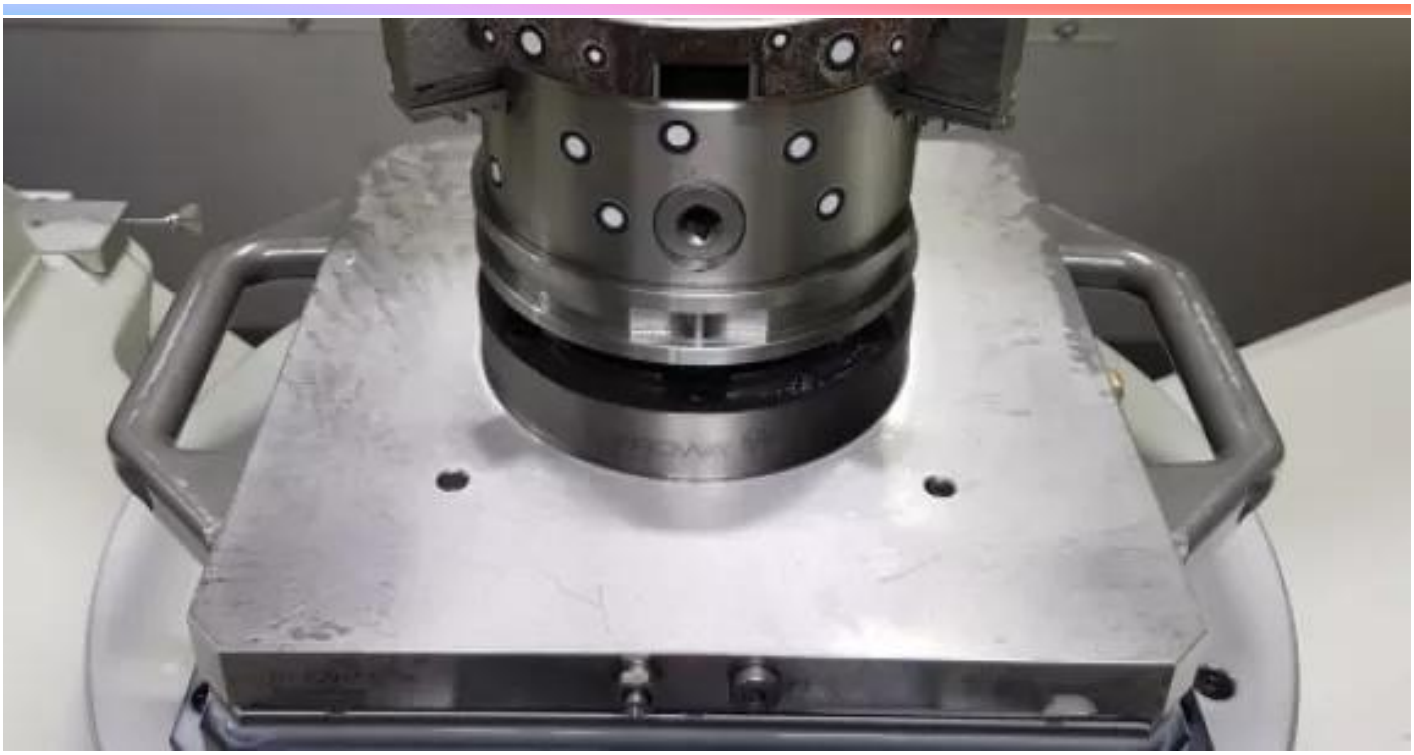


New insights into wire and arc additive machining

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A consortium of Flemish educational institutions - Thomas More and the De Nayer campus of the University of Leuven - and knowledge institutions - IBS and Sirris - have investigated the use of WAAM (Wire and Arc Additive Manufacturing) in a production chain. This was part of a European project. It yielded some new insights into the technology.

With WAAM technology, metal parts can be constructed from welding wire using a robot. Afterwards, they often have to be finished with more conventional technologies. WAAM is a relatively flexible and fast technique, which makes it suitable for small series production or prototypes even if these involve multiple materials.

In the European CORNET project 'Advanced Processing of Additively Manufactured Parts' (AdProcAdd), attention was given to the technology itself - the effects of parameters, material behaviour, processing strategies, as well as its interaction with and effect on post-processing operations. For example, it turned out that certain parameters during the welding process can have a major effect on the machining afterwards.

Sensors were used to monitor the WAAM process. The power consumption and voltage monitoring made it possible to guarantee the stability of the process so that material defects, such as porosity, can be avoided and a better surface quality achieved. By using simulation software, machining

conditions could be found that gave a better finish of the often very complex and thin-walled shape elements.

A group of mainly Flemish SMEs followed up the project and took part by means of use cases. The results were bundled in guidelines, reports and presentations that are also available online.

The two-year CORNET project 'Advanced Processing of Additively Manufactured Parts', which ended last year, took place with the support of VLAIO and together with international partners.

You can find some presentations of last year's project workshops here:

- Workshop 1 on wire and arc additive manufacturing, focusing on the preparation and execution of WAAM steps, including deposition path planning, post-processing, welding robot and power source setup, and deposition: https://youtube.com/playlist?list=PLR65B4SgaCKBD36-fTKgan3p0yQCoqHki
- Workshop 2 on the intermediate processes (3D scanning, CAD model alignment, preparation, etc.): https://youtu.be/mToCJ2-Fr4M
- Workshop 3 on selecting machining conditions for WAAM parts (post-processing): https://youtu.be/V4PSYYdA6fk

Would you like to know more? Contact one of the authors!



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