

A Tradition of Rail Excellence

Case Studies



20 YEARS OF RAIL EXPERTISE



AN UNRIVALLED SAFETY RECORD



100% FOCUSED ON THE RAIL INDUSTRY

www.emeg.co.uk

About Us About Us

About Us

At Emeg, we provide a range of specialist services focused on the needs of owners and operators of rail facilities and sidings. We aim to develop long-term relationships with our clients, to understand your business so we can tailor our services to your unique requirements.

Our History

Emeg was founded in 1997 by Richard Simmonite, a time-served electrical engineer with over 40 years' experience within the rail sector. Today, Emeg is a completely rail-focused company with offices in the UK and the UAE, offering turnkey, in-house solutions to all projects – from new-build to enhancement and refurbishment works.

Throughout our long history, our work has mainly centred upon maintenance depots, station upgrades, re-signalling and permanent way (PWay) project works.



Our Clients

Our focus on client-oriented and tailor-made solutions has enabled us to work with a large list of clients on a long-term basis. Our clients include:



















































Our Services



Design Services







MEP





DPS Solutions



Depots





Stations

Maintenance

Our Accreditations

We are focused on delivering the highest level of service and efficiency and are dedicated to maintaining a list of accreditations that prove our commitment to quality.















Our Ethos

We employ a consistent site workforce of full-time engineers, electricians, pipe fitters, gas installers, heating & ventilation engineers. All ably supported by our project management teams, backed up with off-site services of SQE, estimating, procurement and design.

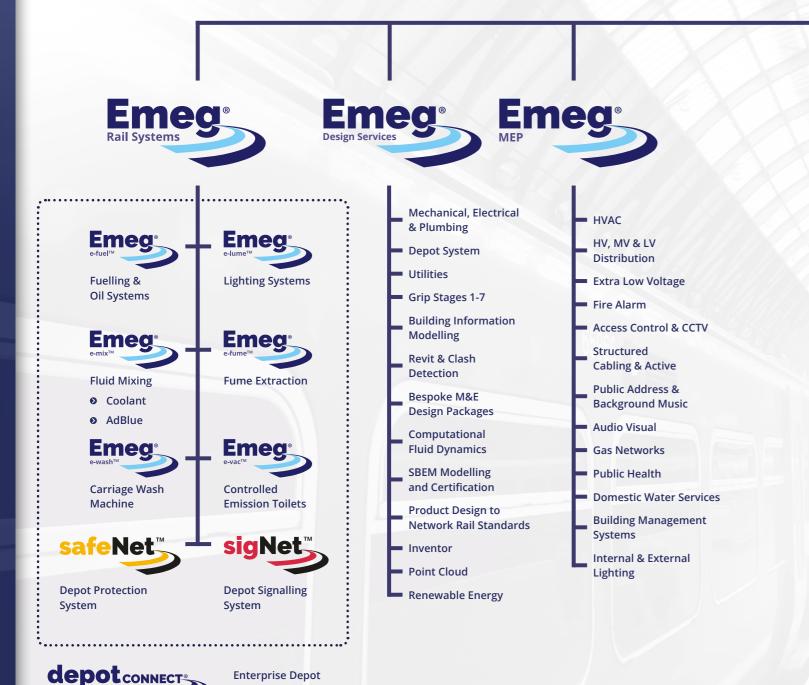
At Emeg, we believe that safety is a behavioural culture and an attitude, and as such, is led from the top by the Managing Director.

We firmly believe that our unprecedented success in continuing to achieve zero accidents over our full trading history is a tribute to our safety-first work ethos.

This ethos and culture, coupled with our highly experienced and timeserved workforce, are fundamental to our past and continued success.

Our Group Structure





Integration Platform



Emeg



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Case Study **Etches Park Depot**

Location

Derby, Derbyshire

Client

Network Rail

Project Overview

Design, supply, install and commissioning of a new refuelling system at Etches Park depot in Derby. The system included both rail and road off-loading systems, 400,000 litres of new fuel storage, a new fuel pump room, a new fully automatic control system, and new dispensing lines connected to both existing and new fuel dispensers.

As this was a fully operational depot with an ongoing requirement to fuel each night, the commissioning changeover onto the new system had to be staged over many weeks, with all necessary temporary works such that the depot's ability to fully re-fuel each night was not affected.

