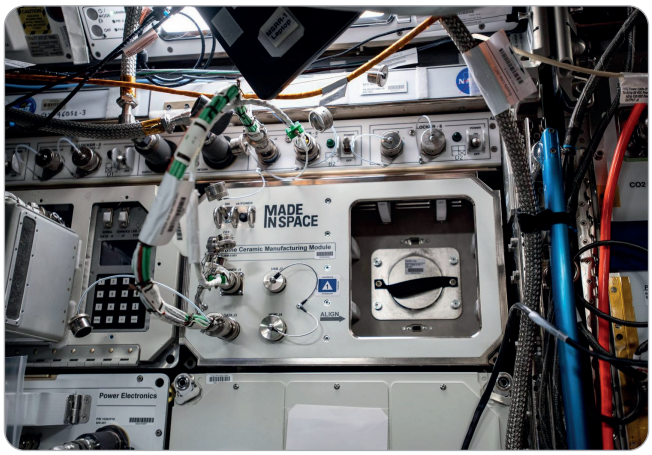
REDWIRE

SPACE COMMERCIALIZATION

CERAMICS MANUFACTURING MODULE (CMM)

PRODUCT DESCRIPTION

Redwire's Ceramics Manufacturing Module (CMM) uses a technique called additive stereolithography (SLA) to cure ceramic resin into solid ceramic parts. The process uses a light source to cure resin in very thin layers. Each new layer adheres to the previous one, stacking up to form a complete ceramic part. Ceramics manufacturing offers a unique capability to our in-space partners, one that can produce hardware with high thermal resistance. Furthermore, it also offers capability to our commercial partners here on Earth.



IMPORTANT SPECIFICATIONS

BUILD VOLUME:

+ CMM makes use of a circular build platform with a diameter of 80 millimeters (3.15 inches). This equates to a cross-sectional build area of 5000 square millimeters (7.8 square inches)
+ Vertically, the build platform can translate 30 millimeters (1.2 inches) allowing CMM to print parts of that height or shorter
+ CMM total build volume is 150,000 cubic millimeters (9.2 cubic inches)
+ The build chamber carries 206 milliliters of ceramic resin for printing

POWER LEVEL:

+ CMM draws approximately 75-80 watts of power during printing operations

RESIN CAPABILITIES:

+ CMM can print using several different resins
+ Tethon 3D's Porcelite® can be SLA printed at 25 micron layer thickness
+ After firing Porcelite® parts in a kiln, they can withstand temperatures greater than 1000 degrees Celsius (1800 degrees Fahrenheit)

REDWIRE

SPACE COMMERCIALIZATION

ADDITIVE MANUFACTURING FACILITY (AMF)

PRODUCT DESCRIPTION

The Redwire Additive Manufacturing Facility (AMF) is a gravity independent 3D plastic printer operating on the International Space Station (ISS). The AMF produces hardware on-demand in-space for experimentation, tools, parts, education, and microgravity research. Some of the benefits of in-space additive manufacturing are faster delivery time, customization, lighter, more optimized parts, and limited necessary human interaction. Built to be modular and upgradeable, the AMF can also be used as a research platform to advance other in-space manufacturing techniques.

IMPORTANT SPECIFICATIONS

BUILD VOLUME:

+ **Print Volume (mm):** 140 L x 100 W x 100 H
+ **Material:** ABS, HDPE, PEI+PC (more possible!)
+ **X/Y Resolution:** 0.025 - 0.44 mm; Nominal 0.15mm
+ **Z Resolution:** Down to 75 micron layer height
+ **Min. Wall Thickness:** 1 mm
+ **Threaded Holes**: >M10

POWER LEVEL:

+ **Input Power:** 28V DC @ 12A
+ **Power Usage:** 600W

TEMPERATURES:

+ **Extruder Temp:** 180 C - 375 C
+ **Heated Print Bed**
+ **Heated Volumes**

ACCEPTED FILES:

.stl, .stp, .step, .int, .its, .ipt, .igs, .iges, and .prt

REDWIRE

SPACE COMMERCIALIZATION

REDWIRE REGOLITH PRINT (RRP)

PRODUCT DESCRIPTION

The RRP system is an additive manufacturing technology that 3D prints with regolith material. RRP builds on Redwire's decade of in-space manufacturing experience and development of new space manufacturing capabilities that address ISRU priorities, such as recycling, electronics printing, metal manufacturing and self-repairability. RRP's goal is to empower humans to more efficiently explore farther into space and without having to depend on supplies from Earth. The system can be used for creating civil infrastructure on Earth in addition to extra-terrestrial bodies. It is applicable to constructing landing pads, roads, bridges, structural foundations, pipelines, and buildings. The system may also be configured to operate safely in crewed spaces.

IMPORTANT SPECIFICATIONS

BUILD VOLUME:

+ **Print Volume (mm):** 140 L x 100 W x 100 H
+ **Material:** Regolith simulant mixed with binder

POWER LEVEL:

+ **Input Power:** 28V DC @ 12A
+ **Power Usage:** 600W

ACCEPTED FILES:

.stl, .stp, .step, .int, .its, .ipt, .igs, .iges, and .prt

REDWIRE

SPACE COMMERCIALIZATION

ADVANCED CONFIGURABLE OPEN-SYSTEM RESEARCH NETWORK (ACORN)

PRODUCT DESCRIPTION

Redwire's ACORN is a modeling and simulation development environment for space system design, integration, and test. Using a Modular Open System Architecture (MOSA), ACORN offers a scalable, rapidly reconfigurable, closed-loop, end-to-end space system design ecosystem.

ACORN is a complete life-cycle digital engineering tool that provides for risk reduction and mitigation as well as increased mission assurance. The tool also enables significant cost reductions throughout the mission.

PLAN
Component Modeling

DEVELOP
Dynamic Simulation & Visualization

ANALYZE
Analysis & Trades Toolset

VERIFY
Bentchmark evaluation software suite

INTEGRATE
Component Integration

IMPORTANT SPECIFICATIONS

+ **Operating System Requirements:**
  Windows or Linux O