The future of Depot Control

Fenix
RAIL SYSTEMS

Increasing safety, reducing costs

Why Fenix Rail Systems?

We are the sole provider of the Tie-FenLock Depot Control System in the UK.

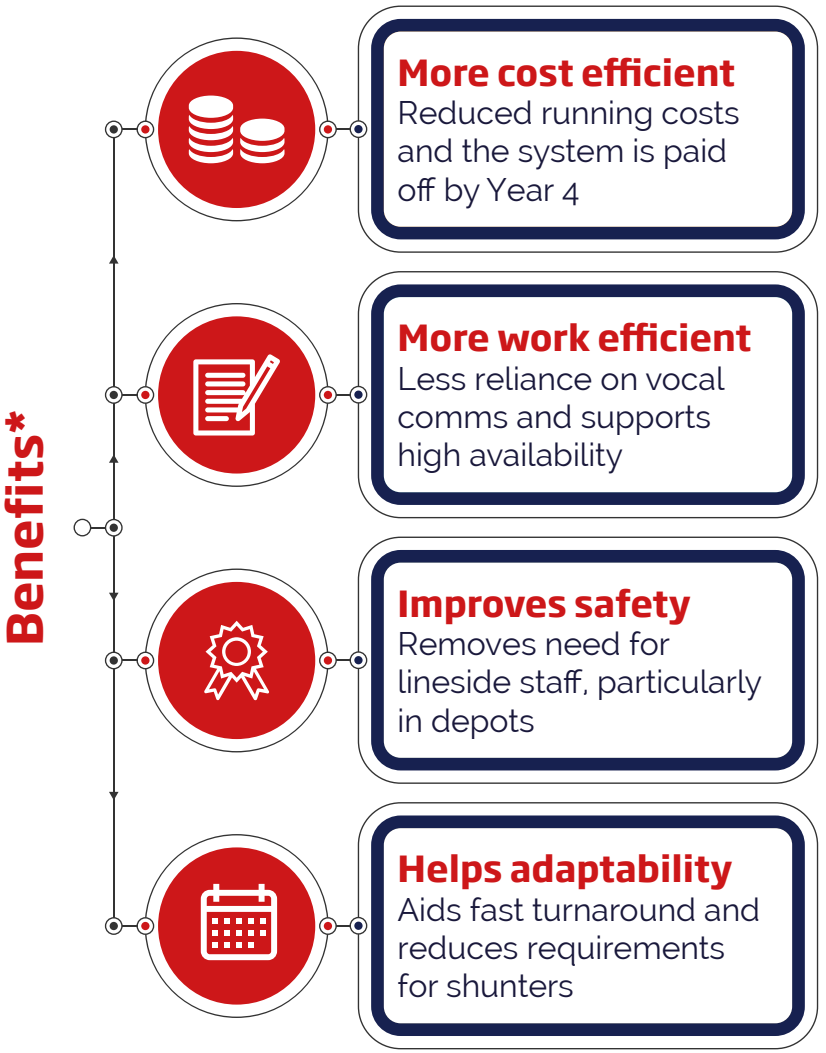
Fenix Rail Systems provides you with a comprehensive digital safety system for controlling train movements into, within, and out of a depot, siding or yard.

This system is easily modified or extended for future depot layout expansions, additional equipment or buildings, or adaptable to different methods of working.

We provide you with a solution that essentially futureproofs your depot operations, while **providing a typical investment payback on the system within four to five years.**

Ultimately, we can save the average depot controller £2.7m by Year 10, based on certain factors. Find out how on page 5.

Our team can support you to determine potential savings based on your depots and the specific requirements they may have.



*These benefits are in line with the RSSB Guidance Note for the Development and Design Considerations of Passenger Rolling Stock Depots, GIGN7621 issued Sep. 2018.

An introduction to Fenix Rail Systems

A more cost efficient Depot Control System (DCS)

Fenix Rail Systems works hand in hand with you to help reduce operational costs and meet your KPIs.

We know many depots and train facilities rely on improving performance and reducing operational costs to meet KPIs.

Manual systems will not result in cost reductions and are more operationally intensive

Depots operated by manual hand points are more expensive to run.

Manual systems increase:

- Management costs to administer training, rostering and HR
- Costs to maintain mechanical hand point levers
- Costs to maintain regular monthly inspections and maintenance

Mainline signalling systems are prohibitively expensive to install in depots - resulting in many unsignalled depots with manual hand points.

