

electrofusion wire laying



manufacturing systems for the production of electrofusion pipe fittings
using the MSA patented wire laying technology and processes

MSA are forerunners in the development of technology and systems for the wire laying and production of electrofusion fittings using a **patented wire laying process**. MSA currently offer production equipment for the manufacture of fittings ranging from 20mm to 1200mm (internal diameter), with the systems presenting a much simpler, flexible and more efficient alternative to the traditional method of inserting wire coils during the initial moulding stage of producing fittings. Production licenses are sold to each customer in line with worldwide patents (contact MSA for further details).



** see separate data sheets for more information*

Horizontal or vertical format machines are available* (depending on fitting size) with design layout allowing easy access for set-up and component loading; while the CNC control system enables optimum production cycle times and repeatability.

Moulded fittings or pipe sections are manually loaded into specially designed fixtures fitted to the main spindle(s) of the machine. The production cycle consists of 3 main operations:

1. boring and chamfering
2. wire laying cycle
3. final boring

WIRE LAYING PROCESS

When clamped in the machine the component revolves around a fixed wire laying insert. The insert moves in a parallel direction to the fitting wall and a continuous spiral groove is formed in the wall by the insert. The forming action displaces the material alongside the insert and wire is simultaneously inserted into the groove. The displaced material is then closed back over the wire using a 'closer' feature on the tool, sealing the wire back under the surface of the fitting wall.

The systems are capable of single wire laying (end-to-end) or double wire laying (dependent on size). Double wire laying can be used for fittings which require separate fusion zones and have two terminals at one end. Wire is laid from the first terminal at double the pitch, then special tooling rotates in a U-turn and returns in the opposite direction to the second terminal.

MSA can also offer a complete electrofusion technology consultancy package related to the design of fittings. Machine systems are pre-programmed to suit the design of each customers fittings.*



For the 'traditional' method of winding wire onto a mandrel and forming the fitting around the coil/mandrel during injection moulding, a complex capital set-up is required, along with a very strictly controlled cooling process before removing the mandrels from the moulded fittings. Laying the wire after the fitting has been moulded offers several advantages unique to the process:

- injection moulding cycle time reduced, so increased utilisation of moulding machines
- moulded fittings in a stable condition when wire laying carried out, producing a high tolerance product with accurate internal diameter (no ovality), resulting in a better fit with the corresponding pipe
- no need for a heavy mandrel in the injection moulding stage, eliminating the requirement for expensive specialist lifting equipment to interface with the moulding machines
- flexible CNC process reduces capital set-up costs, reduces setting times, has fewer design constraints and is easy to operate
- wire laying has enabled electrofusion fittings to be manufactured at a LOWER COST

Additionally, MSA manufactures the NEXUS 500 Series* of electrofusion controllers, plus a COMBI-UNIT, which combines a generator and NEXUS ECU in one convenient, portable unit.

MSA are winners of The Queen's Award for Enterprise: Innovation 2006, for the development of machining and wire laying systems for manufacturing electrofusion fittings. Electrofusion fittings are used to join thermoplastic pressure pipes typically used for gas and water distribution systems, in chemical drainage systems, etc.



PROCESS & EQUIPMENT PROTECTED BY PATENTS: EP1042108 | E215874 | P19813732-8 | 2,312,374 | ZL98812630.3 | 215588 | 136,935 | 2000-526336 | 10-0616469 | 220759 | P341526 | E5217365773 | 04/2320 | US 6,530,139 B1 | US 6,751,840 B2 | US 7,069,637 B2 | PCT/GB2008/050487 | 08290385 | 57411



MSA ENGINEERING SYSTEMS LIMITED, 3 Assured Drive, Thurmaston, Leicester, LE4 8BB, United Kingdom
 phone +44 (0)116 260 8866 | fax +44 (0)116 260 8861 | sales@msa-engineering.co.uk | www.msa-engineering.co.uk
 Registered Office: 12 Shibden Hall Croft, Shibden Hall Road, Halifax, W. Yorkshire, HX3 9XF, UK | Registered No. 2636196 England

