SELLA CONTROLS

Company and Rail Overview

SELLA CONTROLS is an independent engineering company specialising in the design and supply of integrated safety, control and automation systems.

The company is recognised as a market leader in the provision of ‘engineered solutions’ for safety, control and automation applications. Its products and services improve operational efficiency and safety in highly complex and often hazardous environments within a variety of industry sectors including Oil and Gas, Chemical and Petrochemical, Nuclear and Power, Rail, and Steel.

Our dedicated engineering teams focus on the day to day delivery of safety solutions, process control and information systems using the world’s best hardware from our product partner’s, and more importantly using technology with innovative and flexible applications which deliver on time, to cost and to the very highest standards of quality and safety.

Underpinning our entire operation is a whole hearted commitment to quality, safety and reliability that is acknowledged by those who define the standards across the world. We have an ongoing commitment to maintaining those standards and continue to raise the bar as technology affords, and customers demand better and safer solutions.

Our custom built offices and production facilities provide the following:

- Consultancy
- Project Management
- Design
- Lifecycle Management
- Engineering
- Manufacturing
- Testing
- Commissioning
- Technical Support
- Training

Rail Assurance

SELLA CONTROLS has over 45 years' experience of designing and integrating safety critical systems across a broad range of highly regulated industries.

In the rail industry this experience includes formal safety assurance in line with the requirement EN 51026. SELLA CONTROLS can manage and facilitate the safety assurance on all the safety critical systems we supply. This includes development of the following key assurance documents:

- System Definition
- Safety Plan
- Hazard Log
- Risk Assessment (HAZID, HAZOP & Functional Failure Analysis)
- Safety Requirements Specification
- Safety Case
- ISA interaction and facilitation

In addition we have a dedicated Safety and Security Assurance department that supports our project teams with detailed reliability analysis of the system we supply using a combination of the following techniques:

- FMECA
- Fault Tree Analysis
- SIL Verification
- FRACAS facilitation

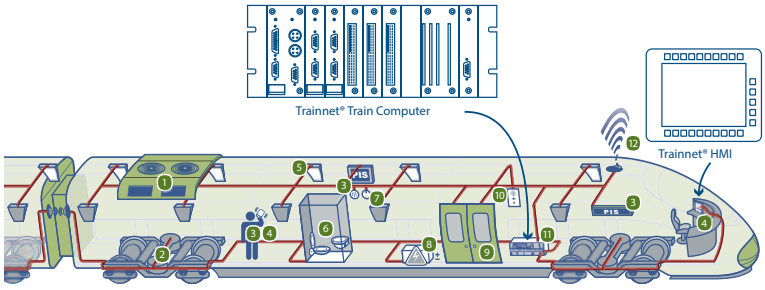
Since 2001 SELLA CONTROLS have operated an independently certified UKAS accredited Functional Safety Management System that governs the processes and practices we use to develop safety critical systems. Based on BS EN 61508 these processes align with EN 51028 and EN 51029 and enable us to ensure the safety critical systems we supply meet the levels of integrity and reliability required.

Functional Safety and Safety Assurance is at the heart of everything we do at SELLA CONTROLS, our history and pedigree make us the logical choice for safety critical systems in the rail industry.

Mobile Solutions on board

Through our own designed products, custom solutions and our product partners, SELLA CONTROLS is able to offer a range of products and solutions for on-board rail vehicles.

Trainnet® control electronics from product partner EKE Electronics for applications such as Train Control and Management System (TCMS), Train Communication Networks, Vehicle Control Units, Vigilance Control System and Event Recording.



TRAINNET® TCMS, FOR THE MONITORING, CONTROL AND AUTOMATION OF:

1. HVAC
2. Bearing temperature (SIL-2)
2. Speed measurement (SIL-2)
2. Lateral vibration (SIL-2)
2. Brakes
2. Traction
3. PIS/PA
4. Diagnostics
5. Lights
6. Water tanks
7. CCTV
8. Batteries
9. Doors
10. Emergency communications
11. Data protection (event recorder)
12. Train-to-wayside communications

Train automation

The Trainnet® TCMS can be used to automate the train sub-systems. In most modern trains, on-board sub-systems generate a large quantity of data which is essential for safety (speed, braking, faults etc.) and operation purposes (system status, energy consumption, video recording etc.). The Trainnet® TCMS is able to gather this data, analyse it, and send logical commands and warnings. The information can be automatically exchanged between sub-systems and conveyed in real time to the train driver, the train captain, remotely located personnel and even passengers.

