



HRD Integrated Services technical training

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HRD Integrated Services offers an industry-acknowledged preparatory program to electrical engineering graduates entering rail signalling.

This program is *the* definitive introductory course offering a detailed insight into rail signalling systems. Training is delivered by acknowledged experts in the field of rail signalling.

Brief info

Course code: GSE

Training delivered

- G1 – 17 days total training
- G2 – 50 days total training
- Maximum group size of 8

Venue

- Rail Academy–Newport
- Includes selected site visits (RIW card required)

What to bring

- Notebook/pen
- Hi-vis safety vest and boots
- Standard issue uniform

Scheduled dates

- Contact HRD for the next training opportunity

Preparatory program content

Introduction

Participants are introduced to the fundamentals of rail signalling, systems, including:

- Train dynamics and signal system overview
- Signalling principles and equipment
- Control and wiring systems



Systems overview

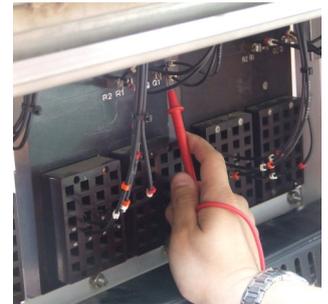
A more detailed look at the signalling system.



- Signal power supplies
- Jointed/jointless track circuits
- Signals, and train protection
- Point mechanisms
- Level crossing protection
- CBI
- Telemetry systems

Testing and commissioning

- Victorian practices
- Assisting the tester
- Processes and compliances



Assessment

- Knowledge test at the end of each training module
- Work-based projects

Why choose HRD graduate training

Enrolling graduates in the GSE preparatory program at the time of employment gives them insight into signal systems and applications.

The GSE helps graduate engineers, project managers and project staff quickly develop an understanding of rail signalling.

Benefits

The GSE preparatory program:

- covers essential operations of all Victorian signalling systems
- provides the underpinning knowledge needed to work effectively across the rail industry
- ensures graduates have signal systems knowledge prior to post-graduate rail study
- gives project managers and project assistants an insight into signal systems
- trainers are highly experienced and technically qualified.

Conditions

Enrolment

Learners enrolling in this course must be employed in a project capacity or as a graduate engineer. Access to signalling infrastructure is essential.

This is not an accredited course and does not qualify the participant to practise as maintainer.

A certificate of completion for HRD training modules completed is issued.

HRD–GSE–Preparatory training

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Support and continuation

The graduate rail signal engineer (GSE) preparatory program provides the graduate with detailed information condensed into a short-term training timetable.

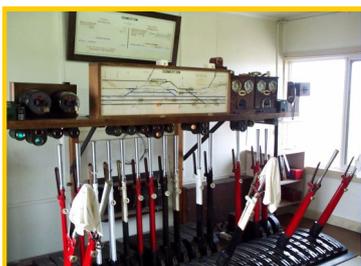
The Victorian rail signal system consists of signalling equipment dating back to the early 1900s.

The program provides examples of systems designed and commissioned over past decades.

Training is supported by a seven month on-the-job rotation program. Graduates therefore require ongoing support from mentors and participation in work placements that further develop skills and experience.

Graduates use systems knowledge learned from the GSE program, supported by self-directed learning, research and industry resources, to gain a comprehensive understanding of the rail signal infrastructure industry and the practice of rail signal design.

The GSE preparatory program is not intended to provide system design or maintenance skills.



Learning resources

Up-to-date learning resources are issued to graduates in the form of one study folder per training module.

In addition, learners are provided with example system designs, access to manufacturer handbooks and industry standards, and a library of infrastructure resources.

Graduates are encouraged to share their current experiences with other learners.

G1 Rail signal systems, controls and principles

Rail signal systems, controls and principles training is a comprehensive introduction to rail signalling over 17 days training.

Graduates are introduced to Victorian signal systems and principles in preparation for the system-specific modules. References are given to standards and specifications.

G1.1 Rail signal system and principles (7 days)

Included are the principles of Victorian signalling, 3 and 4 aspect-type signal systems, signal equipment, train protection, points, track circuits, interlocking, and telemetry systems.

The graduate is introduced to signal control principles, plan-reading and signalling circuits.

G1.2 Rail signal control system and principles (5 days)

This module covers control centres, computerisation, computer-based interlocking, and level crossing controls.

G1.3 Rail signal wiring systems (5 days)

Wiring systems includes the practice of wiring and cabling found in the signalling system.

Training also covers jointing and termination, and cable specification.

G2 Detailed signal system applications

Signal system applications theory training covering the application, installation and maintenance of various equipment is supported by on-site inspection of installed equipment.

The learning modules below are listed in delivery order.

G105 Rail signal power supplies (5 days)

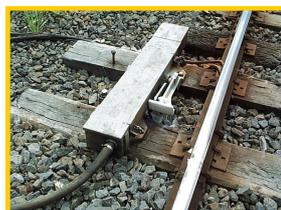
Power system training covers the application of various power sources, including AC/DC low to high voltage supplies, UPS, hydraulic units, pneumatic and diesel standby systems.

G109-1 Jointed track circuits and bonding systems (5 days)

The track circuit module covers the various track circuits in use. It includes DC; Westrak, AC; Jeumont; UM71; FS2500; PS0II, AFOM, and IPI overlays; processor-based; axle counters; and non-vital tracks.

G111 Signals, train protection and permissive signalling (5 days)

Signal and train protection system training includes learning related to signal equipment, trainstop, TPWS and absolute permissive block systems.



G108 Point mechanisms: on-rail and off-rail types (5 days)

Point operating mechanisms and control circuits are covered in this module.

Training includes off-rail locking and on-rail locking machines.

G107 Level crossing systems (5 days)

Level crossing system learning covers flashing light, boom barrier, predictor, traffic light coordination, pedestrian gates and related control circuits.



G112 Relay and geographic interlocking (5 days)

Relay-based interlocking and geographic module applications are the focus of this module. Control tables and circuits related to ASR, LR, timers, and special controls are included.

G109-2 Jointless track circuits and axle counters (5 days)

Learn about track circuits including UM71; FS2500; PS0II, AFOM, and IPI overlays; processor-based; axle counters.

G114 Computer-based interlockings(5 days)

CBI system training reviews the application of computer-based types fundamental design. Interface processors and playback utilities are included.

G128 Testing and commissioning signalling systems (5 days)

Using the current Victorian testing and commissioning standards, this module covers equipment inspection, insulation and continuity tests, wire counting, null counting, function tests, completing required documents.

(A practical test is required for module completion.)

G110 Non-vital telemetry systems (5 days)

This module covers the application, installation and maintenance of various telemetry systems in use.