Digital systems improve performance and reduce costs

Depots operated by an automated DCS provides:

- Reduction in operations staff required per shift allowing these resources to be employed elsewhere.
- Reduction in planned and reactive maintenance, with only annual inspection and maintenance needed.
- Reduction in risk of penalties for train delays.
- Reduction in training, safety clothing and equipment costs.
- Reduced running costs and may need fewer units as a result of faster turnaround within the depot.
- Supports the achievement of a high availability of rolling stock for service by the avoidance of collisions during shunting.
- Typical investment payback within 4-5 years

See the next page to find out the typical investment payback and potential cost savings.

Fenix RAIL SYSTEMS

Cost Benefit Analysis Fenix Depot Control System vs Hand Points - based on 19 Point System

Cost - BDCS	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Initial purchase (project) cost	£2,500,000										
Planned & Reactive Maintenance #1		£2,500	£2,500	£2,500	£2,500	£2,500	£2,500	£2,500	£2,500	£2,500	£2,500
Electricity		£1,500	£1,500	£1,500	£1,500	£1,500	£1,500	£1,500	£1,500	£1,500	£1,500
Operational staff (5x Shunters) #2		£300,000	£300,000	£300,000	£300,000	£300,000	£300,000	£300,000	£300,000	£300,000	£300,000
TOTAL ANNUAL COST	**£2,500,000**	**£304,000**	**£304,000**	**£304,000**	**£304,000**	**£304,000**	**£304,000**	**£304,000**	**£304,000**	**£304,000**	**£304,000**

Cost - Hand Points	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Planned & Reactive Maintenance #3		£25,000	£25,000	£25,000	£25,000	£25,000	£25,000	£25,000	£25,000	£25,000	£25,000
Operational staff (10x Shunters) #4		£600,000	£600,000	£600,000	£600,000	£600,000	£600,000	£600,000	£600,000	£600,000	£600,000
TOTAL ANNUAL COST		**£625,000**	**£625,000**	**£625,000**	**£625,000**	**£625,000**	**£625,000**	**£625,000**	**£625,000**	**£625,000**	**£625,000**

Cost /Saving (-)	£2,500,000	-£321,000	-£321,000	-£321,000	-£321,000	-£321,000	-£321,000	-£321,000	-£321,000	-£321,000	-£321,000

Benefits	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Time savings #5		£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000
Safety (staff removed trackside) #6		£45,000	£45,000	£45,000	£45,000	£45,000	£45,000	£45,000	£45,000	£45,000	£45,000
Safety - preventing incidents		£35,000	£35,000	£35,000	£35,000	£35,000	£35,000	£35,000	£35,000	£35,000	£35,000
Saving of additional cleaning and maintenance staff		£35,000	£35,000	£35,000	£35,000	£35,000	£35,000	£35,000	£35,000	£35,000	£35,000
Reduced maintenance of walking routes and lighting		£10,000	£10,000	£10,000	£10,000	£10,000	£10,000	£10,000	£10,000	£10,000	£10,000
TOTAL ANNUAL BENEFITS		**£200,000**	**£200,000**	**£200,000**	**£200,000**	**£200,000**	**£200,000**	**£200,000**	**£200,000**	**£200,000**	**£200,000**
YEARLY COST - BENEFIT	**£2,500,000**	**-£521,000**	**-£521,000**	**-£521,000**	**-£521,000**	**-£521,000**	**-£521,000**	**-£521,000**	**-£521,000**	**-£521,000**	**-£521,000**
CUMULATIVE COST - BENEFIT	**£2,500,000**	**£1,979,000**	**£1,458,000**	**£937,000**	**£416,000**	**-£105,000**	**-£626,000**	**-£1,147,000**	**-£1,668,000**	**-£2,189,000**	**-£2,710,000**

#1 - Two points maintenance shifts per annum plus one callouts
#2 - Assumes five staff to provide three 8-hour shifts of one shunter per day. Assumes an annual cost of one shunter to be £60,000 that includes salary, pension, employee benefits, employer taxes etc.
#3 - Monthly planned maintenance
#4 - Assumes 10 staff to provide three 8-hour shifts of two shunters per day. Assumes an annual cost of one shunter to be £60,000 that includes salary, pension, employee benefits, employer taxes etc.
#5 - Nominal figure, assumes savings for e.g. improved fleet availability due to lower downtime, ensuring all trains enter service on time each morning, reduced need for backup drivers and operations staff etc.
#6 - This is the saving in lost staff time due to sickness and injury from slips, trips falls, back strain from pulling points levers etc.