The Trainnet® TCMS is a versatile train computer which can be used in a number of applications such as:

- Diagnostics
- Automatic Train Inauguration
- PIS/PA system management
- Crew HMIs management
- Brakes and traction monitoring
- SIL and Safety Applications
- Fleet Management
- HVAC management
- Door management
- Lighting management
- CCTV system management
- Tank level monitoring
- Battery charge monitoring
- Train-to-wayside communication management

SELLA CONTROLS have been working with Kamera & System Technik (KST) for many years to offer the UK rail industry high quality, safety-related specialist CCTV cameras for on-board rail vehicles.

CCTV cameras for Driver Controlled Operation (DCO), Pantograph and Front facing application including Airflow optimized dust and weather protection housings for use with high speed trains. Proven standard camera housings or custom designed housings to fit the ergonomics of the vehicle can be provided.

Mobile Solutions
ASDO - CSDE - DCO - PPOS

Automatic Selective Door Operation (ASDO), and Correct Side Door Enable (CSDE)

TRACKLINK® III system or Trainnet® Odometry and GNSS based solutions or a combination of both are used to determine the location of a train at stations to provide the functionality of ASDO and CSDE. Our system can also be enhanced to include Driver Control Operation (DCO) to optimise space in the cab by providing dual use HMI driver displays.

Selective Door Operation and Correct Side Door Enable systems are used to prevent train doors being released when there is no platform available. Provision of an ASDO and CSDE system can enhance passenger safety and improve dwell times at stations. Our systems meet safety level SIL-2.

SELLA CONTROLS have been supplying Selective Door Operation systems since the early 1990s and have extensive experience in the UK and overseas Rail markets.

The selection of an ASDO and/or CSDE system is dependent on a number of factors such as existing technology already on board the train, route geography and commercial factors. SELLA CONTROLS have experience in providing solutions that are train based, coach or car based, stand alone or integrated with existing on board train control and management systems.

TRACKLINK® III or Trainnet® GNSS based solutions or a combination of both are used to determine train location which is used for traction limiting trigger, AC to DC changeover, AC to battery change over, tunnel enter/exit, regenerative braking on/off and any other geographical location trigger.

Physical Prevention of Over Speeding - PPOS

A combination of TRACKLINK® III system and Trainnet® is used to provide a SIL-2 PPOS system that can be used on trams, light rail and trains.

The system is used to provide over speed protection at high risk sections of track by deployment of TRACKLINK® III Beacons prior to the speed restriction zone area to ensure that the speed is not exceeded approaching the high risk area and also through the high risk area. The PPOS system provides monitoring, data recording and communication to the operations control room in the event of a trip.

Rail Control Solutions

SELLA CONTROLS, in partnership with signalling designers Amey have developed a COTS Safety PLC solution for Level Crossings, Depot Control and Simple Interlocking applications using the HIMatrix range of safety PLCs.

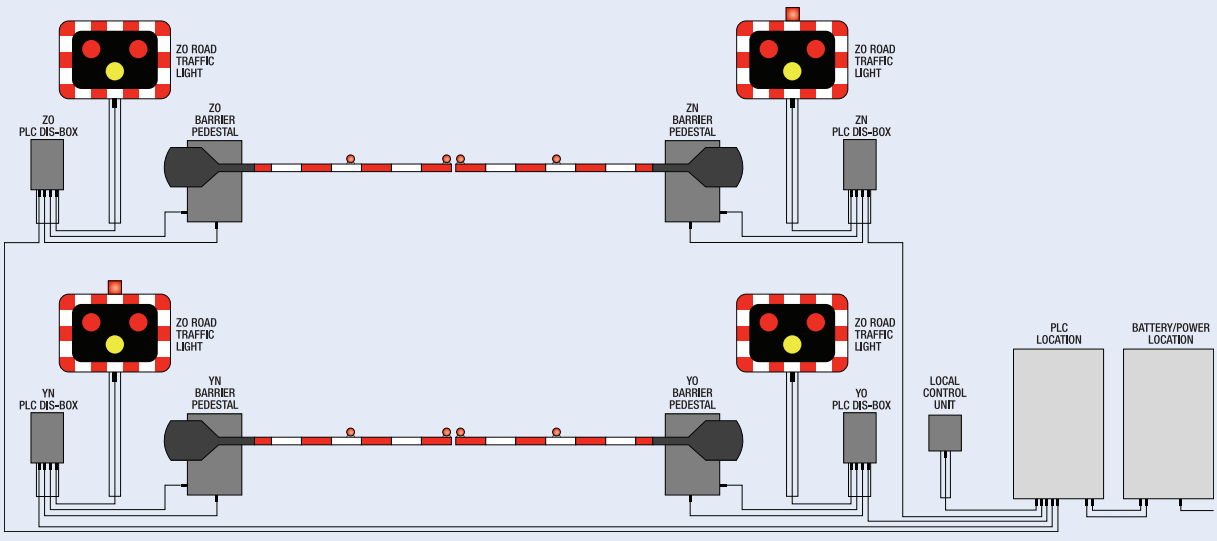
SIL4 COTS Safety PLC for Level Crossings

