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ADDITIVE MANUFACTURING ACADEMY
TO BOOST TRAINERS' COMPETENCES IN INDUSTRY

Summary

Selection of Parts

Project Number: 2021-1-IT01-KA220-VET-000033365

Course Content

The online course investigates the area of part complexities and part consolidation in additive manufacturing and looks at examples of where it is being adopted and the benefits in this realm.

Part Complexity & Part Consolidation

Short Description

A possible metric for success in the AM industry, rather than market size, is to investigate the number of unique additive manufacturing applications that will create value in ways that traditional manufacturing cannot. The term complexity for free is explored and the need to consider that the design complexity must add some type of value that can't be achieved by conventional manufacturing.

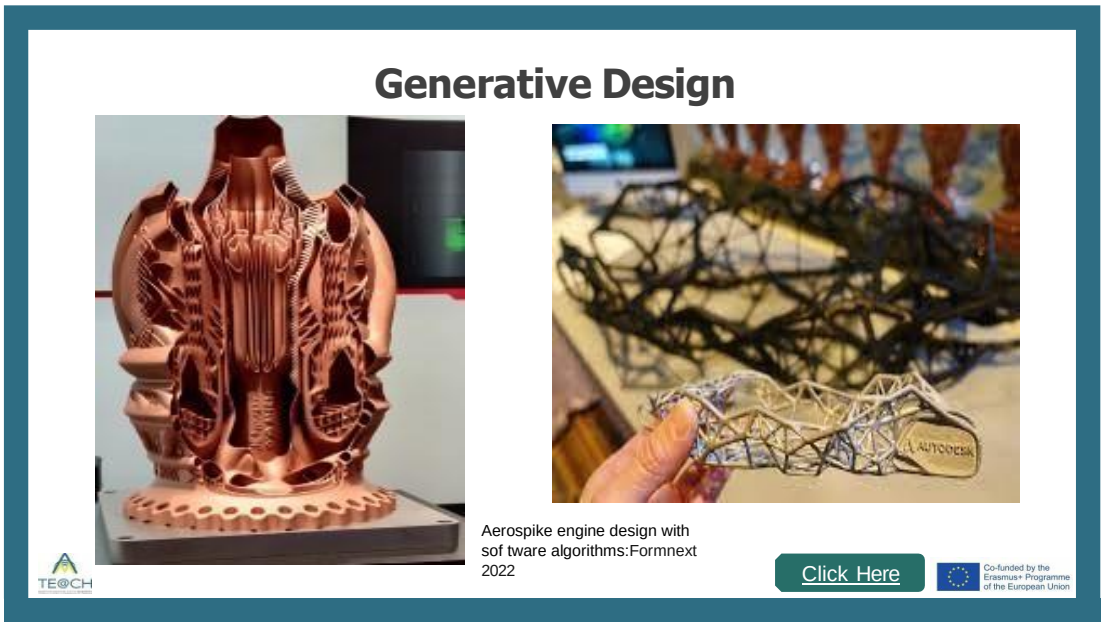
Conformal Cooling

Conformal cooling is a technique that incorporates custom cooling channels into the tools used in plastic injection molding or blow molding processes. The cooling channels can be specifically designed to match part geometries for more effective and uniform cooling. Pairing conventional cooling with injection molding can reduce cycle times by 10 to 40%.

By using metal 3D printing to manufacture the cooling channels, they can be custom designed and manufactured to closely conform to the shapes of even the most complex part geometries.