Design Services

- Initial study & surveying
- Analysis of fuelling needs
- Mechanical design
- Electrical design



Key Project Features

- 400k litres stored fuel
- Automatic rail & road offload
- Automatic pollution prevention
- New fuel pumps & pump room
- New fully automatic control system
- New welded pipework
- Provision of building works
- Seamless commissioning into service
- Ongoing system support

Case Study Croft Street Depot

Location

Preston, Lancashire

Client

Network Rail & Buckingham Group Contracting Ltd (BGCL)

Project Overview

The Northern Hub electrification programme was developed to increase capacity, line speed and connectivity throughout the North West of England.

Croft Street Depot is one of the four Network Rail owned depots to be upgraded and have e-fuel™ fuelling systems installed in order to facilitate the fuelling and servicing of the additional rolling stock. The project also included the coordination of piped services and electrical supplies to equipment and lighting.

Just down the road, Leyland Carriage Sidings is another Network Rail depot that needed to be upgraded in order to facilitate rolling stock maintenance. This project included M&E services on the service aprons to roads and the carriage cleaning roads.

Design Services

- Existing M&E surveys
- Conceptual design to 'As Built'
- LV distribution
- Lighting, earthing & bonding
- Fuel monitoring systems
- Low-level external task lighting

Key Project Features

- e-vac[™] Controlled Emission Toilets
- e-fuel™ fuel storage & dispensing
- Oil & coolant system
- Powerpoints
- Electrical services distribution
- External lighting
- Lighting control system
- Tanking water













Case Study Allerton TMD

Location

Liverpool, Merseyside

Client

Network Rail & Buckingham Group Contracting Ltd (BGCL)

Project Overview

The Northern Hub electrification programme was developed to increase capacity, line speed and connectivity throughout the North West.

Allerton is one of the four Network Rail owned depots to be upgraded and have OLE reinstated in order to facilitate the maintenance of the additional electric rolling stock. The project also included M&E services on the five depot shed roads, the six outer carriage cleaning roads and the neck.

We also designed, supplied and installed our industry-leading safeNet[™] depot protection system (DPS), e-fuel[™] smart fuel storage & dispensing, automatic sanding systems and e-vac[™] controlled emission toilets (CET).

Design Services

- Existing M&E surveys
- Conceptual design to 'As Built'
- LV distribution plan
- Built' Lighting, earthing & bonding



Key Project Features

- safeNet[™] Depot Protection System
- e-vac[™] Controlled Emission Toilets
- Automatic sanding system
- e-fuel[™] fuel storage & dispensing
- Oil & coolant system
- Powerpoints
- Electrical services distribution
- Internal & external lighting systems
- Lighting control system
- Tanking water
- Depot heating solutions

Case Study

Northampton Castle Station

Location

Northampton, England

Client

Network Rail & Buckingham Group Contracting Ltd (BGCL)

Project Overview

The original Northampton Castle Station was part of the 'Northampton and Peterborough Railway' line which started at Blisworth and opened in 1845. Designed and built by George R. Stevenson, the Northampton to Market Harborough line was opened in 1859 and after more than 100 years of service, Castle Station closed on 5th June 1950 – the passenger service was finally withdrawn on 26th August 1973.

Forward to 2013 when a new 'gateway' station building and footbridge were constructed to replace the existing station building in a partnership between Network Rail, London Midland and Northampton Council. We were very pleased to be working on such a historical site, providing all associated MEP works.

Design Services

- New station building services
- Integration solutions for all M&E, telecoms & CIS supplies
- Electrical services for footbridge
- Full survey of existing services for efficient decommissioning
- Coordination of reconstruction works for platform 1

Key Project Features

- HV/LV transformed power supply
- Isolated earthing & bonding systems to new NWR standards
- HVAC services systems
- BMS control systems
- Electrical services distribution
- Internal & external lighting
- DALI lighting control system
- Self-contained emergency lighting system
- Intruder alarm system & disabled refuge system
- Piped services & fire protection
- Ventilation & cooling systems















Case Study Kirkdale Depot

Location

Merseyside, North West England

Client

BAM Construction for Stadler/Mersey Travel



A new service, maintenance and carriage wash machine (CWM) facility was needed at the Kirkdale depot to stable the new rail fleet being produced by Stadler Service AG.