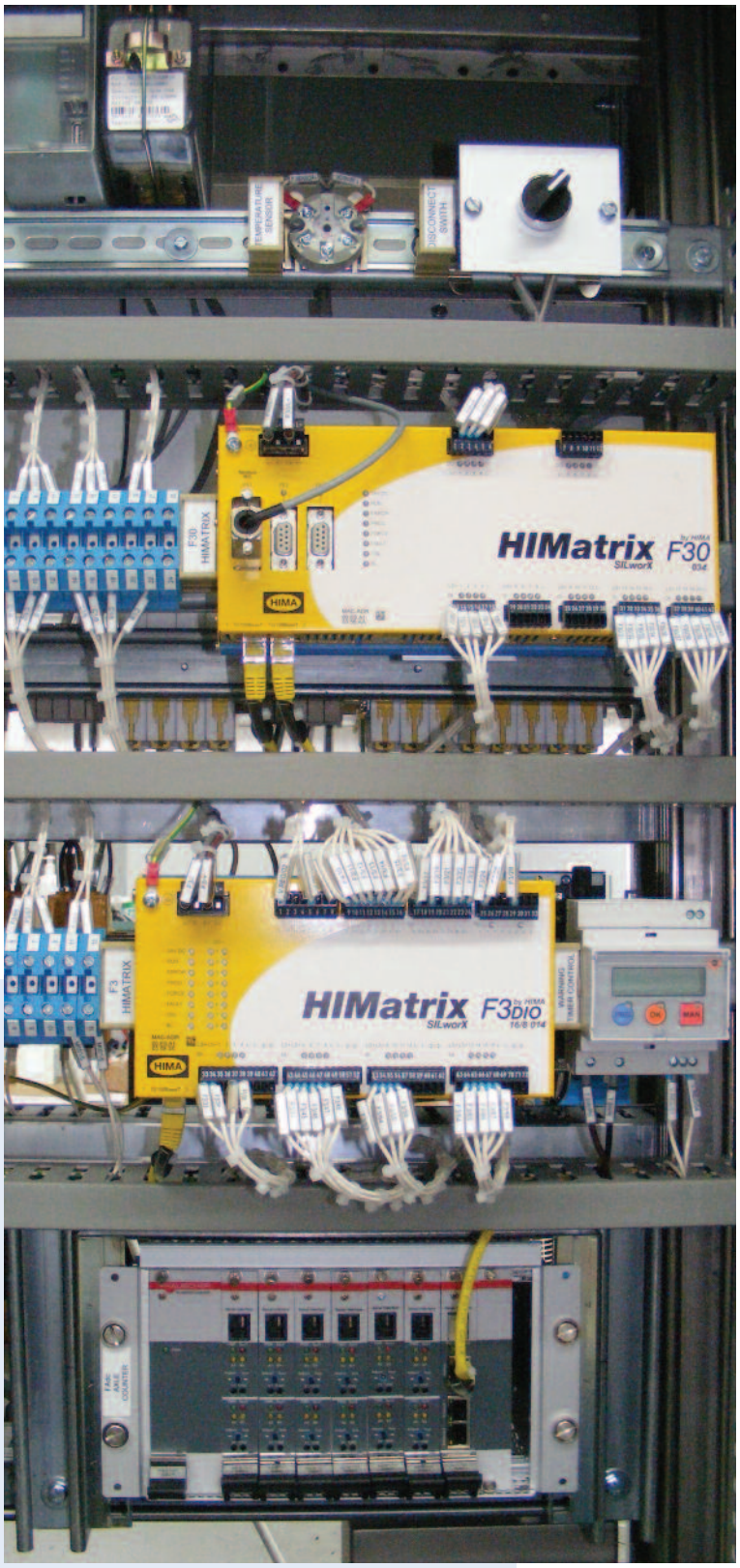
Using standard proven industry safety PLCs in Level Crossings and railway signalling is a logical step. This has been achieved by railway administrations in other countries.

The main advantages are significant cost reductions and increased system performance. Use of Safety PLCs simplifies the design and testing. PLCs have significant design tools to simplify the design process and further reduce costs. The function block logic used in PLCs is easily suited and understood by signalling engineers.

