UT Austin Portugal | 2019 Strategic Research Projects

NANOTECHNOLOGIES

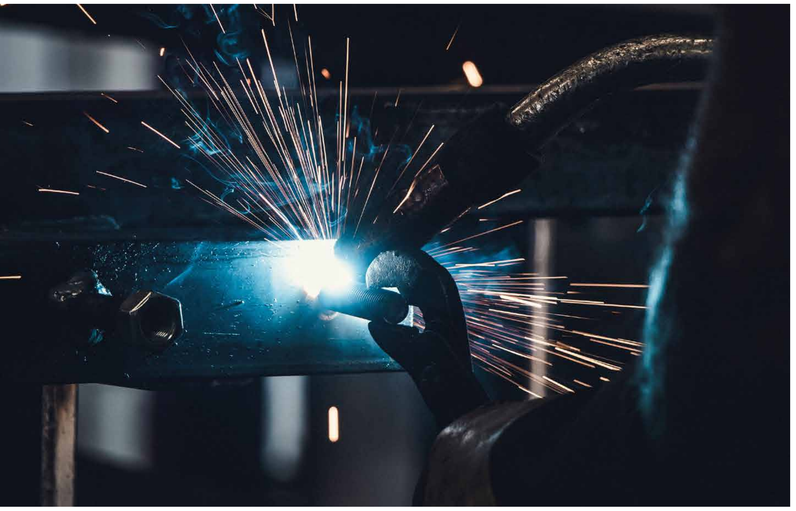
MCTool 21

Manufacturing of cutting tools for the 21st century: from nano-scale material design to numerical process simulation

Start Date: 01-APR-2020 **Duration: 36 months** **Operation Code: 45940**

The premature degradation of cutting tool materials is one of the problems that aerospace and automotive industries are now facing. The MCTool21 project will improve the machinability of alloys through an innovative optimized coating system and new simulation tools.

Keywords: Cutting tool materials, coating systems, industry



Main challenge/problem the project seeks to address

Fabricating parts of cars and planes is hard on cutting tools and tends to ware them down. Additionally, increasing requirements on high speed and dry cutting applications open up new demands on the quality of cutting tool materials. Several solutions have been tried to improve the machinability of these alloys, being the application of thin solid films by sputtering techniques the most promising. However, it still has a long way to go to meet the need for high-speed machining and green manufacturing.

Proposed solution

An optimized coating system which can be upscaled to industry and simulation tools to optimize the size, geometry as well as to predict the right machining parameters for improvement of the performance of the cutting tool directed to hard-to-machine materials.

Innovative Potential

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco labori.

Target beneficiaries

Aerospace and automotive industries.

Consortium

PORTUGAL
Inovatools Portugal, Unipessoal, Lda. (Lead Beneficiary)
University of Coimbra
University of Minho

USA - UT AUSTIN'S PRINCIPAL INVESTIGATORS
Gregory J. Rodin (Oden Institute for Computational Engineering and Sciences)
Filippo Mangolini (Cockrell School of Engineering)

Funding Sources Distribution

$ 791 736,00
UT Austin
(UT Austin Portugal Budget)

€ 647 849,94
PT2020 Incentive

€ 151 593,80
FCT Incentive

€ 86 556,51
Business Self Funding

Co-funded by: