Learning Outcomes

Thermit Welding Training, Certification / Re Certification, Process Conversion & Certificate Re-validation Courses

Level I & Level II

PURPOSE

These comprehensive courses aim to provide the trainee with required knowledge and skills to be issued with a Level 1 or Level 2 Thermit Welding Certificate for the Thermit Welding Processes accredited. The certificate is issued by Goldschmidt Australia Pty Ltd. and is approved to AS/NZS ISO 9001: 2000 Certificate No. QEC13476.

DURATION:

Ten (10) working days (minimum 80 hours) for all new trainees.

Five (5) working days (minimum 40 hours for a refresher course for previously certificated welders.

One (5) working day (minimum 8 hours) for a certificated welder, Process Conversion Course.

Welder Recertification programs duration and content are dependent on existing certification level and prior experience.

The courses are designed so that on completion of the Level I or Level II Training, Re-training, Re-Certification programs or process conversion and certificate revalidation courses the trainee will achieve the necessary Standards required.

LEARNING OUTCOMES:
On completion of the Thermit Welding Training Course, the trainee will be able to:

a) Demonstrate sound theoretical knowledge of the Thermit Welding process.

b) Understand the requirements and enforce safety standards for operational welding procedures, including correct use of personal safety apparel and equipment (PPE) for Thermit welding tasks undertaken.

c) Prepare the rail ends for Thermit Welding
Including:

- Identify oxygen / fuel gas cylinders safety precautions.
- Using oxygen / fuel gas and rail disc saw.
- Cutting Rail in a safe and competent manner.
- Cleaning the rail ends.
- Competently demonstrate the four uses of weld setting gauge.

d) Competently demonstrate the correct procedures for rail end alignment, using a 1-metre straight edge, taper gauge, steel wedges, an alignment frame and or similar devices.

e) Identify Thermit Welding Equipment components and their correct usage.

f) Competently carry out procedures of alignment and fitting of sand moulds, fitting of luting cards and luting and sealing of the mould's operations. Checking fit of pouring plug.

g) Identify Crucible components, their correct assembly and preparation for Thermit Welding operations.

h) Competently carry out preheating operations. Including:

- Identification of Oxygen and Fuel gas regulators, regulation hoses, flashback arrestors, non-return valves, in line check gauges, mixers and preheating torch assemblies.
- Setting of specified Oxygen and Fuel gas pressures and correct preheating torch tip neutral flame adjustment.

Observe and identify:

- Colour of rail ends at completion of preheat.
- Identify and implement preheating specifications for relevant, Thermit Welding processes and rail profile being welded.
- Identify preheating problems and implement corrective action.

Set up crucible Single Use (SU) crucible components and loading
of the Thermit Welding portion.
Including: -

- Correctly identify welding portion type and grade, premixing and loading into crucible.

i) Competently and safely, install Thermit cast weld metal.
Including:

- Ignition of Thermit SafeStart cap.
- Observe reaction, tapping and pour, maintaining safe working distance.

j) Demonstrate and implement correct timing and procedures for removal of equipment.
Including:

- Removal of crucible assembly, slag trays, rail protection covers, rail clamp, mould protectors and base plate.

k) Demonstrate and implement correct timing and procedures for removal of sand moulds, two- and three-piece systems and sand mould residue.

l) Competently carry out weld shearing operations.
Including:

- Using hydraulically driven weld shears.
- Manually, using hot sets and sledgehammer.

m) Competently carry out weld profile grinding operations to specified tolerances.
Including:
- Rail profile grinding safety and general maintenance procedures.
- Lifting and packing weld joint.
- Correct timing and procedures for the removal of steel wedges, rail jacks or alignment frames or similar devices and lifting and packing sleepers.

n) Identify a variety of weld defects, their causes and corrective action to be taken.

ON THE JOB TRAINING:

1) The content of Level 1 and Level II training courses should be followed by on-the-job skill practice.
   a. Goldschmidt Australia Pty. Ltd. will only issue a Thermit Welding Certificate after the trainee has successfully completed:
   b. A five (5) or ten (10) day Thermit Welding Training / Re Training Course. A Process Conversion or Certificate Revalidation Course.

2) After a written and practical assessment in the presence of a Qualified Thermit Welding Technical Instructor, a Level I or Level II Certificate will be issued.

3) Successful Level I certificate recipients can only weld provided that they are under the strict and close supervision and guidance of a Level II Thermit Welder at all times.

4) To qualify for a Level-II Certificate the Level-1 trainee welder must complete a minimum of 50 welds under the supervision of a Qualified Thermit Welder with minimum Level-II Certification. Details and number of the welds completed should be recorded in a register (i.e. Weld Return Doc) and submitted as supportive documentation for qualification for reassessment by a Qualified Thermit Welding Technical Instructor.

Note: The validity period of a Level I Certificate is One (1) year and Level II is Two (2) years from date of issue