

New welding discovery could radically improve manufacturing practices

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(PhysOrg.com) -- A new welding technique for manufacturing horizontal and inclined structures discovered by Cranfield University could radically improve weld-based manufacturing practices, without the need for additional tooling or any type of fixtures or waste materials.

The discovery is part of the University's revolutionary research on Ready-to-use Additive Manufacturing (RUAM), a [new technology](#) that aims to improve industry's ability to manufacture high precision ready-to-use functional parts for a range of applications from small turbine blade repairs to making large aerospace structures.

As part of this research and based on previous experience of the fabrication of vertical [steel](#) walls, the team investigated the fabrication

of angled steel walls without the use of any kind of support structures. A series of experiments were conducted using an 'inclined torch' method, resulting in the successful production of a series of inclined walls varying from 60° to 15° . Finally, a horizontal wall section was successfully created, initially as an extension of an existing horizontal section, and tested in the form of a box structure.



The RUAM process is capable of producing a range of geometries and features to fit various demands. It uses innovative additive layer welding techniques such as Cold Metal Transfer (CMT), which allows for flexible [welding](#) strategies at high speeds (currently deposition rates of more than 1kg/hour are possible). The successive process also allows for the mixing of strategies and materials as well as for amending existing metal work pieces. Innovative software for automatically generating [robot](#) paths has also been developed as part of this project.

Provided by Cranfield University

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