

Aseptic Plant Culture System (APCS)

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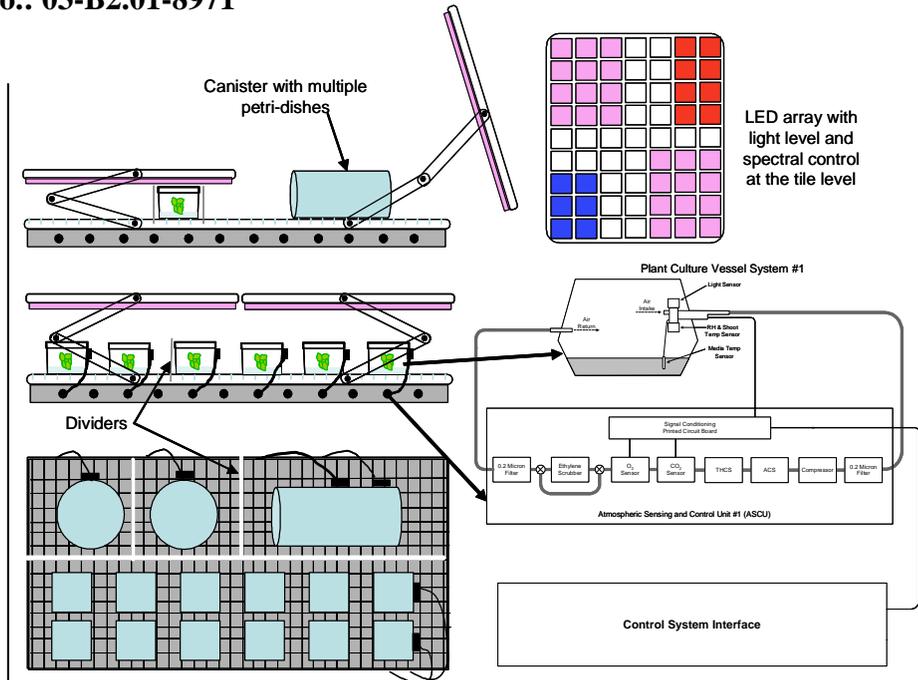
Proposal No.: 03-B2.01-8971

Identification and Significance of Innovation

- Supports plant experimentation in sterile environment
- Accommodates wide variety of culture vessels
- Control and monitoring of light level, spectral quality, photoperiod, air and media temperature, humidity, and atmospheric composition
- Independent control of set-points by culture vessel
- Miniaturization of multiple environmental control technologies

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Technical Objectives

- Develop design requirements
- Design sterile interface between base unit and vessels
- Design miniaturized environmental control subsystems
- Test critical components
- Develop sterility maintenance plan

NASA Applications

- Accommodate experiments requiring sterile plant culture in reduced gravity
- Physiology and biotechnology experiments using *Arabidopsis* explants or seedlings
- Maintain propagules in well defined environment for transplant to experiments
- Fly as insert to expand capability of existing incubators or plant growth units
- Maintain stock plants for bioregenerative life support systems

Non-NASA Applications

- Academic and commercial agricultural research tool
- Enhance commercial tissue culture production systems
- Pre-college/college level science education
- Advanced biology outreach programs