

# Dual Inventive

## Saving Time and Money with Dual Inventive's Track Circuit Operating Device

Mobile Maintenance Train at Woldingham Station, Oxted



### Background

Dual Inventive was invited to Woldingham Station, Oxted which is part of the Network Rail Sussex Route to observe the Mobile Maintenance Train (MMT) and to see how it operates in conjunction with Dual Inventive's ZKL 3000 RC (remote-controlled track circuit operating device) and a signal protection zone.

Network Rail on the Sussex route has been using the MMT for seven years covering regions from London Victoria to the South Coast to undertake repairs, renewals and to conduct upgrades to the rail network.

### Having access to the MMT:

- enables track workers to carry out railway maintenance work in a safe and controlled environment
- allows for shorter setup and shut-down times providing cost efficiencies
- reduces emissions created during machine operation, improving long-term health, thanks to the use of electric tools and proper ventilation
- allows for the adjacent track and overhead lines to remain open, making it less disruptive for passengers and freight

## Problem

Prior to using the MMT, any equipment needed for the shift would arrive by road, be driven to an access point and be transported by rail to the work site. The team would also have to take a line block using conventional methods during the dark hours putting track workers at risk.

It is a requirement that, when using a manual T-COD that it must be installed by a controller of site safety (COSS) with the assistance of a second person. To meet safety standards, two people must stay with the T-COD during the entire shift. Working this way is a slow and labour-intensive process, that is not cost-effective.

## Solution

Even though the MMT provides cost efficiencies by reducing time and resources, Network Rail felt it could reduce the set-up time in terms of taking a line block.

A decision was made to use Dual Inventive's ZKL 3000 RC remote-controlled track circuit operating device to provide additional protection. The device can be pre-installed and positioned outside of the worksite to create a signal protection zone.

The ZKL 3000 RC can be switched remotely with ease using the MTinfo 3000 app. Activating the device

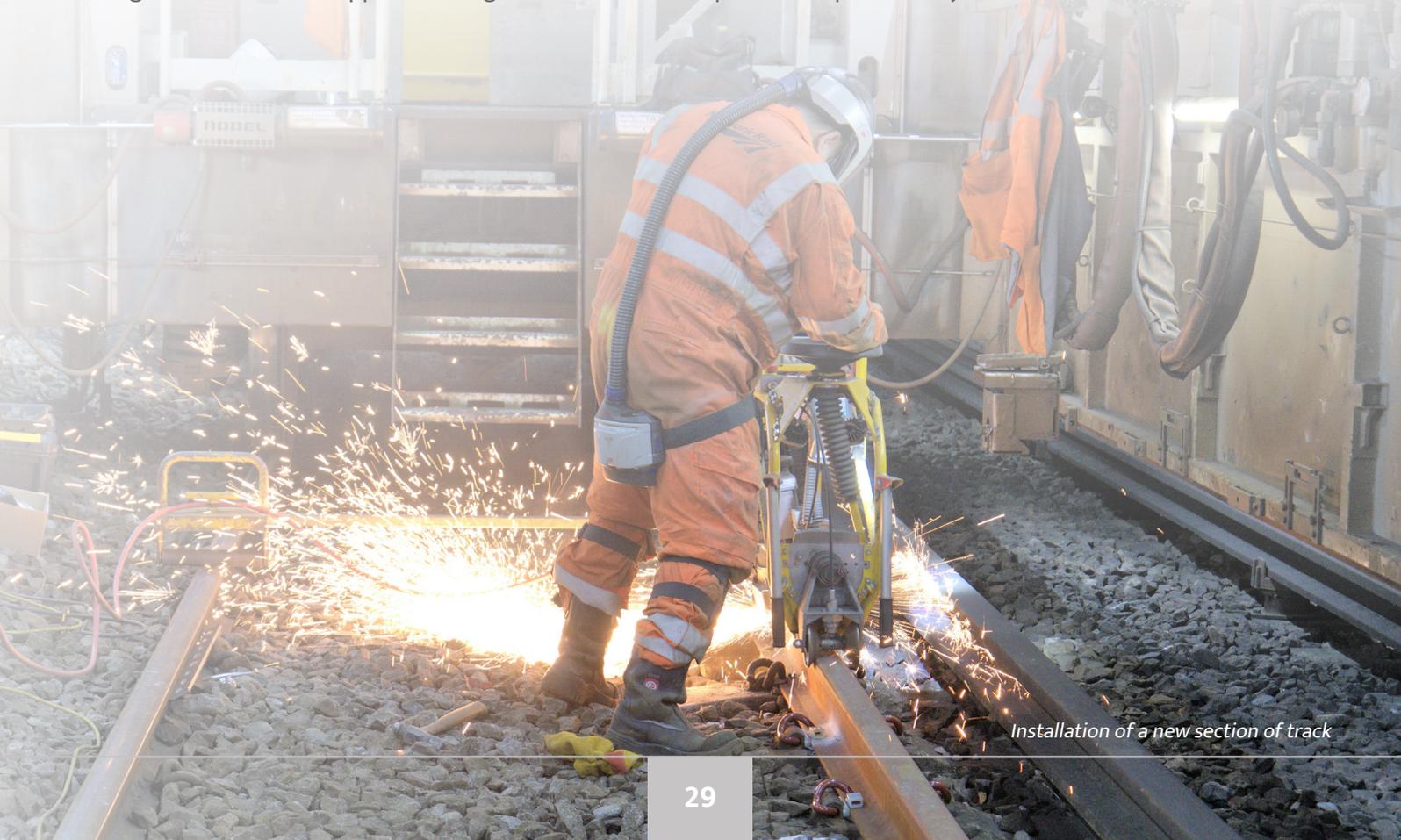
creates a short circuit that simulates a train in section, occupying the track circuit and therefore maintaining the protecting signal at danger.

