Irish Water Self Lay Quality Assurance

Toolbox Talk 1 of 8: Electrofusion Welding

Step 1 – Before You Start

- Ensure safety is considered during the planning and execution of the works. If working on behalf of Irish Water, adhere to Irish Water's HSQE requirements.
- All operatives should complete Water Hygiene Training and adhere to the requirements.
- All fusion welding operatives should be in possession of a current relevant training certificate.
- All equipment should be in good working order and, where applicable, have a relevant calibration certificate and CE marking.
- Materials are to be in accordance with the Irish Water Codes of Practice (CoP) and have CE marking.
- All fusion welding is to be carried out in accordance with WIS 4-32-08 and as per the manufacturer's instructions provided these instructions do not contravene good site practices.
- Before installation of any water or wastewater infrastructure works refer to Irish Water's Codes of Practice and Standard Details which are available, along with the full library of Quality Assurance Toolbox Talks, on the Irish Water website **water.ie/connections/**

Step 2 – Required Equipment Checklist

✓ Portable Welding Unit
✓ Generator
✓ Mechanical Scraper
✓ Hand Scraper
✓ Pipe Cutter
✓ Alignment Clamp
✓ Re-rounding Clamp and Insert
✓ Tapping Tee Clamp (if applicable)
✓ Indelible Marker
✓ Lint Free Cloth
✓ Ground Sheet
✓ Tent
✓ Mirror

Step 3 – Site Set up

- All welding should be carried out in a clean, safe working environment – you can use a groundsheet/base board and a tent to achieve this.

Step 4a – Pipe Joint

- The pipe end should be flush – use a pipe cutter to attain a flush end.
- The pipe end should be circular – use a re-rounding clamp and insert to correct the ovality of pipes which are out of shape.
- Coils are only permitted for pipe diameters 125mm and below. Re-rounding is especially important when joining coils.
- Clean down the pipe with clean water and dry off with a lint free cloth.
- Mark the insertion length (half the length of the coupler) +20mm on the pipe with an indelible marker, and then hatch the area between this line and the end of the pipe.

- Use a mechanical scraper to remove between 0.2mm – 0.4mm of the hatched area of the pipe. Ensure to leave a light press fit for the coupler (the pipe should be scraped immediately prior to welding).

- A mirror can be used to view underside of pipe following scraping to confirm pipe has been adequately scraped.
- The scraped section of the pipe should not be cleaned again unless it is contaminated.
- Remove rough edges at the end of the pipe using a hand scraper.
- Open one side of the fitting bag and slide the coupler fully home without removing it from the bag, mark its final location on the pipe.
- Prepare the end of the second pipe in the same manner.
- Remove the bag from around the coupler and insert the second pipe home, mark its final location on the pipe.
- The alignment of the pipe assembly must be maintained during the welding process and until after the cooling time has elapsed.
- Use a clamp to maintain alignment, however, the use of a clamp does not guarantee alignment is maintained and welding operatives should not rely solely on the clamp.

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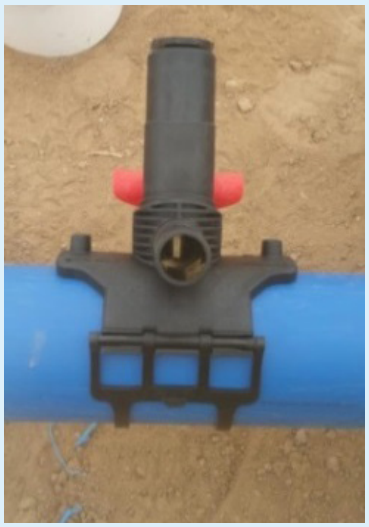
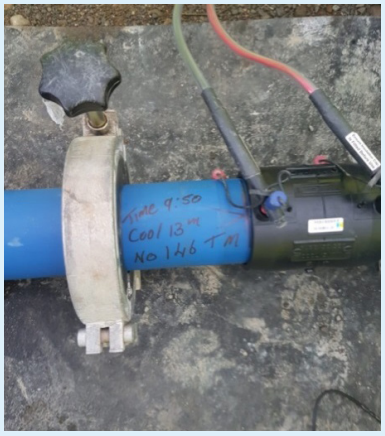
Step 4b – Saddle Joint

- Clean the pipe down with clean water and dry off with a lint free cloth.
- The pipe should be circular – use a re-rounding tool to correct the ovality of pipes which are out of shape.
- Mark the saddle boundary on the pipe with an indelible marker, and then hatch the area within the lines.
- Use a mechanical scraper or a hand scraper to remove between 0.2mm – 0.4mm of the hatched area of the pipe.
- Assemble the saddle on the scraped pipe and tighten saddle in place. Ensure that there are no gaps between the saddle and the pipe.
- Tapping Tee Clamp to be used if required as per manufacturer's instructions.



Step 5 – Electrofusion Welding

- Connect the welding leads of the fusion welder up to the fusion coupler/saddle joint.
- The bar code on the fusion fitting should be scanned by the welding operative for the correct welding time or alternatively entered manually into the fusion welder.
- Check the generator to ensure it has adequate fuel to complete the weld, and then the welding process can be started.
- The welding operative should sign the pipeline assembly with their initials, date, joint number, time welding started and completion time.
- Leave the fitting with the welding leads and the alignment clamp on until after the cooling time has elapsed.



Step 6 – As-Constructed Records

- Record and maintain the Irish National Grid (ING) co-ordinates of each weld location; the weld reference number; photos of each weld and the time and date at which each weld was carried out.
- As-constructed records are to be included in the final documents which are submitted to Irish Water prior to connection.

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