

FRICTION STIR WELDING

Especially developed welding process for joining light metals and steels in engineering and automotive industry. Suitable also for surface treatment of components with achieved fine microstructure and for removing the presence of pores, typical for castings.



automotive



**engineering
industry**



**energy
industry**



**surface finishing
of components**



Welding Research Institute
Industrial Institute of SR
Račianska 71
832 59 Bratislava



0915 751 724



sales@vuz.sk



www.vuz.sk

FRICION STIR WELDING IS A PROGRESSIVE WELDING PROCESS, WHERE WELDED JOINT IS FORMED IN SOLID STATE AT INCREASED TEMPERATURES WITHOUT NECESSITY OF MELTING DOWN.

THE ABSENCE OF MELTING DOWN OFFERS A NUMBER OF ADVANTAGES WHEN COMPARED TO CONVENTIONAL WELDING PROCESSES.



ADVANTAGES OF FRICTION STIR WELDING:

- » No filler metal is needed
- » No need for shielding gas
- » Minimum surface preparation of materials welded
- » Minimum requirements for the welder's qualification and skill

EXCELLENT MECHANICAL PROPERTIES OF WELDED JOINTS:

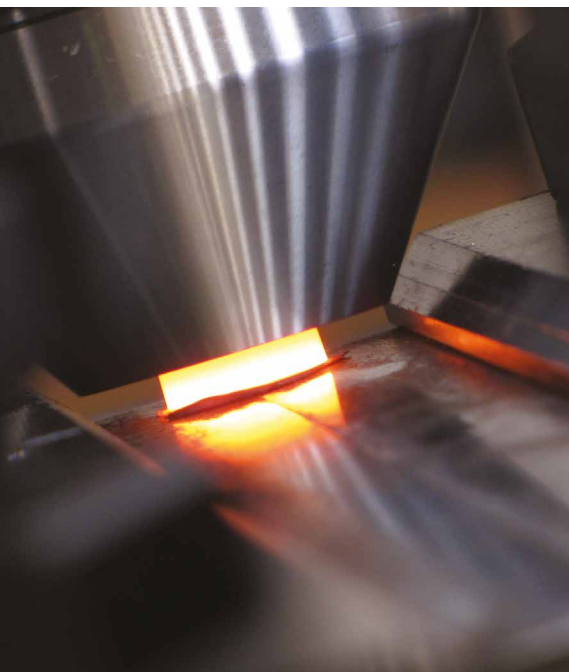
- » Free from lack of fusion
- » Without the change in chemical composition of materials welded
- » Comparable and even better mechanical properties of welded joint when compared to base metal
- » Minimum distortions of welded materials after welding

POSITIVE IMPACT UPON THE LIFE ENVIRONMENT AND WELDER'S HEALTH:

- » Free from vapours and fumes
- » Free from electric arc
- » Free from radiation
- » Spatter free
- » Free from pores

OTHERWISE NON-WELDABLE MATERIALS:

- » Aluminium materials produced by the technology of powder metallurgy
- » Self-hardenable aluminium alloys of all grades and their combinations (DURAL-y) used in aviation industry
- » Magnesium alloys
- » Joining of otherwise non-weldable materials as for example: copper and aluminium



POSSIBILITIES OF TECHNOLOGY IN THE CONDITIONS OF VÚZ – PI SR (WELDING RESEARCH INSTITUTE – INDUSTRIAL INSTITUTE OF SR)

Thickness	LIGHT METALS	STEEL
One-side welding	1-25 mm	0,8 – 10 mm
Welding from both sides	50 mm	20 mm
Welding speed	Within the range from 300 – 2500 mm/min	Within the range from 50 – 600 mm/min
It depends on alloy thickness		