The buildings were designed to accommodate 65m vehicles comprising 4 carriages and would consist of 3 main areas; the existing wheel lathe building (circa 1305m²), a new maintenance hall (circa 1360m²) and a new 2-storey accommodation building (circa 2000m²), which would include offices, meeting rooms, storage, workshops, changing rooms & showers, switch room and plant room.

Key project features

- Bespoke DPS tailored to the depot facility
- No need to amend operating procedures and practices
- Automatic, one-pass, drive-through CWM
- CWM achieves 75% SOAP efficiency
- CWM nightly throughput = 124 carriages
- Comprehensive mechanical & electrical services



Products & Services

- SafeNet[™] Depot Protection System
- e-wash™ carriage wash machine
- New underframe wash pit
- Internal, emergency & external lighting
- Lightning & fire protection
- Data, telecoms & security
- Heating & ventilation
- Water supply & drainage
- General power & LV distribution/earthing
- Building Energy Management System (BEMS)

Case Study

Wigan Springs Branch Depot

Location

Greater Manchester, North West England

Network Rail for Volker Rail Group

Project Overview

As a result of the implementation of major railway projects in the North West, rolling stock deployment will change significantly. Emeg were contracted to assist with the construction of a new train maintenance depot, including carriage wash machine (CWM), controlled emission toilet (CET) systems, fuelling and sanding services, to enable Network Rail to service new and existing rolling stock.

The Wigan Springs Branch Depot site consists of the Wigan Springs branch sidings and the Bickershaw Colliery Line headshunt, which are situated either side of an operational DB Cargo depot.

Key project features

- New CET with 25,000-litre water tank and hot & cold water system
- New CWM with 36,000-litre water tank
- Pre-wet, detergent, water wash & final rinse sides
- Plant rooms for CET, CWM, fuel & sand systems
- Eco-friendly water recycling system
- New eMix system with 50,000-litre fuel tank



Products & Services

- e-vac[™] Controlled Emission Toilets
- e-wash™ Carriage Wash Machine
- e-mix[™] fuel, oil, AdBlue & coolant delivery system
- Automatic sanding system
- Double vacuum pump set
- CWM booster pumps
- Air compressor
- Mechanical & electrical services
- Internal and Remote Control Panels (RCP)

















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Case Study

Plymouth Laira TMD

Location

Devon, South West England

Client

Network Rail/Great Western Railway

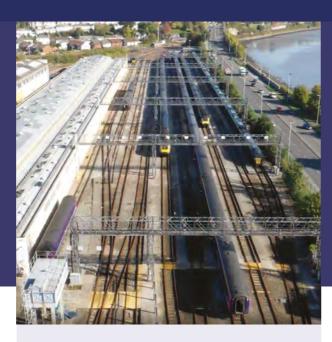


Laira TMD is operated by Great Western Railway (GWR) and is mainly concerned with the overhaul and daily servicing of their fleet of high-speed trains as well as DMUs.

As principal contractor, Emeg guided the client through the principles of depot servicing design. Following site surveys, data logging, load studies and coordination with end users, we used our lessons-learned approach to deliver a fully cohesive and site-specific design to allow maintenance activities in support of AT300 introduction.

Key project features

- Design, install & commissioning on live depot
- 3D models for review and discussion
- Adherence to NWR's Engineering Management Plan
- Modifications to existing shore supply systems
- Extension of existing fuelling systems
- Relocation of existing exhaust extraction systems



Products & Services

- e-vac[™] Controlled Emission Toilets (CET)
- New CET & e-mix[™] plant room
- Vacuum and water booster pump sets
- Apron hot & cold water points
- e-mix[™] fuel, engine oil, hydraulic oil, coolant & AdBlue fuel additive
- AdBlue 30,000-litre storage tank
- Fuel pipe fabrication & welding
- e-shore™ sidings shore supply system
- Mechanical & electrical services
- Cable management

Case Study

Bombardier Transport V-Shop

Location

Derby, Derbyshire

Client

Balfour Beatty

Project Overview

A new 10,000m² facility for Bombardier Transportation in Derby to enable the final test and sale of trains for the Crossrail project.

The facility comprises 4 roads separately controllable and interlocked, complete with full-length under-carriage inspection pits with lighting and power. In addition, an adjoining 2-storey amenities building comprising open plan & cellular office facilities as well as mess, locker room and toilet/shower areas.