Amey and SELLA CONTROLS have produced the Generic Application Safety Case (GASC) for the introduction of the HIMatrix PLC into the UK and the Specific Application Safety Case (SASC) for application to NR level crossing work.

Software has been developed using standard function blocks and also to interface to existing Network Rail approved data loggers and to Frauscher axle counting systems using FSE. All types of Level Crossing solutions can be achieved using the Safety PLC; from Miniature Stop Light (MSL) to Controlled Barrier Crossing with Obstacle Detection (CB-OD).





Depot Control

Using its expertise in systems integration and functional safety and its range of TRACKLINK® products, SELLA CONTROLS has developed a generic modular solution for the control of rail depots. Using SIL certified safety PLC's integrated with traditional signalling assets such as axle counters, the SELLA CONTROLS solution provides a cost effective application.

Modular control cabinets for axle counters, point control, signal indication and power distribution reduce the installation cost of a traditional depot control system by moving away from a typical centralised architecture to a distributed layout using a depot network.

COTS safety PLC's are used to deliver the safe control functionality. This can be supplied for applications up to SIL4. Operational control is provided by adapting SELLA CONTROLS TRACKLINK® SCADA application to provide indication of depot layouts, track occupation and route setting. Dynamic safe interfaces allow the solution to integrate with traditional hardwire relay interlocking systems and modern SSI installations.

SISS Telecommunications

Drawing on 45 years' experience in rail telecommunications, SELLA CONTROLS has developed a proven cost effective approach for the delivery of Station Information and Security Systems (SISS). Using industry proven COTS technologies, SELLA CONTROLS can offer complete turnkey solutions for both new and redevelopment schemes.

Lifecycle

Our specialist client service offering covers the complete end to end project lifecycle for SISS telecommunications. From consultancy (GRIP1-3), through to design (GRIP3-5), installation (GRIP6), test and commissioning (GRIP7) and final handover (GRIP8). Expertise gained over many years provides SELLA CONTROLS with the skills to manage all aspects of station telecommunications, including the management of stakeholder interfaces.

Design

Our in-house design capability delivers detailed design packs to satisfy key clients such as Network Rail, Transport for London, and Train Operator Companies (TOCs). Skills include an in depth and detailed understanding of industry recognised standards and procedures.

Customer Information Systems

The supply of accurate train service information to passengers is of paramount importance to all train operating companies. Poorly presented information leads to poor passenger confidence, this has a major impact on the performance and reputation of the service provider. To improve the presentation of service information to passengers, SELLA CONTROLS works closely with its product partners to offer.

