UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE *of* ENGINEERING

Senior Design Project Description for FALL 2016
Project Title: Refrigerant System Moisture Detector (CARR_MOIST)

Supporter: Carrier (UTC)
Supporter Technical Representative: ASSIGNED
Faculty Mentor: _____ ASSIGNED __X__ TBD (check one)
Single Team __X__ Dual Team _____ (check one)
Personnel (EN/ET): __2__ E, _____ Cp, _____ Cv, __3__ M, _____ SE
(Complete if the number of students required is known)
Expected person-hours: (250 per student)

Description of Project:

Carrier manufactures chillers in a 335,000 square foot facility in Charlotte for the air conditioning and refrigeration industry. Moisture within a refrigeration system will cause corrosion of the steel and cast iron parts adversely effecting product reliability.

The present state is the cost of electronic moisture detectors are prohibitive, thus a visual detector is utilized, shown below. At issue this requires a human to recognize and take actions when high moisture is recognized.

This project is to develop a low cost method of detecting moisture content in a refrigeration system that can communicate values to a chiller controller to enable monitoring moisture content in the chiller control system.

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

The desired state is to electronically detect moisture content and communicate the value to the chiller control system, which can then warn the user of the issue and record this adverse operating situation into the product log.

Measurement Range: 0 - 5000ppm or water contained in a refrigerant environment

Accuracy: +/- 2 ppm of water

Output signal: Analog proportional to moisture content or conditioned digital indicating PPM value

Cost < $100USD

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Expected Deliverables/Results:

A concept will be developed and proved that meets the project requirements and with a proposed approach to produce this device.

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

None.