

Experimental Layer Technology (MELT) Project Printer

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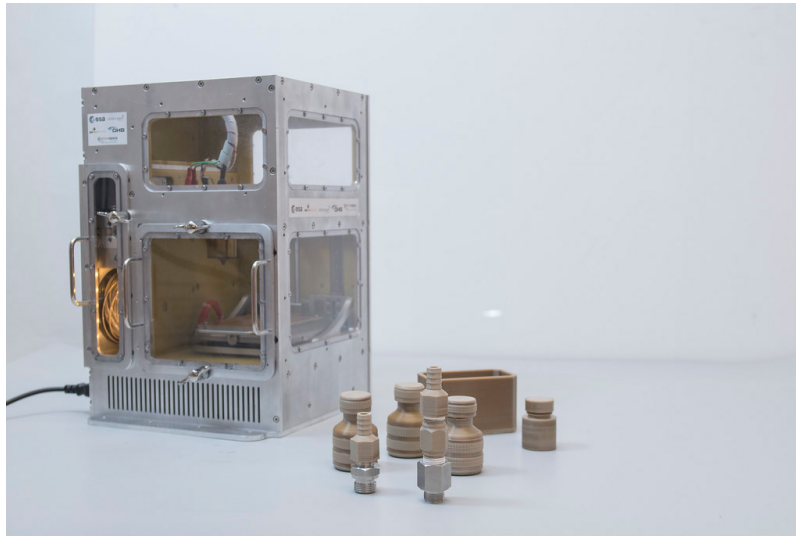


Figure 1: ESA's Manufacturing of Experimental Layer Technology (MELT) project printer has to be able to operate from any orientation-up, down or sideways-in order to serve in microgravity conditions aboard the International Space Station. Based on the 'fuse filament fabrication' process, it has been designed to fit within a standard ISS payload rack, and to meet the Station's rigorous safety standards. The MELT printer can print a wide variety of thermoplastics from ABS (Acrylonitrile butadiene styrene), as used in Lego, up to high-melting point engineering thermoplastics such PEEK (Polyether ether ketone), which is robust enough to substitute for metal materials in some cases. This printer could be used to make parts on demand for the repair and maintenance of a long-duration orbital habitat," explains ESA materials and processes engineer Ugo Lafont. "This printer would also benefit human bases on planetary surfaces. Crucially, it can also print using recycled plastics, allowing a whole new maintenance strategy based on closed-loop reuse of materials.

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