

A maintenance revolution for the UK - update

Plasser UK's Mark Simmons details the latest on the Robel mobile maintenance system for Network Rail.

Production on the Robel Mobile Maintenance Systems (MMS) for Network Rail's London North Eastern and South East Routes are proceeding apace. In *Rail Infrastructure* Issue No: 96, the award of the contract was announced and an in-depth view was provided on what the systems were and how they would look, as well as a promise of regular updates on the progress for readers of this magazine.

A busy start

Traditionally, there is a period following the contract award where the design team is extremely busy with concept and detailed design, but this is not visible to the outside world so all appears calm. The nature of this project and the enthusiasm of the project team have meant just the opposite. Since the last article, there have been three project progress meetings (two at the factory in Germany), three progress reports, two visits to Network Rail sites, a hazard identification meeting and numerous telephone calls, emails and formal issuing of documents describing, clarifying or updating nearly every aspect of the systems. Issued documents are as varied as water and fuel usage calculations, emergency exit and electrical layout plans and the rail transport system.

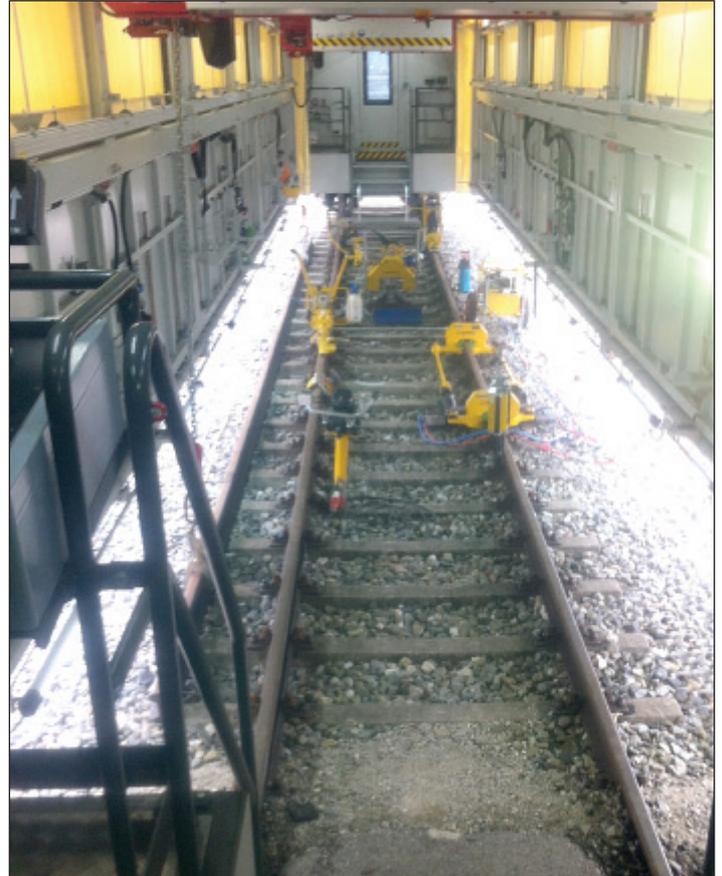
Designing in maximum efficiencies

In the previous article, it was mentioned that the IC (the Intermediate Car between the TSU and MMU which will be used for storage of material and equipment) will include a facility to transport six 45ft rails in a storage well under the floor. These would be stored in two rows of three rails. The overhead crane that runs between the IC and MMU is ideal for transferring these between the two vehicles and lowering them into the well. Early on though, it was identified that, to ensure maximum efficiency, it would be ideal if the rails could be loaded and unloaded in the individual compartments without having to deal with the entire top row before gaining access to the row beneath. For example, if only two rails were being changed on the night it would cause extra handling to have to remove the remainder of the top row and two of the bottom row to place the scrap rails in position. The Robel designers have developed and presented a system for handling each section independently.

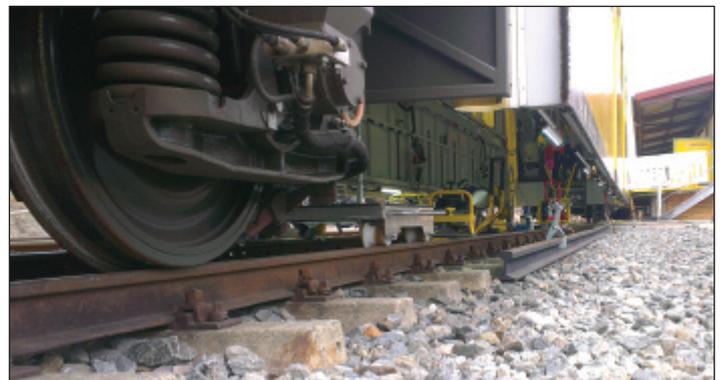
This aspect has been taken seriously by the project as a whole with both sides taking active steps to consider in detail the most productive system for carrying out each of the intended tasks. Robel has assigned a member of staff specifically to the development of the most efficient working processes and the specification of small plant to achieve this goal. As mentioned above, two site visits have already taken place to observe current Network Rail practice and ensure that the efficient processes developed are compatible with important UK culture, practice and constraints even as they take on the challenge of a step change in productivity in the coming, new protected, safe environment with all the necessary energy supply directly available where needed.

