

Robert Nield

Sella Controls

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TRACKLINK® Overspeed Prevention System

Delivering a SIL2 Solution to the Light Rail Market

Rob Nield – BDM, Mobile Solutions



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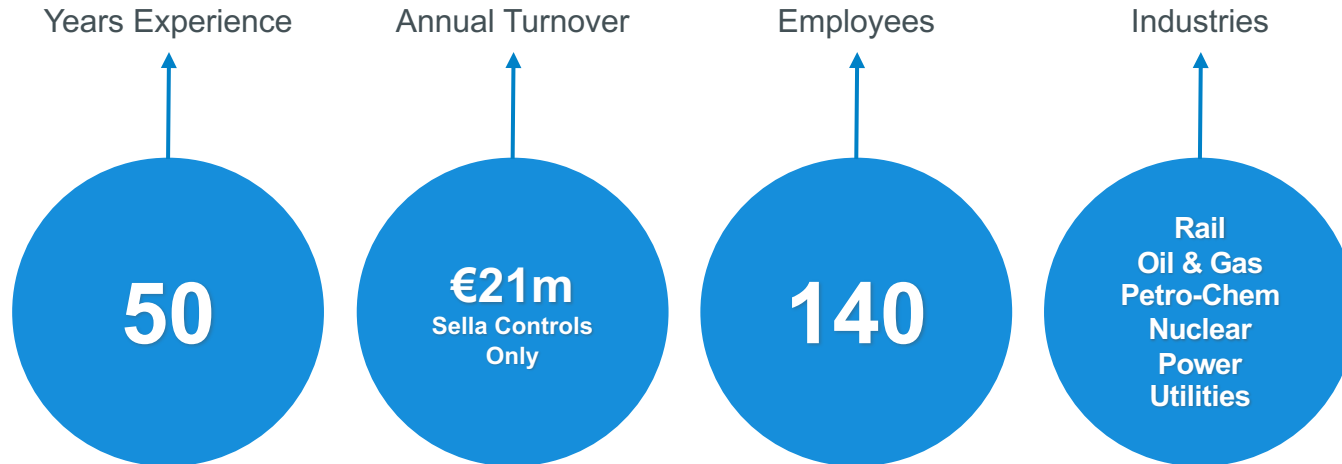
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A Brief Introduction to
SELLA CONTROLS,
A HIMA Company



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BUSINESS OVERVIEW



HISTORY IN PARTNERSHIP



- 1974 – SELLA CONTROLS Established
- 1983 – Signed System Integrator Agreement with HIMA
- 1994 – Rebranded to HIMA-SELLA Ltd – HIMA Investment
- 2001 – Awarded CASS Functional Safety Management Certificate
- 2010 – Rail Business Offices in Ashby de la Zouch Established
- 2015 – Strategic Partnership Signed with Mitsubishi Electric UK
- 2017 – Business Rebranded to SELLA CONTROLS
- 2020 – Rail Business Achieves Significant Growth
- 2023 – SELLA CONTROLS becomes A HIMA Group Company

BUSINESS PARTNERSHIPS



Rail Control Solutions

SELLA CONTROLS

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TRACKLINK® Overspeed Prevention System

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TRACKLINK® III



- **TRACKLINK® III Track – Train Communication System**
- Fully Integrated with EKE TRAINET® TCMS Equipment
- Safety Critical Control for:
 - Automatic Selective Door Opening (ASDO)
 - Correct Side Door Enabling (CSDE)
 - Automatic Power Changeover (APCO)
 - Radio Changeover
 - Regenerative Braking Control
- UK Rail Approved Technology – 90% deployment
- SIL 2 Application



TRACKLINK[®] III - Reader



- The **TRACKLINK[®] III** Reader is capable of reading the **TRACKLINK[®] III** beacons at distances of up to 1 meter and read them at passing speeds of up to 70 mph.
- Possibility of 2 antennas for platform mounted tags
- Single antenna system has antenna integrated into reader; this type used when tags/beacons are mounted in the track.
- UHF License free band, 865.7 to 867.9 MHz
- Frequency Hopping for interference free operation
- Low RF Output power, 24dB (250mW)
- Communication: RS485 to Train computer
- 1 x Volt free output for health
- 2 x Volt free outputs combined for 1 x SIL2 output
- 2 x DC Inputs, Optional 2 x Freq inputs
- Meets RIS-2795-RST Rail Industry Standard for
- Track to Train RFID Compatibility



TRACKLINK[®] III - Beacons



- The **TRACKLINK[®]** III Tag is a beam powered RFID device used in the UHF radio frequency band.
- Meets Safety Integrity level SIL-2
- Security - 16 bit Cyclic Redundancy Check
- Uses Network Rail approved beacons mounting between rails, no power and no maintenance required
- Tags can be mounted on platform inverters (not NR)
- Tags/beacons data can be locked or unlocked
- Meets RIS-2795-RST Rail Industry Standard for Track to Train RFID Compatibility
- Different types of beacons depending on track and part of world



TRACKLINK[®] OVERSPEED PREVENTION SYSTEM



Traditional GNSS based Overspeed Prevention solutions have one key flaw: ***Accuracy.***

Even combining GNSS and Odometry doesn't adequately solve this problem – black spots in coverage and wheel slippage occur all too often to satisfy the accuracy required for SIL2.

The answer? **TRACKLINK[®] III**



TRACKLINK[®] OVERSPEED PREVENTION SYSTEM



Using our **TRACKLINK[®]** III beacons we can provide two types of solutions dependent on the networks requirements.

