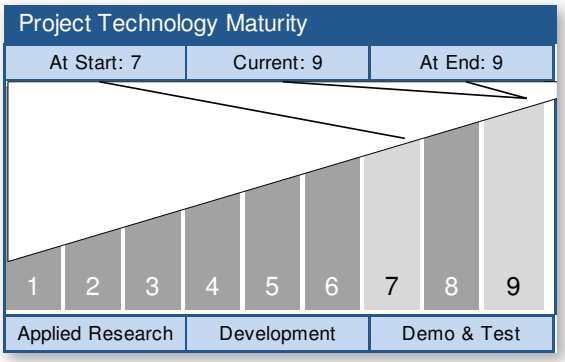
Environmental Control Unit Harness Project

Center Independent Research & Developments: KSC IRAD Program

N/A ( )

National Aeronautics and Space Administration

Environmental Control Unit Harness



ABSTRACT

Testing four new Environmental Control Unit Harnesses for improved user comfort during SCAPE operations. Phase I, testing in a lab environment, Phase II will continue testing the best candidates in a field environment.

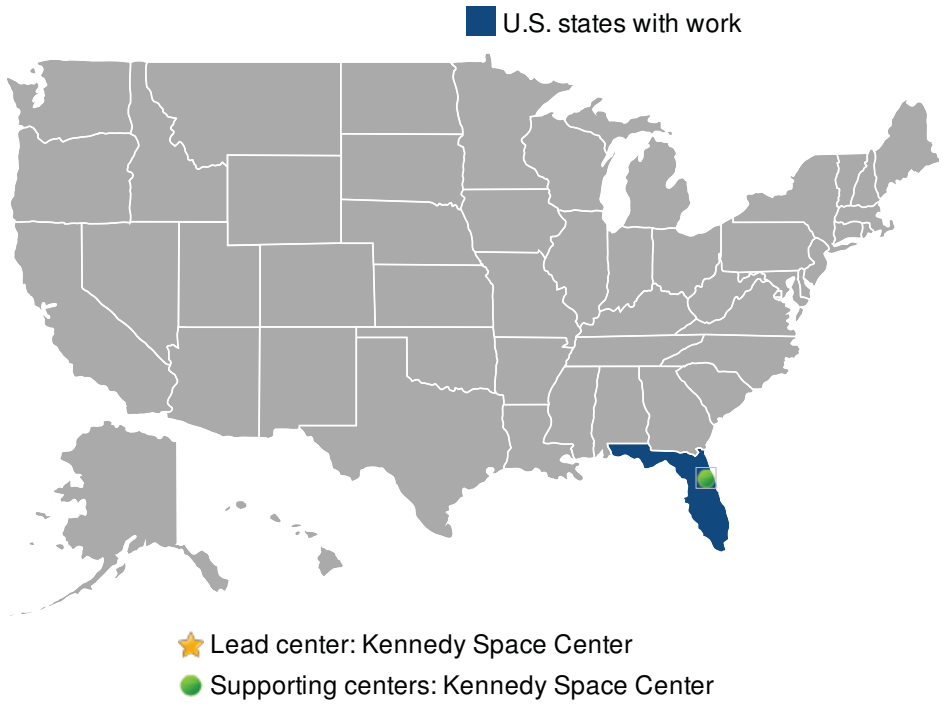
Technology Area: Human Health & Performance TA06.3 (Primary)
Human Health, Life Support & Habitation Systems TA06 (Secondary)

ANTICIPATED BENEFITS

To NASA funded missions:

Ergonomic evaluation of backpacks should help other similar NASA functions such as in hazardous operations and EVA

Read more on the last page.



MANAGEMENT

Project Manager:
David Bush

Principal Investigator:
David Bush

DETAILED DESCRIPTION

Our overall objective is to evaluate four candidate alternatives for a new backpack harness for the existing PHE environmental control unit. The intent is to improve the comfort and wearability of this 41 pound (when filled with 15 lb. liquid air) unit. Complicating the task is the fact that it must be worn within the Category I version of the Propellant Handler's Ensemble and must fit within the rear suit pouch. While improving comfort, it must not impede mobility during extremes of body position or work function. The plan is to include two phases. The first will be a laboratory evaluation by three subjects (small, medium, and large) while performing a previously used Familiarization Work Protocol (Appendix A). Each of the three subjects will wear the suit with the filled ECU for the 60 minute duration. Tests will be conducted in the Biomedical Lab and each subject will test each of the 4 backpack harnesses and the existing harness (as a control). Tests will be arranged in random order. Tests must be at least one day apart. At the end of each test, subject will fill in a questionnaire evaluating various performance features (attached). The test conductor will also record observations if notable. The second phase will be conducted at the Cape Canaveral Air Force Station propellant farm. Experienced PHE personnel will wear the packs during real operations and provide post ...

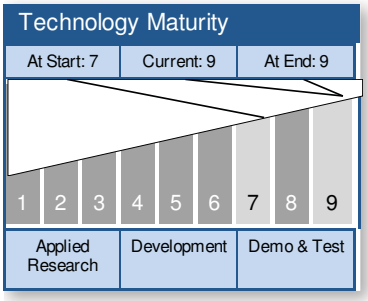
DETAILED DESCRIPTION (CONT'D)

operation feedback via the questionnaire.

Based on the study, a harness was chosen, procured and implemented across all ECU packs in service at KSC.

TECHNOLOGY DETAILS

Environmental Control Unit Harness



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This technology is categorized as a hardware component or part for ground support or mission operations

- Technology Area
    - TA06.3 Human Health & Performance (Primary)
    - TA06 Human Health, Life Support & Habitation Systems (Secondary)

CAPABILITIES PROVIDED

Improve the confort and wearbility of the Environmental Control unit backpack

Future harness selection for back pack designs (next generation Liquid Air Packs, etc.)

IMAGE GALLERY

Environmental Control Unit Harness