Fenix RAIL SYSTEMS

Improving Operational Efficiency

A digital control system makes best possible use of the time through effective management and manoeuvring.

All trains require daily servicing such as cleaning, refuelling and controlled emission toilets (CET), as well as planned servicing and small repairs. This means you need time on your side.

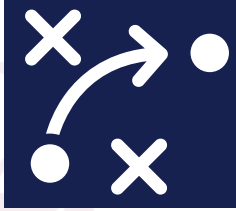
An automated DCS can bring the following increases in Operational Efficiency:

MOVEMENT AUTHORITIES FOR TRAINS PROVIDED - MEANING THERE IS LESS RELIANCE ON VOICE COMMUNICATIONS

ONE OPERATOR CAN MANAGE ALL TRAIN MOVEMENTS WITHIN THE DEPOT - WORKLOAD IS DECREASED

MANAGEMENT TIME CAN BE FOCUSED ON OTHER OPERATIONS RATHER THAN ROSTER MANAGEMENT

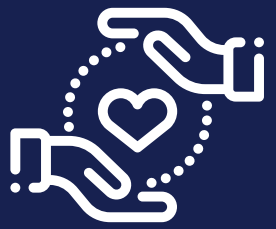
ENABLES TRAIN MOVES TO BE SET UP QUICKLY AND EFFICIENTLY, TYPICALLY WITHIN A FEW SECONDS (CIRCA 5 SECONDS), WITH MULTIPLE, NON-CONFLICTING MOVEMENTS CARRIED OUT SIMULTANEOUSLY.



SUPPORTS ACHIEVEMENT OF A HIGH AVAILABILITY OF ROLLING STOCK FOR SERVICE BY AVOIDANCE OF COLLISIONS DURING SHUNTING

IMPROVED KPIs FOR ON-TIME DISPATCH, QUALITY OF SERVICING, AND REPAIRS

ALLOWS MORE TIME FOR SERVICING AND REPAIRS AS TRAINS CAN BE MOVED QUICKER



Reduce any risk of danger by implementing a safer system which automates and enhances procedures

An automated DCS takes away the reliance on operational procedures, shunters communicating verbally with drivers and/or with hand signals or handheld radios and allows you to grow as the size and complexity of the depot increases.

The TUC biennial survey of safety representatives identified the main reasons for loss of working hours for operational staff were due to:

- Back strains (35%)
- Slips, trips and falls (40%)
- Manual Handling injuries

It also reports an estimated 35% of incidents or close calls are not fully captured by SMIS11 and there are issues with reporting.

Taking into account legal proceedings, medical charges, damage to equipment, loss of production and insurances, a cost per fatality of anywhere between £2 to £7 million has been suggested. An additional risk occurs in depots with 3rd rail traction with conductor rail run at ground level.

A depot operated by an automated DCS:

- Takes staff off track, removing them from the primary place of danger, significantly reduced risk of injuries
- Reduces reliance on compliance with operational procedures, train movements controlled by a certified safety system
- Provides a centrally located VDU (typically in the control room) and provides operations staff with a real-time overview of each train's location / movements
- Logs all system and operator actions, essential data in the event of an accident / incident or misuse
- Reduces trip hazards through power-operated points installed in the 4'
- Prevents train derailment through trailable point machines if points accidently trailed. The machines are CENELEC SIL-4 accredited, the highest safety level
- Improves KPIs for OHS

A scalable and adaptable system

Every depot is different and has unique features, layout and operation. Our DCS caters for that and futureproofs your operations.

The Tie-FenLock DCS is scalable and adaptable to extensions to depot track layouts, buildings, equipment and facilities and can be modified and extended easily.

A depot operated by an automated Tie-FenLock DCS provides:

- A bespoke system for each depot, and designed based on operating requirements
- A modular system, can be easily modified / extended by fitting additional control cards, without requiring extensive redesign and testing
- Four different application levels, ranging from a simple locally powered point to a full route setting signalling system
- Bespoke technical interface that enables the system to be integrated with all UK-based interlockings
- System can be interfaced and interlocked with other depot systems DPPS, carriage wash etc.
- Passive provision for future expansion can be built in.

Fenix RAIL SYSTEMS

Contact us today

Call us on 01926 358428 ext: 2003 for a consultation to see how we can help you.

Alternatively, please email:

Craig Purcell | craig.purcell@fenixrailsystems.com
Natalie Hermer | natalie.hermer@fenixrailsystems.com

Fenix RAIL SYSTEMS