



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING

Senior Design Project Description

Company Name	Diversey Inc	Date Submitted	5/31/2018
Project Title	Design of a Wireless Conductivity and Temperature Sensor for Industrial Dishwasher – Phase 2 (DIV_WASH2)	Planned Starting Semester	Fall 2018

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	1
Computer	1	Systems	
Other ()			

Company and Project Overview:

Diversey Inc provides smart, sustainable solutions for cleaning and hygiene. Included in this product line is the dispensing of soaps and chemicals for industrial dishwashers. Currently there is a water temperature/conductivity probe in some washer designs and nothing in others. This probe is subject to scaling and provides only a manual indication of temperature and conductivity with the dishwasher open.

This project is to design a temperature/conductivity probe that is less prone to scaling and wirelessly communicate with the dispensing system.

A previous Senior Design Project created a proof of concept unit and carried out research into building a bespoke Inductive conductivity probe. This project will build on this work and create a smaller and lower power unit

Project Requirements:

The initial requirements for this device are:

- Fit in the water reservoir at the bottom of the washer
- Be able to float in any position
- Read conductivity via inductive means
- Hibernate when the dishwasher is not in operation
- Accelerometer to “wake up” the device when dishwasher operation begins
- Battery requirements will be provided later



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- Wireless communication to control chemical dispensing based on conductivity and temperature and provide high and low alarms (dispensing control system within 3 meters of the dishwasher)
- Design for a normal temperature range of 65 °C to 85°C with a maximum range of 60 °C to 90°C
- Wireless signal must be able to work with a stainless steel dishwasher housing

Expected Deliverables/Results:

A tested prototype is to be provided. It is to include an operating manual with drawings.

Disposition of Deliverables at the End of the Project:

Prototype to be given to the industry supporter at the conclusion of the Expo.

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

- Electrical circuit design
- Embedded firmware
- Plastic enclosure design