Source of Acquisition
NASA Johnson Space Center

Rationale for Suit & Airlock Dust Mitigation

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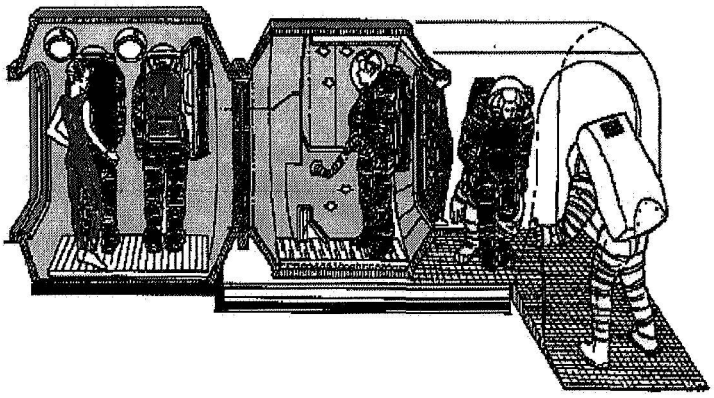
General Concept for AEVA Dust Mitigation



Description

- ***Major objectives are to:***
  - ***identify promising technologies for primary dust mitigation outside the airlock and cabin pressurized volumes.***
  - ***identify promising technologies for secondary dust mitigation within the airlock and inside cabin.***
  - ***identify promising concepts/architectures that integrate primary dust mitigation concepts with airlock concepts and suit maintenance concepts.***

Key Findings

- ***Suit dust removal needed prior to suit entering airlock and suit prep areas.***
- ***Irrespective of airlock concept, suit must routinely enter pressurized cabin for maintenance.***
- ***Airlock-to-suit connections and sealing surfaces require airlock to be relatively clean area (leave mud room to outside the airlock).***
- ***Primary dust mitigation area, or mud room, may be unpressurized.***
- ***NASA dust-related research must address all these areas, from suit prep thru suit dust removal.***

Challenges for Future Missions

- ***For planetary travel, total weight and volume of EVA support structures and equipment must be lower than current programs.***
- ***Airlock volume and expended gas due to depress must be lower than current programs (Void vol/Suit vol <1)***
- ***Suit must be protected from extended exposure to dust, radiation, and thermal environment while in EVA standby, as well as during inter-planetary transport and planetary transport modes .***