Coverage of High-Risk Zones:

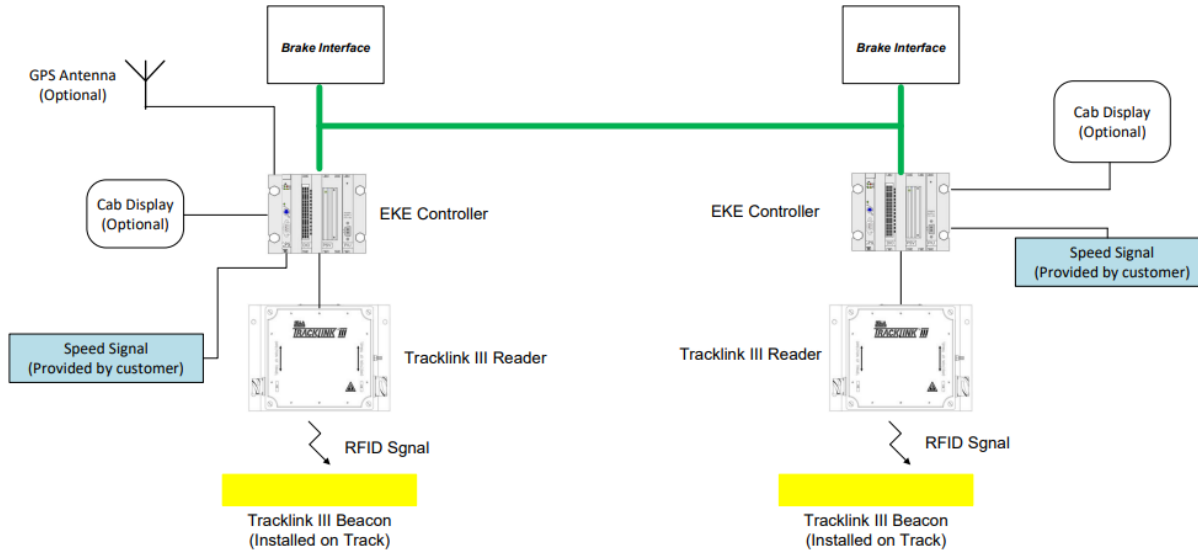
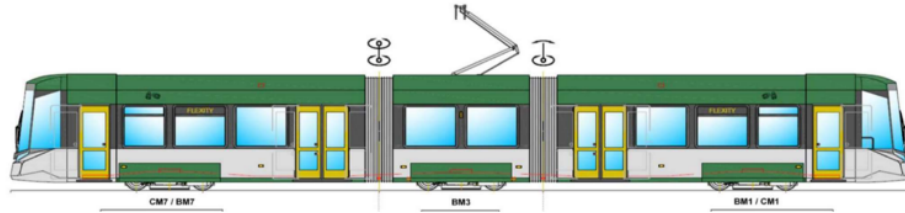
Placing a series of **TRACKLINK[®]** III beacons at specified distances on the approach to these zones we can track graduating breaking and intervene in cases of Overspeed.

Entire Network Coverage:

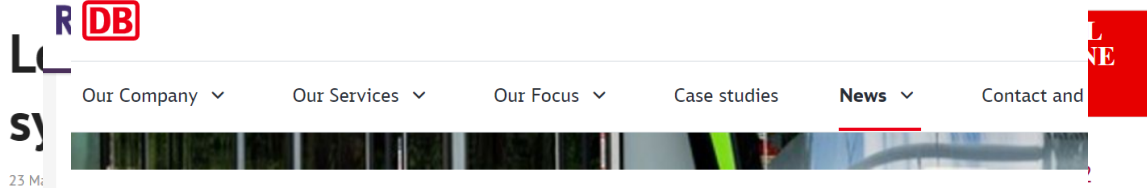
Mapping the entire network in our SIL2 controller we can track vehicles at any point on the networking using GNSS and Odometry – the key difference being our **TRACKLINK[®]** III beacons are used periodically as geographical reset points, negating black spots in coverage and wheel slippage.



EXAMPLE SYSTEM ARCHITECTURE



TRACKLINK[®] OVERSPEED PREVENTION SYSTEM



DB ESG > News > Press Releases > **Overspeed protection system on London trams awarded SIL2**

Overspeed protection system on London trams awarded SIL2

The safety system installed on London Trams network to prevent the overspeeding of trams receives Safety Integrity Level 2 (SIL2) certification. This SIL2 accreditation is a UK first for a light rail overspeed protection system and provides independent safety assurance.

(Derby, 22nd of March 2023) In January 2019, DB ESG was selected by Transport for London, following a competitive tendering process, to develop, design, install and commission a device to physically prevent the overspeeding (PPOS) of light rail vehicles operated by London Trams in the Croydon area. DB ESG collaborated with Sella Controls who provided the hardware and software, including a PPOS controller and Tracklink III system.

This SIL2 accreditation is a UK first for a light rail overspeed protection system and provides independent safety assurance.

UK: certified to Safety Integrity Level 2.



TRACKLINK[®] OVERSPEED PREVENTION SYSTEM



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Manchester Metrolink awards contract for Tram Safety Improvement Programme to DB ESG

By Metro Repc



Transport for Greater Manchester (TfGM) has appointed leading rolling stock engineering consultancy DB ESG to deliver its tram safety improvement programme.

(Derby, 22nd of May 2023)

The Rail Accident Investigation Branch (RAIB) recommended that light rail networks deliver programmes to prevent the risk of serious accidents from tram over-speeding or driver inattention following the tragic event at Sandilands in Croydon where a tram overturned.

Metrolink trams are already fitted with a device that applies the emergency brake in the event of a driver becoming incapacitated and the signalling system has several built-in protections. DB ESG working in partnership with Sella Controls, will design, install, test and commission the Driver Vigilance Devices (DVD) and Tram Overspeed Protection Systems (TOPS) to the Metrolink fleet of trams.

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Thank You Any Questions?

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