Generative Design

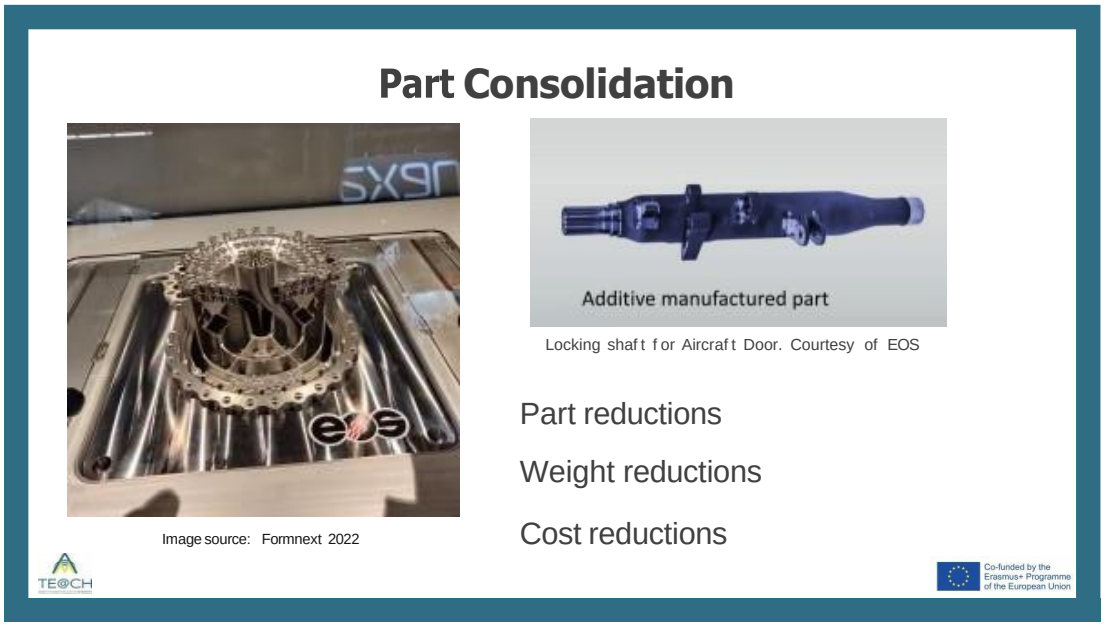
Generative design is an iterative design process that generates multiple design outputs that meet predefined constraints, allowing many hundreds, if not thousands of possible solutions to be evaluated within a relatively short timeframe.



Notes

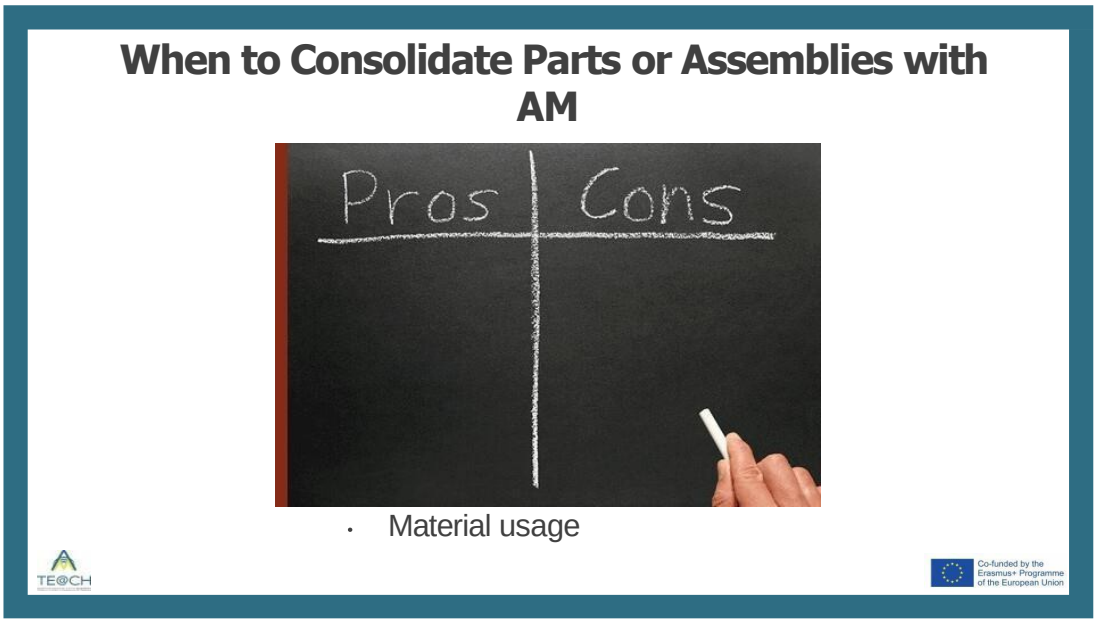
Part Consolidation

In many sectors, including the automotive and aerospace, the ability to reduce the amount of individual parts has many benefits, including the reduction in part count in comparison to previous designs, considerable weight reductions and also cost reductions.



When to Consolidate Parts or Assemblies with AM

Typically, it is not enough to think in terms of combining two parts. Ideally, you should be thinking in terms of systems or units that contain ten or twenty plus parts if you can, dependant on the unit. The more parts being combined, the more benefits will be made possible as already outlined.



Based on the component that is to be reviewed, both the advantages and disadvantages need to be considered in the process selection.

Notes

For further information please

Contact us via the Faculty of Engineering & Technology, ATU Donegal.

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