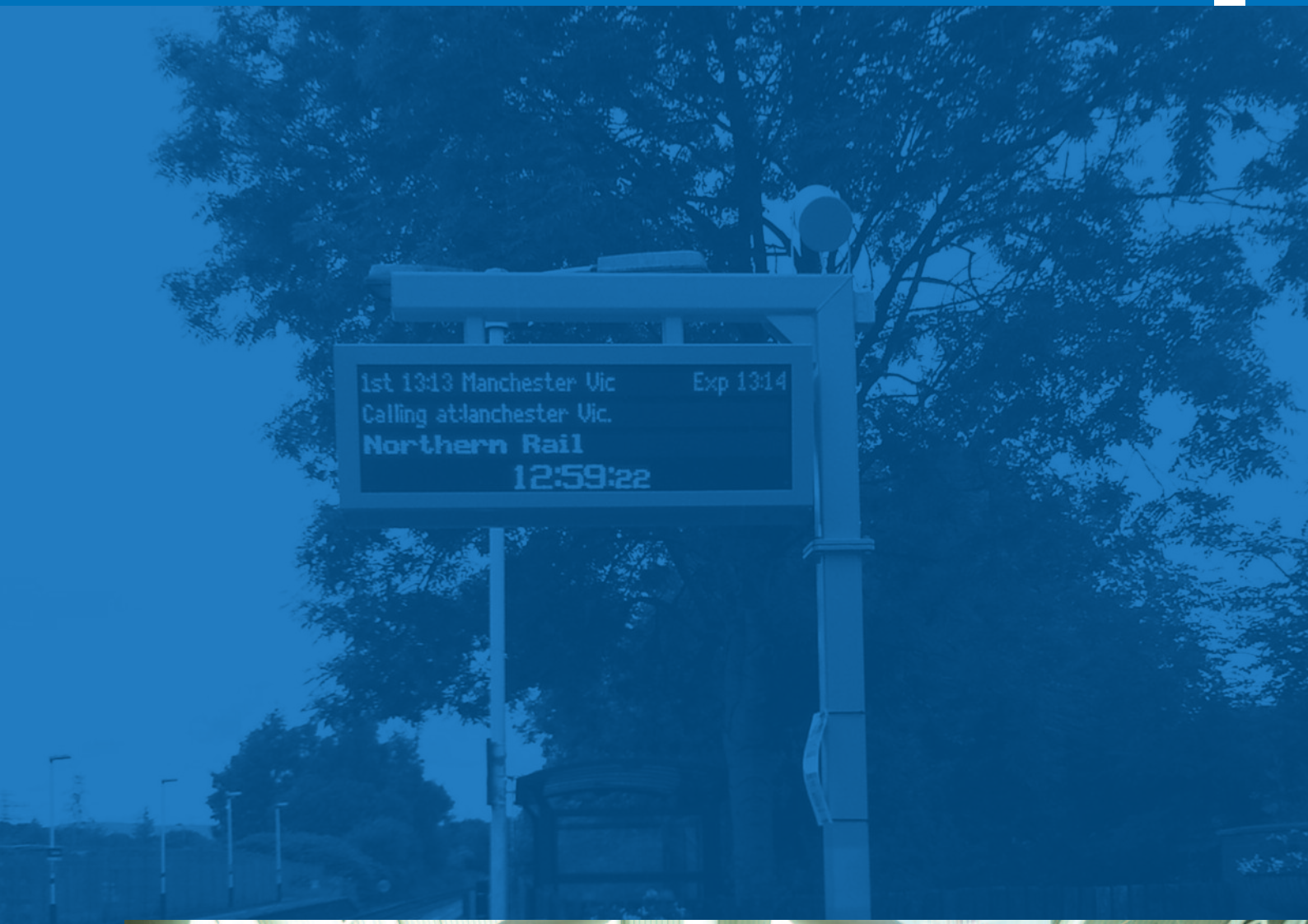
- Project Management
- Technical Consultancy
- CDM Principal Designer
- CDM Principal Contractor
- Installation and Commissioning

Capability

Our customer information capabilities include the complete lifecycle solution for all, or a combination of typical station telecommunication assets as detailed below:

- Customer Information Systems (CIS)
- Public Address/Voice Alarm (PA/VA)
- Passenger Help Points (PHP)
- Closed Circuit Television (CCTV)
- WiFi Enabling Works
- Ticket Vending Machines (TVMs) Enabling Works

SELLA CONTROLS work closely with specialist partners to integrate technology solutions into wider station refurbishment schemes.


1st 13:13 Manchester Vic Exp 13:14
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Northern Rail
12:59:22


A to Z Departures
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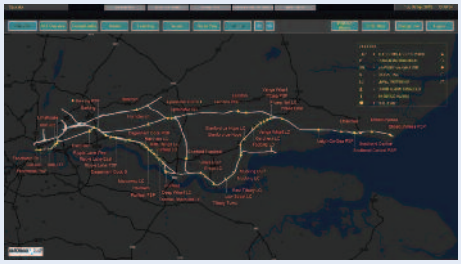
Information
Northern Services
A temporary timetable will operate on some routes from 04 June to 31 July 2018.
There will also be NO DIRECT services to Liverpool due to major station upgrade work taking place. Visit northernrailway.co.uk For more details
Departures
Next train to
Manchester Piccadilly
(For city centre)
16:47
Platform: 4A
EXPRESS
Platform
AirportCity
.com
WWW
THIS
WAY
WHAT'S ON?
TRAVEL MONEY

TRACKLINK® SCADA

…technology for integration and control…



SELLA CONTROLS, using its 45 years' experience as a system integrator delivering safety critical control applications, has developed a solution that enables rail operators to centrally control equipment and plant across a number of different applications. This includes Traction Power, Tunnel Ventilation and Rail Telecommunications.

Industry proven SCADA software and hardware provide the platform for SELLA CONTROLS, TRACKLINK® SCADA toolset.

System integrity is maintained by the use of a dual redundant RAID server architecture. The user interface has been designed in line with rail industry standards to provide a flexible and fully configurable application.

Product Overview

SELLA CONTROLS' TRACKLINK® SCADA application has been developed to provide solutions for Traction Power control and integrated telecommunication applications.

TRACKLINK® SCADA utilises existing industry-standard, robust communications protocols within its application to provide the required data communications connectivity between SCADA equipment and all remote sites.

