Humans to Mars

EVA Suits & Operations

www/nasa.gov/suitup
NASA has made significant progress in developing and testing technologies for the lunar surface. Currently infusing technologies into next generation EVA Systems that will enable deep space exploration from cis-lunar to the moon and Mars.

**ARTEMIS**

**EVA SPACESUIT TECHNOLOGY AND DESIGN**

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**Exploration EVA Mobility Unit (xEMU)**

- High Speed Data Comm.
- HD Video and Lights
- Informatics Display and Control
- Integrated Communications (No Snoopy Cap)
- Automated Suit Checkout
- Enhanced Upper Mobility
- Environment Protection Garment (EPG) w/Dust Mitigation
- Planetary Mobility
- 4.3 – 8.2 psi Variable Pressure
- 1 Hr. Emergency Return
- Vacuum Regenerative CO2 Removal System
- Membrane Evaporation Cooling
- Modular/ORU PLSS Design
- Rear Entry Ingress/Egress
Suiting up for Mars

- The Extravehicular Activity (EVA) suit will enable human exploration of Mars by protecting the crewmembers from the extreme Mars surface environment, providing portable life support systems, and enabling autonomous surface exploration, research, construction, servicing and repair operations.

- Mars is a different challenge from other human spaceflight destinations.
  - Partial gravity: drives need for low mass equipment, surface mobility
  - Planetary protection, both forward and reverse contamination: drives need for dust mitigation layered defense plans for suit and ingress/egress method designs, testing (need chemical and physical properties of dust, dust storms, and simulants needed for testing); and minimizing the human effects to planet and geologic samples
  - Natural environment: Radiation, CO2 atmosphere (non-vacuum) that creates weather (dust storms and seasons), convective thermal environment