

Senior Design Project Description for FALL 2016

Project Title: Remote Thermographic Applications for Monitoring Thermal Fatigue (EPRI_THERFAT)

Supporter: EPRI

Supporter Technical Representative: ASSIGNED

Faculty Mentor: _____ ASSIGNED TBD (check one)

Single Team Dual Team _____ (check one)

Personnel (EN/ET): 1 E, 1 Cp, _____ Cv, 2 M, _____ SE

(Complete if the number of students required is known)

Expected person-hours: (250 per student)

Description of Project:

This project is an expansion of a project that started in Fall 2015. In this recently-completed project, a method to generate 3D CAD representations of defects observed in piping materials using thermography was developed. Similarly, utilization of low-cost thermal cameras was evaluated for remote applications.

The goal of this project would be to create a program (or piece of software) that can interface with the camera, read the data, and plot the desired thermal data into a graph at a specified, user-defined interval to measure and record thermal cycling in a component.

Initial Project Requirements (e.g. weight, size, etc.):

This project would use the cameras from the initial project. The requirements of this project are:

- Ability to read and plot max and min values from the camera into a .txt or .dat file
- User-selected max and min ranges (i.e. any data to discard) and user-selected recording period
- Ability to select the region(s) of the camera's field of view to include/exclude from the data measurement and recording
- Ability to run multiple cameras simultaneously
- Capability to estimate internal fluid temperatures based on the known parameters (i.e. pipe wall material, thickness, ambient temperature, etc.)

Expected Deliverables/Results:

The deliverable will be an interactive Matlab/Octave algorithm and/or computer program that perform the functions described in the Initial Project Requirements.

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

Matlab/Octave Experience / Mathematical Computation