TRACKLINK® SCADA is a suite of functionality based on the Panorama E^2 product, a commercially available SCADA software package, which utilizes diverse communications routes and is installed on many transportation systems for both local and centralised SCADA applications. As a true client-server application the TRACKLINK® SCADA architecture is typical of other Panorama E^2 installations.

TRACKLINK® SCADA is an event driven application and subsequently a very efficient SCADA platform. This makes TRACKLINK® SCADA highly flexible in its architecture and design.

TRACKLINK® SCADA continuously delivers high levels of performance over a design life of 25 years through the provision of a cost effective lifecycle plan. Standard features of the TRACKLINK® SCADA solution include:

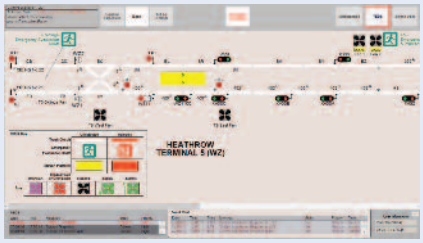
- Common Platform for Operation
- Object Orientated Configuration Toolset
- Simple Workstation Architecture
- Multi User/Fully Configurable Access Profiles
- IEC Standard Cyber Security
- Network Management - Areas of Control
- Extensive Alarm Management Suite
- Full Simulator and Event Replay Suite
- Asset Management and Reporting Business Tools

TRACKLINK® SCADA

Traction Power Control Solutions

In Electrical Control Room applications, the TRACKLINK® SCADA solution is adapted for the remote control of traction power networks. Utilising its flexible user interface and open systems architecture the TRACKLINK® SCADA solution provides electrical operators with a suite of tools to control and monitor electrical power over a wide geographical area. Compatible with all modern protocols including IEC 61850, DNP3/IP, Serial DNP3 as well as legacy protocols used in the UK rail industry, TRACKLINK® SCADA can interface to all third party RTU products as well as its own TRACKLINK® RTU solution.

Enhanced features provide the ability to deliver network management for pre-planned isolations, engineering maintenance and fast effective emergency outages. Compliant to Network Rail standard for the Specification for Remote Control Equipment NR/L2/ ELP/27229-2, TRACKLINK® SCADA has achieved product acceptance (PADS PA05/06720).



Tunnel Ventilation Control Solutions

For Tunnel Ventilation Control SELLA CONTROLS utilises its TRACKLINK® SCADA solution to provide a quick, effective and informative view of the operational environment of a tunnel or tunnel complex.

Using its TRACKLINK® RTU or 3rd party PLC devices to interface to fan controllers, and ventilation management systems, operational scenarios can be implemented based on air movement and traffic/people management. Use of simple HMI mimics provide the user with an immediate view of the operational plant and the ability to provide instant decision making to deal with changes in air flow or the operational requirements.

Integrated Telecommunications Solutions

Adapted to meet the requirements for the operators, SELLA CONTROLS utilises its TRACKLINK® SCADA solution as a common point of control for all operational communication systems. The flexibility of the HMI design means that the solution, even though supplied as a separate system, can be engineered so that its appearance is similar or identical to that of other systems.

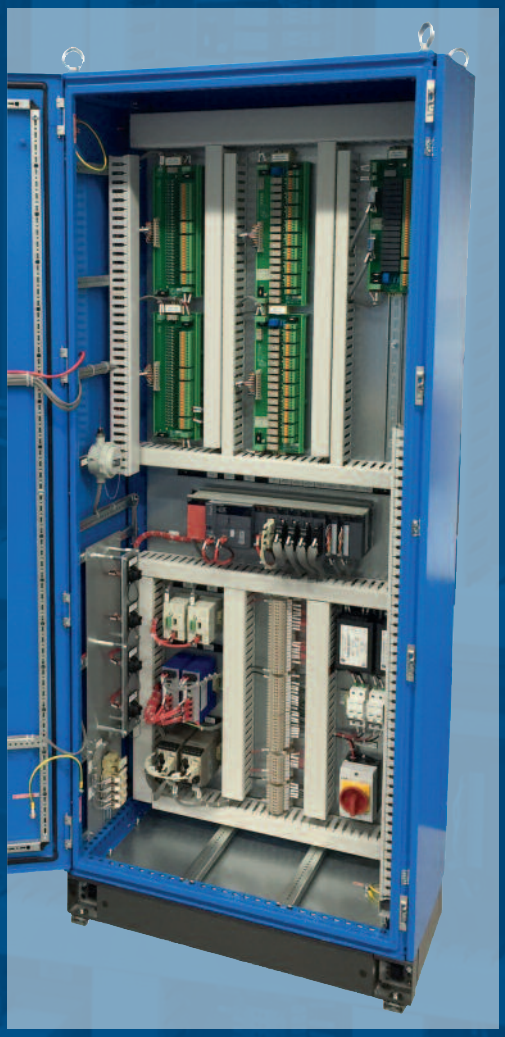
This approach of commonality reduces the level of training required by personnel as mimic layouts, alarm & event regimes and menus are familiar. Typical communication assets that can be integrated include:

