

What are Skills bootcamps?

This tailored **60-hour Skills Bootcamp in MIG Welding for District Heating Networks** is designed around a 20-session evening schedule (18:00–21:00hrs) running on Mondays and Thursdays. It aligns with City & Guilds 3268 Level 2 Welding Performance Awards standards, focusing specifically on the heavy-wall low carbon steel applications, pre-insulated pipe components, and strict quality controls (EN 13941 / EN 253) required in district heating infrastructure.

An interactive curriculum timeline widget is available below to help you track sessions, milestones, and learning outcomes dynamically.

Entry Requirements

To take the City & Guilds Level 2 Award in Metal Inert Gas (MIG) welding qualification (3268-02), you will need to have completed a City & Guilds Level 1 MIG welding qualification or possess equivalent practical experience in the welding and fabrication industry.

Programme Delivery Schedule

The 60-hour programme spans **10 weeks**, comprising **20 sessions of 3 hours each** (70% Practical / 30% Theory split).

- **Days:** Mondays and Thursdays
- **Times:** 18:00 – 21:00hrs
- **Total Duration:** 60 Guided Learning Hours (GLH)

Module Breakdown & Session Planner

Phase 1: Safety, Setup & Foundational Joints (Weeks 1–3)

Focused on City & Guilds health and safety units, machine parameters, and basic configurations on 3mm–6mm carbon steel plate.

Session 1 (Mon): Course Induction & District Heating Context

Workshop safety, PPE selection (powered air purifying respirators – PAPR), and an overview of BESA TR/30 standards for heat networks.

Session 2 (Thu): MIG/MAG Equipment Setup & Consumables

Wire feeder setup, torch maintenance, gas selection (Ar/CO₂ mixes), and selecting ER70S-6 wire diameters.

Session 3 (Mon): Bead Run Techniques & Heat Input

Depositing straight beads in the flat position. Managing voltage, wire feed speed, and travel speed to control heat-affected zones (HAZ).

Session 4 (Thu): Fillet Welds – Lap & T-Joints (PB Flat/Horizontal)

Single-pass fillet welds on carbon steel plate. Visual inspection for undercut and cold lapping.

Session 5 (Mon): Multi-Run Fillet Welds (Heavy Plate)

Inter-run cleaning and stacking techniques simulating structural plantroom bracketry and manifold reinforcement.

Session 6 (Thu): Initial Visual Assessment & Quality Control

Practical test under City & Guilds 3268 marking criteria. Basic destructive testing (macro-etching and fracture tests).

Phase 2: Core Network Pipe & Position Welding (Weeks 4–7)

Transitioning to pipe geometries, open-root joints, and out-of-position welding critical for network trenches and energy centres.

Session 7 (Mon): Introduction to Pipe Welding Geometry

Joint preparation (30-degree bevels, root faces) and tacking techniques for carbon steel pipes.

Session 8 (Thu): Butt Welds – Open Root on Plate (PA/Flat)

Achieving full root penetration and managing the weld pool using short-arc transfer.

Session 9 (Mon): Vertical-Up (PF) Fillet & Butt Welds

Controlling fluid weld pools in out-of-position vertical-up configurations simulating trench restrictions.

Session 10 (Thu): Pipe Welding in Rotation (IG / PA)

Depositing root, fill, and cap runs on carbon steel pipe while rotating the workpiece.

Session 11 (Mon): Fixed Horizontal Pipe Welding (5G / PF – Part 1)

Tackling the bottom-to-top vertical-up progression on a fixed horizontal pipe run.

Session 12 (Thu): Fixed Horizontal Pipe Welding (5G / PF – Part 2)

Refining the cap and managing tie-ins at the 12 o'clock and 6 o'clock positions.

Session 13 (Mon): Pre-insulated Pipe Outer Casing Safety & Field Joints

Theory on preserving the insulation layer (EN 253) and avoiding heat damage to polyurethane/polyethylene jackets during hot works.

Session 14 (Thu): Mid-Point Practical Mock Assessment

Full timed 5G pipe weld attempt matching BS EN ISO 9606-1 quality indicators.

Phase 3: Advanced Network Infrastructure & Assessment (Weeks 8–10)

Focusing on plantroom headers, branch connections, defects mitigation, and final City & Guilds qualification testing.

Session 15 (Mon): Set-on Branch Connections & Manifolds

Joint preparation and welding profiles for adding branch connections or bypass loops to distribution headers.

Session 16 (Thu): Weld Defects, NDT & Remediation

Identifying porosity, lack of fusion, and slag inclusions. Techniques for grinding out and repairing failing weld profiles under trench conditions.

Session 17 (Mon): Final Qualification Practice & Refinement

Targeted 1-on-1 coaching focusing on individual weaker positions (e.g., overhead or restricted access simulation).

Session 18 (Thu): City & Guilds Written / Oral Theory Assessment

Invigilated exam covering welding theory, gas safety, engineering drawings, and district heating regulatory compliance.

Session 19 (Mon): Final Practical Assessment (Day 1)

Formal execution of City & Guilds 3268 test pieces (timed open-root pipe butt weld and multi-run fillet).

Session 20 (Thu): Final Practical Assessment (Day 2) & Employability

Completion of assessments, final visual inspection/bend tests, and a closing session on interview pathways with regional heat network contractors.

What PPE is required?

Candidates will need to bring their own safety boots and a flame resistant, full overall. They will be provided with an auto darkening helmet and gloves will be provided.

Assessment & Certification Standards

To pass the Skills Bootcamp, learners must successfully clear both evaluation formats:

- 1. City & Guilds 3268 Level 2 Component:** Successful validation of one plate and one pipe test piece according to visual and macro-fracture criteria.
- 2. District Heating Alignment:** All assessments are visually inspected to meet **Quality Level B** of BS EN ISO 5817, ensuring compatibility with the strict structural demands of pressurized thermal networks.

Trainer



Stuart

Our Technical Trainer is an NVQ Level 3 qualified engineer, coded in MIG, TIG and MMA, in both mild steel and stainless steel. He has significant experience in a wide range of sectors including the Subsea, Film and TV, Medical, SFX and Construction.

For more information speak to our technical team.

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To register,
SCAN Code



MIG – MMA Welding Skills Bootcamp Programme