Key project features

- 33kV, 25kV & 6.6kV HV substation, switchgear & distribution
- HV/LV transformed power supplies
- Operational interlock system
- 25kV overhead lines (OLE)
- High-level gas radiant heating

- BMS control system
- Electrical services distribution systems
- Internal and external lighting systems
- Ventilation, cooling & compressed air

Products & Services

- Sitewide M&E existing services surveys
- Site HV diversion and enabling works
- Initial client engagement conceptual design through to 'As Built'
- Level 3 BIM (Building Information Modelling)
- 25kV OLE switchgear
- M&E building services
- LV distribution to the facility and adjoining amenities block
- Lighting design
- Fire alarm & security
- Operational interlock system design

13

















Case Study Cardiff Canton ROC

Location

Cardiff, Wales

Client

Network Rail/Transport for Wales

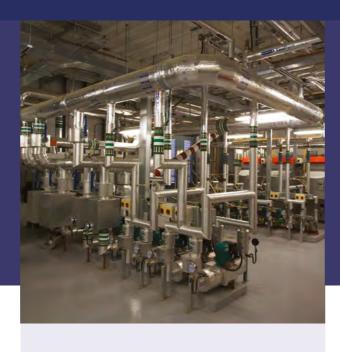
Project Overview

Cardiff Canton Rail Operating Centre (ROC) is operated by Transport for Wales and is mainly concerned with the maintenance and daily servicing of its fleet of diesel engines.

Emeg worked directly with Network Rail/Transport for Wales to upgrade the heating system, thus improving thermal comfort conditions for rail operatives, and improve the extraction of diesel fumes through effective ventilation to reduce contaminants and improve air quality. Our design included all associated containment and electrical distribution systems.

Key project features

- Review of existing electrical infrastructure
- Modification of existing distribution network
- Refurb/replace existing supply fans
- Removal of old radiant heating system
- Installation of gas-fired heating system
- Structural modifications to existing building



Products & Services

- e-fume[™] fume extraction system
- Radiant heating system
- Electrical load monitoring
- Fresh air make-up ventilation
- Structural evaluation

"Canton TMD is mainly concerned with the maintenance and daily servicing of the diesel engine fleet. The primary aim of this project was to introduce systems to reduce the contaminants expelled into the atmosphere, improving air quality and thermal comfort conditions. This upgrade work was essential for improving the working environment and safeguarding the workforce from unnecessary fume inhalation."

Case Study

Blackburn King Street Depot

Location

Blackburn, Lancashire

Client

Northern Rail & Buckingham Group Contracting Ltd (BGCL)

Project Overview

The Northern Hub programme was developed to increase capacity, line speed and connectivity throughout the North West of England. Blackburn Depot is a brand new depot that has been introduced to assist in accommodating the additional rolling stock.

The project included a 12-rotor brush CWM, automatic CET system, tanking water, fuel, oil, coolant and AdBlue storage and dispensing systems, hot and cold water points, sitewide M&E services, telecoms, fire alarm, access control, CCTV and powerpoints.

Key project features

- e-wash™ Carriage Wash Machine (CWM)
- e-vac™ Controlled Emission Toilets (CET)
- e-fuel[™] fuel storage & dispensing
- e-mix[™] oil, coolant & AdBlue system
- Tanking water system
- Apron hot & cold water points
- Lighting, LV distribution & telecoms
- Apron hot & cold water points
- Accommodation & plantroom fire alarm

Design Services

- Site surveys
- Conceptual design to 'As Built'
- Plantroom domestics
- Lighting plan
- LV distribution plan
- Earthing & bonding plan

"King Street Depot has been designed and built for the future. There is no doubt that innovation coupled with unparalleled experience has created a 5-star facility, not just for Blackburn but the entire Northern region. This £28m design and build project came in on time and £4.5m under budget."

















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Case Study

Blackpool North Maintenance Depot

Location

Blackpool, Lancashire

Client

Volker Rail & Network Rail

Project Overview

The Northern Hub programme was developed to increase capacity, line speed and connectivity throughout the North West of England. Blackpool is one of the four Network Rail owned depots to be upgraded and have OLE reinstated in order to facilitate the maintenance of the additional electric rolling stock.

The project includes the replacement of existing depot services including automatic sanding systems, e-vac™ controlled emission toilets (CET), e-wash™ carriage wash machine (CWM) and tanking water to the new servicing aprons.