Space saving

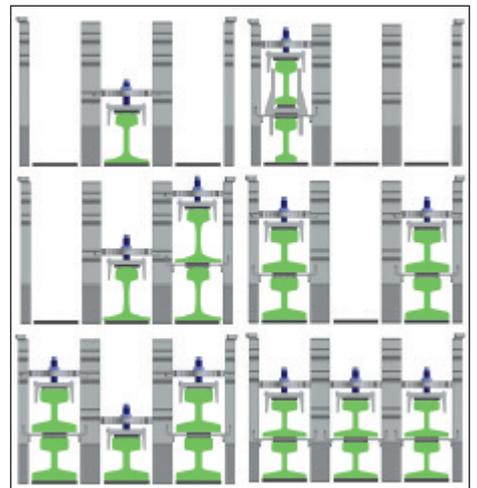
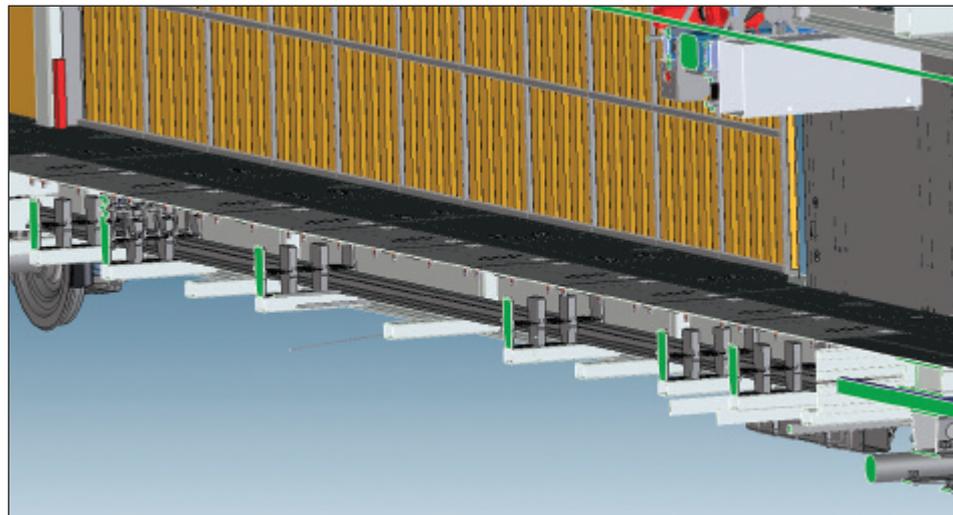
In comparison to the working processes in other European Robel MMSs, particular attention is being placed on the shorter, narrower



Above and below: Views into and alongside a MMU with the small plant arranged for a progress meeting demonstration which included lifting rail from the sleeper end.



space available in the UK. This has resulted in a number of specialised alterations to existing small plant designs to minimise



Above and right: The rail storage system.

Right: The first metal plates cut for the initial of the Network Rail MMSs.

their footprint by maximising their use of, for example, the in-built power supplies. Of course, all developments will require design, prototyping and testing, as well as Network Rail product acceptance testing, before being passed into series production. To ensure all this is ready in time for the first system delivery, the third project progress meeting held at the Robel factory in Freilassing, Germany, involved hands-on demonstrations inside a German MMU, intense discussions and a suggested small plant list for tasks envisaged for the first few MMSs to be delivered. Namely rail changing, pad changing and fish plate oiling.

Other progress

However, the third progress meeting was not entirely devoted to small plant. The designers took the opportunity of having the Network Rail project team at the factory to demonstrate the 3D CAD model and to delve into some aspects of the detailed design which are already completed or nearing completion. Concept design was already frozen at the second progress meeting. The team were able to dive into the driving cabs and look at the almost completed driving desk layout. At the other end of the system, the platform at the MMU was dissected and discussed in detail.

Approval and certification

In keeping with the careful planning that has been a feature of this project from the start, the design team has given much consideration to the authorisation into service process and



begun to engage at a very early stage. Initial structural calculations have already begun. As mentioned above, the initial hazard identification meeting has taken place and, in fact, the initial hazard log listing the identified hazards has been agreed and issued work is now underway on the design mitigations to close out the issues raised.

The on-track machine standard GM/RT2400 was updated in December 2013 to issue 5. Work is progressing in carefully developing all aspects of the design and production in compliance with the standard and considering the implications of some of the changes it has brought. For example, it now calls up the latest fire standards EN45545.

Where appropriate, the design team have identified areas and modules which have

already been shown to be compliant for use within these systems including driving cabins and bogies. This allows those elements to pass much more quickly into the pre-production planning process. This is also good because a number of long lead time items have already had to be ordered. For example, wheels and axles and many others are into the final stages of the procurement process or awaiting final design sign-off.

The build starts!

All of this is great in theory, but nothing says progress like the smell of freshly machined metal. So, during the latest factory tour, the project team were treated to the excitement of the head designer as he noticed the first plates for this project had, in fact, been cut! 