

# Latest Technology Branch: WE-Welding of Plastics at an innovative production line

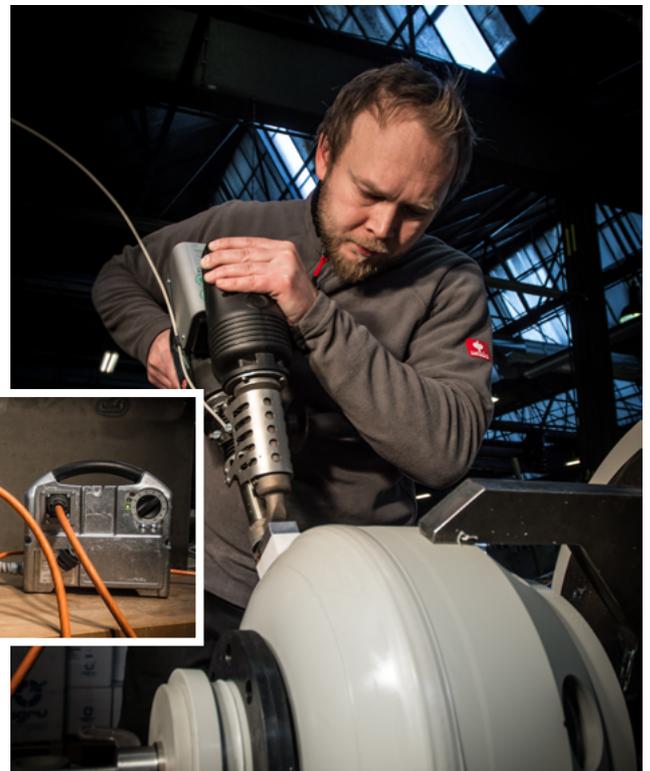


Körting has conquered a new branch of technology: The welding of plastics at a high technical level. With immediate effect, the warm gas extrusion welding process (WE) with brushless high-frequency drive will be applied for the production of high-quality weld joints.

"Up to now, our plastic components were WE-welded by an external company. We wanted to integrate this process into our manufacturing process and, at the same time, improve the quality", reported Florian Kortas, who is employed in the production planning department of Körting Hannover and who, as a welding technician, has been entrusted with implementing the plastics welding process. "That is why we have now taken this for Körting new technology branch into our own hands." With this process, plastic components with ultra-large wall thicknesses can be bonded without any problems, as is demonstrated with the series production such as of the Körting-manufactured oxygen introduction systems made of polypropylene.



WE welding device MUNSCH MAK – 25 with „Powerbox“ high-frequency drive



WE-welder I. Brandes, WE-welding an oxygen introduction system D400 made of polypropylene

First of all, a field test was started with the aim in future to permanently bond the components modules of Körting's oxygen introduction systems made of massive polypropylene by means of the WE welding process and to manufacture these at the Hannover location. After subjecting the welding process requirements to a close examination two of the most favoured welding devices were chosen and demonstrated in the works. "Here, particular value was placed on a "hands-on" testing under actual production conditions", as Mr. Kortas stated. One welding device with brushless high-frequency drive distinguished itself during the test welding in comparison to the conventional WE welding device on account of its clearly increased performance characteristics in continuous-running operation and the optimally adjustable operational parameters.

## Best performance in series production

The new device for plastic welding was now subjected to extensive testing and adjustments in order to gain first experiences for series production and to document these. This was a success. The plastics welding dept. started directly with the series production for a large order of over 90 oxygen introduction systems D400.

"This on-going process was the ideal start-up phase for the welding device as well as for the welding personnel who before had gained their qualifications by visiting a practical training course at the SLV

Hannover“, reported Mr. Kortas. This process realised outstanding quality characteristics even just after a short time on account of the tools and working materials which had been adjusted to the welding process and which could be optimised yet again during the on-going work process.

### ”High-quality welds!“

”With the dedicated commitment of the welding personnel it was possible to achieve such visually high-quality weld qualities that a mechanical re-working of the welds became entirely unnecessary“, explained Mr. Kortas. Moreover, specially designed weld preparations by means of plug connections and specially developed and manufactured clamping tools caused that the originally required work process of tacking the components could be completely dispensed with. In addition, that increased process economics enormously. Since beginning the project, the plastics welding department has

now been extended so far that oxygen introduction systems made up of approx. ten different groups of components can be manufactured in a constant and safely controllable process.

Right from the start the whole process of plastic welding was designed for optimum quality and now offers a lot of potential for further upgrading in the future. After one and a half years of practical experience and over a thousand welding of components groups Körting Hannover AG has developed into a competent plastic welding company. ”With pride we can say that with the development of the plastics welding department an important



Welding a stub joint

component of the value-added chain as well as complex know-how and job capacity could be secured for the Hannover location“, resumed Mr. Kortas.

## At a glance – Warm gas extrusion welding

**The welding process is optimised for rotation symmetrical components geometries.**

Weldable basic materials:	Polypropylene (PP), Polyethylene (PE) Polyvinylidene fluoride (PVDF)
Weldable wall thicknesses:	
Butt welds (V joints):	4 – 15 mm in single-layer method, > 15 mm in multi-layer method
Stub welds (HV joints):	5 – 17 mm (incl. design throat thickness) in single-layer method > 17 mm (excl. a-measure) in multi-layer method
Fillet welds:	6 – 15 mm (a6 – a15)
Weldable diameters:	approx. 200 – 1500 mm
Possible seam geometries:	Seam forms acc. to DVS 2207-4
Possible welding positions:	The process has been optimised for a flat position (PA). However, theoretically every position is possible.
Possible component weights:	max. 250 kg



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