



About

Worldwide market leaders in the application of depot safety, efficiency and performance.

Our Mission

Zoneareen's team is dedicated to providing the most cutting-edge rail depot systems. By developing long-term working relationships with our clients, we ensure our products consistently meet the demands of a rapidly changing industry.

Our Products

- SMART Depot Personnel Protection Systems (DPPSTM)
- Powered Derailers
- Depot Manager
- Points Converter
- Interlocking
- Operator Planning Suite
- Out-of-Gauge Warning System

With more than 15 years experience and the consistently high standards of its products, Zoneareen has established an unrivalled reputation for quality, safety and reliability. It enjoys successful relationships with customers who value Zonegreen's commitment to developing products that are innovative yet built to last.

Zonegreen's engineers are not only qualified in electronics and software, but also in Functional Safety and Reliability (Technis), EMC (for railway applications), and are Yellow Book certified by Lloyd's Register. Zonegreen's solutions complement our clients' operations without unnecessary, expensive and time-consuming procedures.

Research and Development

Zonegreen maintains its position as worldwide leaders in the application of depot safety through continued research and development projects. We are dedicated to developing cutting edge systems that respond to the needs of rail operators and have the flexibility to adapt to the rapidly changing environment in the rail industry.



The system

Designed to provide the safest and most efficient method of controlling depot train movements, critical in today's modern maintenance facilities. An established market leading product, Zonegreen's SMART DPPS™ is now installed in the vast majority of UK train care depots as well as an increasing number of depots worldwide.

Highest standard of safety

The development of the SMART DPPS™ has allowed Zonegreen to provide the highest standards of safety for staff working in maintenance depots. The system complies with International Standards IEC 61508 and EN50128/50129, has been independently verified to Safety Integrity Level (SIL) 1, and is fully and

The development of the SMART DPPS $^{\text{TM}}$ and the derailer is has allowed Zonegreen to provide the highest standards of safety for staff working in maintenance depots

independently EMC tested. It's also compliant with all current railway standards and can be customised to the client's precise requirements. Zonegreen's SMART DPPS™ is a proven "off-the-shelf" product providing excellent reliability and functionality.

Operation

Trains approaching the depot will halt at the ground level shunt signal which is interlocked with a powered derailer located at around 20 metres from the depot entrance. Access permission is given to the train by a supervisor using an operator controlled road end panel (REP). This control panel is positioned at a convenient location within the maintenance building, normally next to the depot doors, giving a clear line of sight to incoming and outgoing trains.

Safer

Only after the derailer has been lowered can the shunt signal show a proceed aspect and audible and visual warnings sound within the depot on the road on which there is a train movement. Once the train is positioned within the depot, the warning klaxons and

lights are turned off raised to prevent further movement. Zonegreen's powered derailers are unique in having full Network Rail approval; TPWS

alternatives to derailers are also available.

Electronic personal datakeys with varying authorisation levels - replacing the padlock found in traditional DP systems – identify staff working in different safety zones.

Maintenance staff log on to the REP when they begin work, which prevents the derailer being lowered, providing them with physical protection from train movements.

Intelligent network

The whole system is connected with a simple twisted pair network cable. Multiple derailers can be controlled, the costs of cable installation are greatly reduced and overall reliability is increased.

The SMART DPPS™ incorporates the use of intelligent distributed control and communication technology.

Advanced software systems / traceability

The Depot Manager software offers a complete overview of a depot. It provides key information to make operations quicker and easier to implement, ensures the use of safety systems at all times and offers comprehensive traceability.

The system

The Zonegreen powered derailer is the culmination of three years development work, representing a leap forward in derailer technology. It offers unrivalled levels of performance, and is unique in having full Network Rail approval.

Easy to install

Zonegreen engineers have redesigned and simplified the electronics and mechanical components – which also considerably reduces costs – and fitted an electric actuator, which can be wound manually without the need for disassembly if there is loss of power.

Smaller

The derailer cover has been reduced in size by more than 30 per cent, and the lower profile makes installation easier, accommodating any train gauge.

Withstand all weather conditions

The product is built to last: The actuator is sealed to IP66 standards, which means it is 'dust-tight' and protected against high-pressure water jets from any direction. Furthermore, its operational temperature range is between –40C and +60C. Therefore temporary flooding and extreme weather conditions pose no threat to operation.

Network Rail approved Rigorous testing of the derailer assembly has

Rigorous testing of the derailer assembly has been carried out, simulating five years of continuous usage, demonstrating its high level of reliability. The unique and ultra-safe Zonegreen Powered Derailer has received Network Rail approval, authorising the product to be used on railway infrastructure that Network Rail is the manager of.

Powered Derailers

Delivering massive advantages in terms of efficiency and safety over traditional manual derailers.







Advanced software system

Using a convenient Windows format, Depot Manager can be configured to carry out the following operations:

- Display the location of personnel.
- Record all aspects of depot protection.
- Display status of plant and equipment.

The innovative software provides a complete overview of the depot, on a plasma screen from the supervisor's office, considerably increasing depot efficiency by monitoring, planning and analysing data. It can also be linked to other equipment, such as lifting jacks, bogie drops, Train I.D. readers, train washes and wheel lathes.

Depot Manager displays the status of machinery on a large plan view of the depot and identifies the location of workers and the position of each road. Events are logged automatically, including user and vehicle movement, to give full traceability and accurate information.

Maintenance details are also recorded to create historic reports of operations, which are invaluable when investigating downtime and the use of plant and equipment.



Interlocking for safety of personnel and equipment

Interlocking is the prevention of an undesirable event by another positive mechanical or electrical action.

What is safety interlocking?