Key project features

- e-wash™ Carriage Wash Machine (CWM)
- Water recycling system
- Tanking water
- e-vac[™] Controlled Emission Toilets (CET)
- Automatic sanding system
- Cabling and PW work



Design Services

- Conceptual design to 'As Built'
- Replacement and upgrade of existing CET
- Replacement and upgrade of existing tanking water system
- New Carriage Wash Machine c/w plant room and water recycling
- Automatic sanding system with booster pump for extended distances

"Network Rail appreciated that Emeg is a proactive and connected company when it comes to working with larger main contractors and they have such experience that they can preempt issues due to the company's 'lessons learned' process from project to project."

Case Study

Howdon Satellite Depot

Location

North Tyneside, North East England

Buckingham Group Contracting for Nexus

Project Overview

With the existing Nexus Metro depot at Gosforth undergoing redevelopment works, with an expanded fleet of vehicles, Howdon was needed as an additional depot facility where vehicles could be stabled overnight and new rolling stock received. It also needed to provide cleaning and light maintenance facilities.

Emeg were responsible for undertaking the detailed design, installation and coordination of the mechanical and electrical installations to create a suitable environment within the depot sidings, workshop and office.

Key project features

- Preferred M&E service provider
- Dedicated on-site project management
- Innovative bespoke solutions
- Delivered on time & on budget
- Health & Safety top priority
- No on-site accidents



Products & Services

- safeNet™ Depot Protection System (DPS)
- Points heating
- Automatic derailer
- Mechanical & electrical services
- LV distribution & earthing
- Lighting, telecoms & fire protection
- Gas & water supply
- Ventilation & drainage
- Heating & cooling
- Building Management System (BMS)



















Maintenance Services Maintenance Services

Maintenance Services

Mission Statement

To exceed our client's expectations and objectives by being the first choice service provider and solutions specialist for rail depot systems through the continuous availability of our support, range of services, technical excellence, innovation and efficient deployment of resources.

Company Overview

Emeg Maintenance Division (EMD) has more than 20 years' experience in the provision of rail depot maintenance and specialises in post-install aftercare, uptime and lifecycle replacement of depot systems, providing a comprehensive range and the very highest levels of depot maintenance services. We're a 'onestop-shop' for depot operators, providing services ranging from basic plant failure attendance cover to planned preventative and condition based maintenance.

Depot systems are vital to the effective operation of UK railways. Carriage Wash Machines, CET and fuelling systems are all vital to the timely turnaround of rolling stock. High-usage uptime of these systems, often in demanding conditions, is fundamental to the operation of the depot. Planned 'preventative maintenance' regimes are therefore an essential and mitigating provision, as is the ability to respond to plant failures when called upon, with the relevant skills, knowledge and service history.

Employing a consistent workforce of skilled problemsolvers, from pipe fitters, electricians and gas installers to heating & ventilation engineers, supported by our experienced project management teams, Emeg Maintenance Division focuses on continuous improvement across the business to provide its clients with a best-in-class depot maintenance service provision.

Products and Solutions

Rail depot maintenance solutions

Our solutions encapsulate the planned and reactive maintenance of the majority of depot shed equipment and plant items used to service rolling stock. Our range of services are tailored to meet the requirements of our clients in the following areas;

- Standard or bespoke planned maintenance.
- 24/7 reactive maintenance.
- Warranty and aftercare on Emeg installed products.
- Lifecycle management, including overhaul & replacement of depot equipment.
- Site surveys, including asset condition and lifecycle assessments.



Emeg Maintenance Division has the ability to maintain any depot plant and equipment – we aim to provide a one-stop solution. Our range of services for depot plant and equipment maintenance covers:

- Carriage wash & underframe cleaning machines
- CET systems
- Depot protection systems
- Fuelling systems
- Oil, lube & gas storage and distribution
- Coolant & anti-freeze
- Heating & ventilation
- Boosted cold water systems
- Drainage & effluent
- Leak detection
- Electrical jacks

- Gantry cranes
- AdBlue
- Shore supplies
- Shunting vehicles
- Interceptors
- Air & sand dispensing systems
- Security & CCTV systems
- Yard & internal lighting
- Industrial doors

Our periodic planned maintenance visits and achievement of industry-leading service levels will result in full accountability and honest appraisals, greater levels of data to mitigate plant failures and improved lifecycle expectancy and equipment renewal dates, which allows us to serve depot operators better and promote solutions in advance of problems occurring.







