

Senior Design Project Description

Company Name	TE Connectivity	Date Submitted	4/7/2017
Project Title	Harsh Environment Test Chamber (TEC_ENVIRO)	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	5	Electrical	
Computer		Systems	1
Other ()			

Project Overview:

TE Connectivity has experienced some field failures on a 28 position connector that is due to large amounts of dust accumulating inside of the connector. Despite multiple experiments, the failure has not been replicated in a laboratory setting. If there was a standard test method and necessary equipment available to duplicate the harsh environment that the connector is exposed to, TE could develop a better connector to meet the requirements.

Initial Project Requirements:

Study the causes of field failure on TE's 28 position connector. After determining what caused the failure, design and build a test chamber to replicate field failures of TE's 28 position connector. The purpose of the test chamber will be to replicate the environmental conditions that caused the failure, so that future designs of connectors can be tested to ensure the new designs will not experience these field failures. The chamber must be completely sealed and easily cleaned for safety purposes. The test chamber can be a stand-alone unit or used with existing vibration tables. The test chamber should incorporate the environmental factors that cause field failures which may include:

- *Dust*
- *Humidity/Water*
- *Vibration*
- *Heat*



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- *Oil*

Expected Deliverables/Results:

- Summary of research conducted into the root cause of the field failures.
- Complete Mechanical Design (Including CAD files, Drawings, Bill of Materials, and Estimated Cost)
- All necessary calculations documented
- Completed environmental test chamber, and some preliminary data on test trials.
- Duplication of field failures

Disposition of Deliverables at the End of the Project:

Test chamber should be delivered to TE Connectivity's test lab in Winston-Salem on completion.

List here any specific skills, requirements, knowledge needed or suggested (If none please state none):

- A leader with strong communication skills is desired for this project. The team will be working with TE as well as our customers in order to find the contributing factors/root cause of the failures.
- System Engineer must have passed SEGR 4141 Engineering Experimental Design course.
- Travel required to client site for data gathering and Design Reviews. Travel costs will be re-imbursed from Project budget.