- Operational Telephone Networks (VoIP/PABX)
- Train Radio (GSM-R)
- Emergency Traction Discharge Systems (ETCDS)
- Closed Circuit Television (CCTV)
- Public Address (PAVA)
- Passenger Help Points (PHP)
- Customer Information Systems
- Monitoring of Lifts, Escalators and Ticket Machines

TRACKLINK® RTU

Substation control for rail electrification

SELLA CONTROLS has designed a Remote Terminal Unit (RTU) capable of providing a simple and cost effective solution for substation control.



Overview

Utilising the Mitsubishi PLC software and hardware, SELLA CONTROLS has developed its TRACKLINK® RTU for the control of traction power. Designed to meet the requirements of new and legacy installations, the solution has full Network Rail product acceptance (PADS reference PA05/06125) and is complaint to the applicable Specification for Remote Control Equipment standard NR/L2/ ELP/27229-2.

The TRACKLINK® RTU solution utilises 'COTS' PLC hardware and software. Already in operation in the UK rail industry, the Mitsubishi Q-Series PLC equipment has been used for signalling, power and rail asset solutions.

Plant interface cards designed by SELLA CONTROLS deliver signal conditioning and protection. These interface cards provide the necessary marshalling for the TRACKLINK® RTU.

Intelligence and Control

Central to the TRACKLINK® RTU is the Programmable Logic Controller (PLC). The PLC provides the TRACKLINK® RTU with its Intelligence and Control. The core PLC build consists of a Central Processor Unit (CPU), Communications and Input and Output Modules.

The programming of the CPU module is derived using standard function blocks. The core software build has been created for the supply of small, medium and large applications. This enables simple mapping of the I/O for each TRACKLINK® RTU once the design has been agreed.

Networking and Telecommunications

A range of network and telecommunications modules are available to provide a number of options when connecting the TRACKLINK® RTU to the SCADA. These consist of serial and Ethernet based devices. The TRACKLINK® RTU has been pre-configured to use the following industry proven protocols:

- Legacy System Protocols
- DNP3 (Serial / IP)
- IEC 60870-5-(101/103/104)
- IEC 61850 (KEMA Certified with GOOSE Messaging capability)

RTU Key Features

The RTU solution has been designed to deliver not only a function but to also implement key features and benefits. These are as follows:

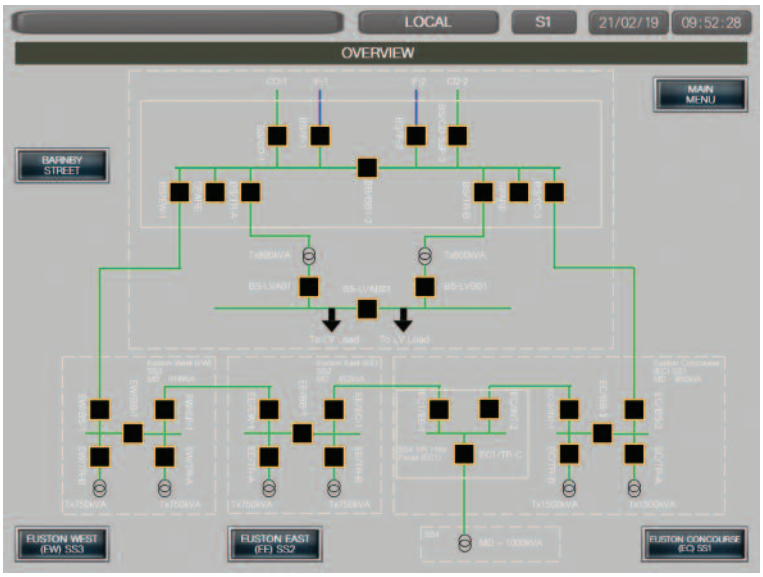
COTS Based Technologies

- Scalable and Distributed I/O Configurations
- Dummy and Mass Trip CB Options
- Dual Processor Option
- Reduced Installation Costs
- Future Proof Design
- Interchangeable Modules to reduce downtime
- Flexible Enclosure Design
- Reduced Spares Holding
- Reduced Maintenance Costs
- Master Slave Architecture
- Multiple Protocol Implementation
- Battery Back-Up

Local Control HMI

To aid the performance of the TRACKLINK® RTU a local panel mounted HMI can be supplied. Using the proven COTS based Mitsubishi GOT series; the HMI can be configured to provide a range of features to aid the operation, commissioning and maintenance of the TRACKLINK® RTU. Standard configurations are supplied that facilitate instant access to the current status of the plant.