The conventional methods of either detonators and possession limit boards within a possession or placing a manual T-COD requires a minimum of two people, taking around 45 minutes. With this process having to be repeated at the start and end of each shift, up to 90 minutes was being lost, impacting the time to undertake the task.

During the course of four nightshifts, this equates to 360 minutes, whereas the ZKL 3000 RC can be preinstalled and left in situ. The installation of the ZKL 3000 RC takes 15–20 minutes on average and this includes a full function test. To activate and deactivate the device remotely takes 2 minutes (60 seconds to activate and 60 seconds to deactivate), which amounts to 8 minutes as opposed to 360 minutes, therefore a total saving of 352 minutes (approximately 5 hours 52 mins).

The ZKL 3000 RC also reduces the need to drive to various blocking points, increasing efficiency, saving on time and resources whilst reducing CO2 emissions.

The MMT, on the shift that Dual Inventive joined, was working under a signal protection zone, with additional protection provided by a ZKL 3000 RC (remote-



Installation of a new section of track

controlled T-COD). This combination of protection enables the team to remove rail defects safely and efficiently.

## Efficiencies

On this particular shift, a signal protection zone was applied between Sanderstead and Oxted with the additional protection of a ZKL 3000 RC (remote-controlled T-COD) (UP) and a manual T-COD (DOWN). This enabled the team to carry out the planned work – removing a rail defect, installation of closure rail and stress restore as well as two welds, which were inspected and passed. This was all completed within 3 hours and 14 minutes as opposed to taking several shifts providing cost savings in manpower and reducing the time of a line block meaning passenger/freight trains can run more frequently.

Below is an indication of the times and how long each stage took:

Activity	Time of Activity
MMT Left Horsham Yard	23:27
Arrive TPAT (OD3)	00:58
Signal Protection	01:12
Block to Electric Traffic Granted (BTET)	01:14
Protection Zone Granted	01:15
Strap Worksite	01:25
Work Started	01:26
Work Finished	04:40
Straps Lifted	04:42
Traction Current Restored	04:45
Remove TCOD	05:02
Train Exit PZ (OD11)	04:48
PZ Handed back	05:05

By using the ZKL 3000 RC in conjunction with the MMT enabled the section supervisor to reduce a team of 8–10 trackworkers/engineers to a team of 6 to 8 people – instantly making a cost-saving.

### Cost-Savings Using the MMT in Conjunction with the ZKL 3000 RC

- Time saved using a ZKL 3000 RC: 45 minutes
- Manpower saved using a ZKL 3000 RC: 2 people
- Time saved using the MMT in conjunction with the ZKL 3000 RC: 15 minutes



ZKL 3000 RC in track

## Conclusion

Using the MMT in conjunction with the ZKL 3000 RC enabled the team to remove a rail defect safely and efficiently in less than 3.5 hours whereas it would normally take several shifts to perform the same task. Having these control methods in place saves time and resources providing cost-savings of £425,000 within the first four periods.

Applying the remote-controlled T-COD – ZKL 3000 RC allowed the team to operate at full capacity rather than having the expense of backfilling posts, saving the company money in time, resources and CO2 emissions.

Going forward, to reduce costs further, the Sussex Route's goal is to use a ZKL 3000 RC on either side of the single protection zone saving 90 minutes per shift. This will enable it to operate as a full team without having to recruit contractors to backfill jobs that were previously deployed in manually installing the T-COD.

As a result of this, a second MMT train is being mobilised in the neighbouring route of Wessex.

Network Rail were supported in the implementation of the ZKL 3000 RC by Bridgeway Consulting Ltd.

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