Senior Design Project Description

Company Name	NAVAIR ATE ISE	Date Submitted	April 21, 2017
Project Title	RTCASS Ruggedized, Universal Power Supply Design (NAV_UPS)	Planned Semester	Fall 2017

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project. 250 hours are expected per person. Complete the following table if this information is known, otherwise the Senior Design Committee will develop based on the project scope:

Discipline	Number	Discipline	Number
Mechanical	3	Electrical	3
Computer	0	Systems	

Project Overview:

RTCASS is an automatic test station that supports Intermediate Level (I-Level) maintenance for US Marine Corps avionics. The station computer controls the system of instruments and switches while utilizing both an external optical storage device (e.g. DVD drive, Blu-ray drive etc.) and an external monitor.

See Photo of RTCASS station:

Due to obsolescence issues, multiple optical storage devices and monitors have been used during the RTCASS lifecycle. Each has required its own unique power supply adapter ("brick"). Installation of these unique power supply adapters requires new hardware (mounting

hardware, brackets, cabling, etc.) to support its use. This burdens Logistics, Engineering, and Navy supply by requiring support for multiple hardware configurations.

Initial Project Requirements:
The scope of the project will be to design, document, build and custom exact form/fit/function replacement supply that is universal in that it can support any of the different monitor models that are in the logistics support chain. In addition to these requirements, the unit must have a 25 year life, and meet the requirements of a Mil-Spec for shock and vibration that will be provided at kickoff. If possible within the current mechanical envelope, the design should be improved to provide transient spike filtering and an additional spare outlet.

Expected Deliverables/Results:
- 1 demonstration unit, fully tested and ready for installation and production use
- Installation kit with necessary hardware based on what existing hardware will be used and what new hardware is required.
- Full Documentation package that would allow subcontract manufacture (Detailed drawings, schematics, assembly drawings, BOM with mil-spec grade parts,wiring diagrams, manufacturing instructions, testing requirements)
- Pictoral instructions which provides step by step details for de-installation of current power supply and installation of new power supply
- Human Factors analysis to be taken into account to ensure that design provides an optimal man-machine interface for usage in the RTCASS system and for ease of installation for an unskilled technician.
- Design to Cost – during first semester, estimate the cost of the design and consult with sponsor regarding cost/performance trade-offs, present and agree on decision points which will be used to progress the final design.

Disposition of Deliverables at the End of the Project:
All deliverables to be delivered to Tommy Greene either prior to or no later than the end of the SD II Expo

List here any specific skills, requirements, knowledge needed or suggested (If none please state none):
Must be US Citizens (Students and Faculty Mentors)
Power electronics class (ECGR 4144) completed, for EE students
Systems student must have completed Human Factors course SEGR 3103