Further functionality can be accessed via a two stage key switch and password login screen which includes the Control of Plant, Plant Statistics and Alarm Frequencies as well as Engineer level features.



TRACKLINK® P_2P Controller

SELLA CONTROLS, has developed the TRACKLINK® P_2P Controller for use as a solution for the monitoring and control of remote devices. Available as a traditional point to point (P_2P) solution or in a multi drop application the unit has full Network Rail product acceptance (PADS reference PA05/06629) and is compliant to the applicable specification for Remote Control Equipment standard NR/L2/ELP/27229-2.

The TRACKLINK® P_2P Controller utilises the plant isolation capabilities of the TRACKLINK® RTU, combined with built in processor and modem equipment to provide a low cost solution for remote I/O.

Designed on a single platform, the TRACKLINK® P_2P Controller can operate several circuit breakers from a single configuration or provide remote monitoring of plant. The standard unit includes:

- Powerful Universal Processor
- Modem Module
- 5KV Plant Isolation
- 4 CB & 8 CB Configuration Options
- 16 I/O & 32 I/O Configuration Options

Traditionally the architecture for remote devices is based on a point to-point configuration. This requires a master unit installed in the substation and a slave unit installed near to or within the track device enclosure.

The functionality of the TRACKLINK® P_2P enables the slave unit to be installed up to 6Km from the master unit without the addition of modem equipment. The unit is supplied in an IP66 housing pre wired to keyed connectors (Power, Communications & Plant). This allows the installation contractor to pre wire cables to the plant ahead of the final equipment installation and commissioning.

Typical applications for the conventional TRACKLINK® P_2P Controller include the control of:

- Motor Operated Switches (MOS)
- Controlled Track Switches (CTS)
- Negative Short Circuit Devices (NSCD)
- Track Feeder Switches (TFS)

In addition to this the controller can be utilised to monitor plant alarms for remotely located assets such as Uninterruptible Power Supplies (UPS) and Principle Signalling Supply Points (PSP).

Where installations required a number of TRACKLINK® P_2P Controllers to be installed trackside, interface panel solutions are available in traditional steel or GRP type enclosures.

Proven Turnkey Capability

A flexible approach to a successful project delivery

SELLA CONTROLS, has established a strong reputation of proven expertise in the supply of safety critical and control systems to the UK transport industry. Through its partnerships with key product suppliers and its in-house engineering capabilities, we offer a complete turnkey project capability including design, manufacture, engineering, test, installation and commissioning.

Project Management and Delivery

Successful project management and delivery has a significant influence on the reputation of SELLA CONTROLS, in the rail market. Projects are assigned to dedicated delivery teams whose main role is to ensure that project milestones are met, client satisfaction is achieved and that a philosophy of flexibility to delivery is maintained.

Strong communication is the key to the success of projects and the delivery teams are encouraged to develop strong relationships with the client. On successful completion of all factory activities, the delivery teams have the necessary experience to provide site installation and commissioning of equipment.

Consultancy and Design

The success in providing engineered solutions for the rail industry is achieved by the experience of the engineering teams. This experience is utilised during the consultancy and design stages of a project. The engineering team's knowledge and experience can be called upon to improve the value of feasibility studies, risk assessment and whole life costing activities. In respect of safety applications, dedicated TUV approved functional safety engineers are on hand to advise and/or produce detailed functional designs for many applications.

Systems Integration and Testing

The successful implementation of a system relies on strong engineering and systems integration principles. The SELLA CONTROLS engineering teams utilise engineering procedures that have been proven through the implementation of many projects. Our philosophy of a flexible, modular and open architecture design ensures integration of all equipment to third party applications. Detailed independent and fully integrated testing procedures are performed in-house proving system functionality in a safe environment before final commissioning tests are undertaken at site.

Systems Support

SELLA CONTROLS, has an established, dedicated team of technical support engineers who ensure that clients receive maximum benefit and reliability during the operational life of a system. These highly skilled engineers provide a range of services including 24/7 technical support and site attendance, operational and maintenance training, system modifications and upgrades. All of these services are designed to ensure that individual clients are offered the most cost effective solutions to maintain system availability and reliability.

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