

# Metal 3D Printer Technology Demonstrator

## Evaluating 3D printing of metal in space

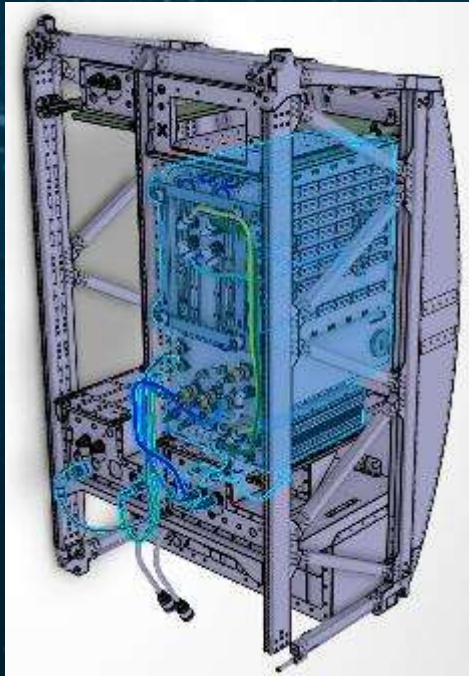
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18 November 2021

The objective of this activity is to develop an AM Machine that will demonstrate the capabilities of this technology to perform metal deposition in 3D under sustained microgravity conditions and manufacture test specimens;

- ✓ To understand the limitations of the metal AM Machine demonstrator in terms of specimen accuracy and quality,
- ✓ To predict the way to improve the demonstrator in order to offer functional parts to astronaut and future in-orbit manufactured systems,
- ✓ To familiarise with operations of an operational Metal 3D Printer in a space habitat, both from the perspective of crew as well as ground operator,
- ✓ The demonstrator shall be developed as a sub-rack payload for the European Drawer Rack Mark II (EDR2) in the Columbus Laboratory on board the International Space Station.

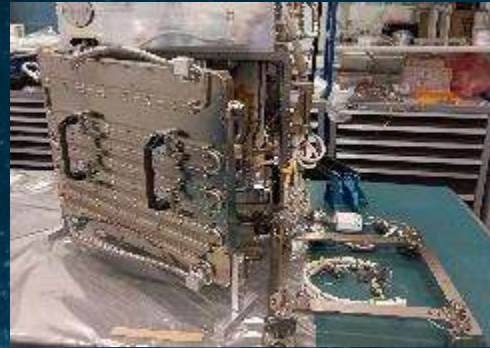
# Timeline



Metal 3D design in EDR2  
(2019 - 2020)



Metal 3D Engineering Model  
(Sept 2020)



MAIT Flight Model  
(Ongoing)



Launch  
(H1 2023)



Operations  
(2023)

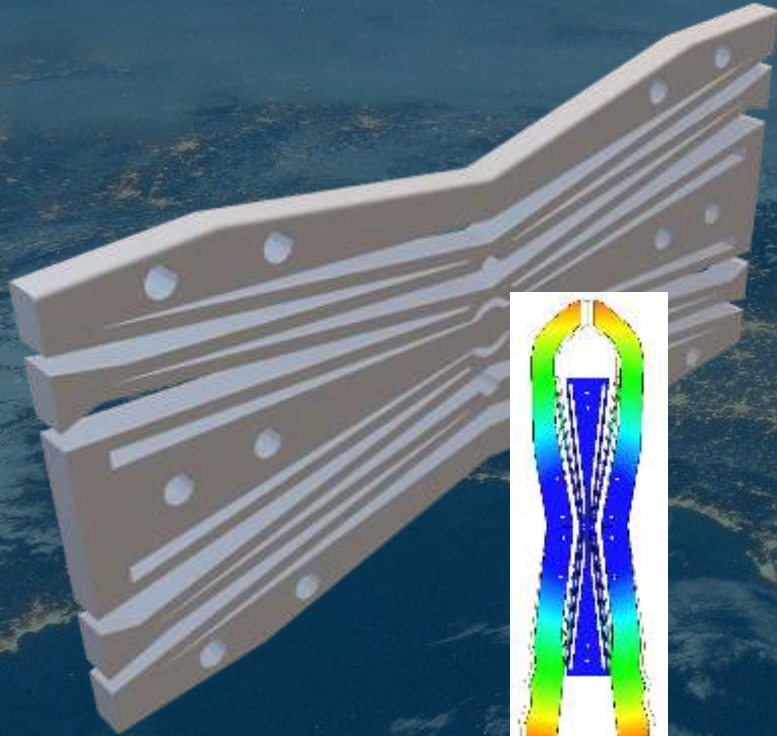


Download of Printed Samples

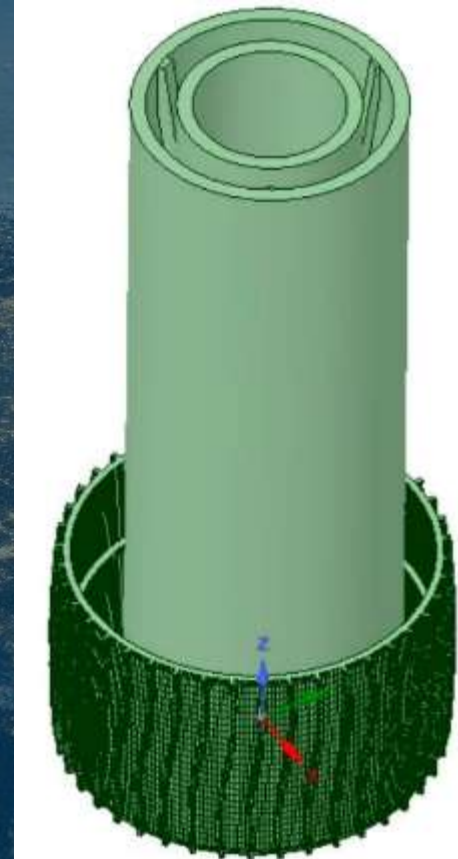
# Specimens planned to be printed



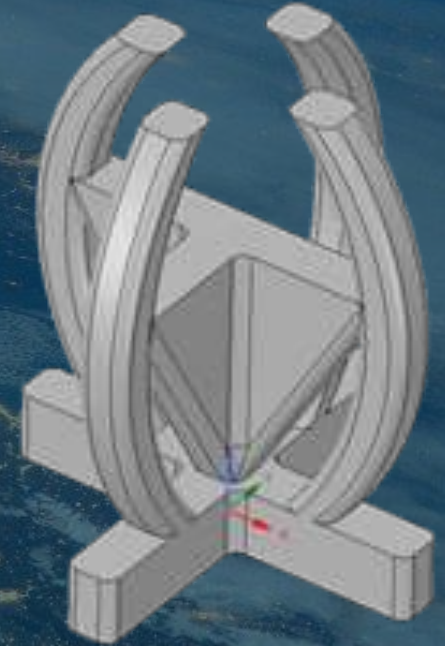
1  
Strength and Tensile Specimen



2  
Part of Tool



3  
Thin walls structure



4  
Spatial Variability  
of Thermal Expansion