Maintenance Clients Include:

















Design Services

Design Services

Design Services

Emeg's design 'centre of excellence' is based out of our Manchester office. The team consists of professional engineers, system architects and designers with skill sets encompassing various electrical and mechanical disciplines.

With the experience gained from our rail, engineering and construction industry background, we have the ability to resolve design problems with viable, cost-effective solutions for clients within all branches of rail engineering.

The team's extensive experience in building services design from the conceptual stage to site installation, include the following services:

- Electrical
- Mechanical
- Telecoms

Through Emeg's proactive and strategic approach to rail and building engineering services and design, we produce solutions that are highly sustainable while representing exceptional value for money.

We pride ourselves on developing and producing design strategies, in conjunction with structural engineers and architects, to provide energy-efficient, cost-effective multi-service designs where required.

Construction based knowledge for practical design solutions

Our electrical design engineers have experience in designing and implementing all electrical services within Network Rail facilities, including service and accommodation supplies, design and modelling of complete electrical infrastructure (from private HV networks to LV supplies), mains power distribution, lighting (general, emergency and external), small power, fire alarm and security.

Mechanical design engineers are also an integral part of our integrated design team, offering design solutions for all mechanical services. Our mechanical design services mainly focus on heating, ventilation and air conditioning applications for aspects of the built environment.

Our building services design engineers specialise in sustainability and low-cost, low-carbon building solutions, incorporating the latest energy-efficient technology to achieve the required BREEAM rating. Low and Zero Carbon (LZC) technologies are also available.

BIM (Building Information Modelling)

Emeg has the ability and experience to take a Bentley Microstation or Autodesk Revit Dynamic Modelling approach to M&E solutions. We are fully BIM ready in terms of policy, processes and compliance. We deliver valuable modelled data and design outputs for all our projects.

Design Software













IES





Electrical Design Services

Emeg has the in-house capability to design electrical systems from 110V and below through to 33kV. The more usual electrical systems that Emeg design are HV, MV and LV distribution, traction power distribution, internal / external lighting and emergency lighting, platform and car park lighting, depot and high-mast lighting, general power and the like, i.e. all aspects of electrical works found in stations, depots and the general rail infrastructure.

In addition, Emeg's designers provide the electrical designs associated with Emeg's products, such as shore supplies, carriage wash machines, CET and Depot Protection System (DPS).



Mechanical Design Services

Our main focal points of mechanical design are heating, ventilation and air conditioning applications. We can provide bespoke heating solutions to cater for the exact requirements of the client and end-users. This is typically coupled with a strategic ventilation system, resulting in a fully-automated scheme controlling heat and air distribution through the building.

On the other end of the scale, we offer solutions for the more user-orientated commercial facilities, i.e. office blocks, station buildings and depot management suites. Occupational comfort tends to be the primary focus for these developments, where our detailed assessments enable an appropriate design solution to be installed.

Telecom Design Services

Our telecoms design engineers can offer the complete package from design conception to approved-for-construction detailed design and CAD drawings. Emeg also has expertise in IT and telecommunications hardware, software and networking services.

We specialise in the design and installation of a variety of telecom voice and data system solutions. Certified technicians work directly with clients and end-users on complex requirements relating to the design of new installations and initial implementations. Emeg is committed to providing a dedicated, efficient and reliable design service without compromising on quality.

Depot System Design

Emeg has the in-house ability to provide complete turnkey packages for all depot systems, including all accompanying M&E works depot-wide and within the various system plant rooms. Emeg's design and construction teams have extensive experience in:

- Depot Protection Systems (DPS)
- Carriage Wash Machines (CWM)
- Controlled Emission Toilets (CET)
- Fuel dispensing systems
- Oil dispensing systems
- Coolant dispensing systems
- Adblue dispensing systems
- Automated sand dispensing systems
- Tanking water dispensing systems
- Hot and cold water systems
- Shore Supplies

All of Emeg's systems can be tailored to meet client requirements, Network Rail standards and the specific constraints of the site or location. Emeg has been involved in various Network Rail services roll-out programmes, such as the Northern Hub electrification programme, to deliver fully operational train maintenance depots to service new and upgraded rolling stock and assets. Our design team is involved from the initial concept stages through to depot handover and they'll ensure the original quality, safety, programme timescales and budget aspirations are maintained.

Design Accreditations









Business Techniques







