibility of using an optical painting system to produce various surface appearances on model trains.
2. Discussion with MM1 identified that the technology could potentially be useful in two areas;
 - a. The application of fine detail to the surface of a model after the base painting has been completed.
 - b. The production of wood panelling effects on the models.
3. The ultimate aim is to reproduce a model with a finish of the same quality but at a lower cost than currently attainable.

CONCLUSIONS

After some initial experiments the project focused on issues of adherence and appearance (i.e. colour) of the photographic emulsion employed in the process. There are two main conclusions arising from the project: firstly that the technology is most likely to be commercially viable in the secondary shading (i.e. adding tones from light grey to black) of coloured undercoats and secondly that for MM1 's products a viable shading process might require only a few hundred pounds worth of equipment.

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