A simple example is train interlocking whereby a driver cannot move his train until all doors are closed and locked. Many injuries and fatalities can be avoided if prescribed safety procedures are followed. Unfortunately humans following the procedures are prone to error, and most procedural systems fail to recognise the human element. However, an engineered solution is at hand in the form of system interlocking.

Interlocking in train depots

Our engineers have developed highly sophisticated interlocking systems in train depots that prevent unauthorised movements of trains, thus protecting injury or death to personnel and damage to other trains and equipment in the depot. Additionally, we manufacture internal interlocking systems that prevent danger when personnel try to circumvent safety measures. This, in turn, reduces the risk of damage to equipment.

Safe system of work

The company has developed a safe system of work that absolutely prevents access to high level access platforms by means of a fully guarded stairways and interlocked gates that can only be opened with a key that is released from a control panel when the OLE is locked and earthed. The sequence of unlocking and removing keys that, in turn, allow other keys to be released, ensures prohibition of access to areas unless they are safely isolated and earthed.

Superior safety

An optional extra that can be provided is a series of green lights that are illuminated above the roads that are isolated, earthed and interlocked and safe to work on. This interlocking system is vastly superior to a 'permit to work' system that is only reliable provided that everyone in the loop strictly obeys the rules.



Benefits of powering your manual points

- Enhanced safety by reducing the potential for slips, trips and falls.
- Removal of excessive manual handling requirements.
- Expandable. Routes can be pre-set, re-configured and upgraded at any time.
- Traceability. Includes an event logging system that allows the depot manager to keep a record of the points operation.
- Low cost.
- Fully EMC tested.

The Zonegreen converter system comprises two parts:

Points converter device

A points converter device is attached to an existing manuallyoperated switch without compromising the integrity of the existing mechanism. It does not require any civil works or changes

Change track at the push of a button

in the operating procedures to be installed. Each converter can be used as a standalone or multiple units can be installed operating together with routing.



Radio remote operator's controller

The points converter device can be operated either with an intuitive remote handset, or with a centralised graphical interface computer system. Both control methods allow the operator to remotely control the points system.

The intuitive handset allows the operator to remotely control the points system. It can be either hand portable, cab mounted or mounted within the depot. A centralised control system is also available via a windows PC interface that offers route planning and visualisation, as well as the remote control of the points converter device. Both Control systems can be used in a route selection mode. whereby one command can operate several points and crossings simultaneously. The half-duplex radio signal that the remote or PC system aerial operates allows feedback to be provided to the operating device, confirming to the user once the point has been set correctly, or the reason behind why it has not been able to set.



Operator planning suite

... multi-user, webbased graphical task planning application replacing the traditional whiteboard

Cost-effective train maintenance planning efficiency through planning

The planning of train maintenance operations is still commonly conducted on a big whiteboard located in the operations control room, on which the train units that require servicing, maintenance tasks, arrival and departure times are listed. These are updated manually either in a tabular form or on top of a graphical layout representing a bird's eye view of the depot.

Advanced web-based software

Zonegreen's Operator Planning Suite, as a multi-user, web-based graphical task planning application, is a cost-effective replacement of the whiteboard. It consists of two main views: a graphical layout representing the depot on which users can position trains and create and assign maintenance tasks, and a tabular layout to plan trains' scheduled arrivals and departures.

Instant information

OPS instantly transmits all information to any whiteboard screen in the depot or elsewhere. It provides up to the minute information on any train in the depot including:

- Train ID
- Expected arrival and departure times
- Type of maintenance required
- Time of arrival of next day's trainsenefits
- Easily visualise train locations in graphical layout
- Accurately update and synchronise maintenance information
- Share and disseminate maintenance information to different locations in a convenient way
- Capture maintenance activities and generate reports, reducing the manual tasks of filling in maintenance forms and paperwork

Out-ofgauge warning system

The system

The Skirt Detector works by using a using low power laser to detect the distance to the side of the vehicle. If the sensor detects any kind of obstruction – e.g. an open skirt – it will trigger an alert on the outbound visual warning board and the illumination of a driver warning stop board on the depot exit road. The stop signs will remain illuminated until the warning is reset via the master key.

Programmable

The system is flexible and has a range of programmable options, such as a delayed response to help prevent the triggering of false alerts. It may also be expanded to cover the entire side area of the vehicle using a multiple sensor arrangement.

Vehicle profile scan

The profile scan ensures that there is no gauge obstruction threatened by vehicles such as:

- Access panels left open
- Lift brackets/equipment
- Broken CET fuelling hoses
- Collision damage

Benefits

- Protection on multiple roads
- Visual warning provided on the depot exit roads
- Control room warnings



Maintenance

Zonegreen staff are very helpful and I am very happy with the quality of the service I received

Mike Barrett - First Great Western

As the UK's leading supplier of depot personnel protection systems, interlocking solutions and points converters, Zonegreen has the skill base and experience to offer a comprehensive range of maintenance contracts to suit your needs.

Providing rapid response throughout mainland UK, Zonegreen's maintenance agreements cover most depot equipment and can be spilt into three broad categories – predictive, preventative and reactive. Our talented technical, electrical and software engineers not only maintain Zonegreen branded equipment, but also third-party products including:

Depot Protection Maintenance and installation works at Rail and Tram maintenance facilities (IRSE Installers)

We are now able to undertake additional service maintenance and installation works at rail and tram maintenance facilities (IRSE Installers) in addition to our normal servicing of Depot Protection, Interlocking Systems and Points Converters. We now offer maintenance of the following:

- 1. POINTS /SWITCHES
- 2. TRACK CIRCUIT RENEWAL (IRSE Licensed)
- 3. SIGNALS (Including axle counters)
- 4. CABLE TESTING (SMTH Standards)
- 5. BARRIER SYSTEMS
- 6. AWS & TPWS SYSTEMS





