



## Company Information

<b>Company Name</b>	<i>Denso</i>	<b>Date Submitted</b>	<i>05/11/2022</i>
<b>Project Title</b>	<i>Design of an Energy Monitoring System (DENSO_ENERGY)</i>	<b>Planned Starting Semester</b>	<i>Fall 2022</i>

## Senior Design Project Description

### Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills.

<b>Discipline</b>	<b>Number</b>	<b>Discipline</b>	<b>Number</b>
Mechanical	1	Electrical	2
Computer	1	Systems	1

### Company and Project Overview:

Denso is the number 2 automotive parts supplier in the world with annual sales of \$45 billion and 168,000 employees in 35 countries. Our specific plant, located in Statesville, NC is part of a larger South Sub Region (SSR) and produces a multitude of different electronic and thermal automotive products. One of our core environmental focuses is to reduce our carbon footprint in our manufacturing plants.

### Project Requirements:

The focus of this project is to create a more sustainable factory by reducing the energy used by the facility. This project will do this by designing systems that provide monitoring and data capture in a way that allows both real-time and database analysis of energy usage possible. By capturing the data, and making it available in a user friendly way, Denso management will be able to map out energy reduction strategies and monitor progress in reducing energy consumption, thereby making the operation more environmentally friendly and sustainable.

Denso plans to allocate capital to better monitor our utility consumption to the lines, through this project, find the best ways to measure consumable utilities per line including compressed air and electricity. The project will be investigating best devices and real time data acquisition ultimately



providing measurements of Carbon Neutral initiatives and ROI.

**Expected Deliverables/Results:**

- Research Denso's current Energy consumption to establish a baseline for electric and air consumption,
- Research the factories current layout to understand and design capture points
- Research available technology for data capture for utility
- Specify correct monitoring device designs taking onboard Denso inputs/suggestions
- Prepare forecast of outcomes based on capability of devices
- Calculations of KWhr per day and convert to Tons of Carbon
- Prepare forecasts of operational cost savings by systematically shutting down operations not requiring electricity at given times.
- Make recommendations for electricity and compressed air reduction based on the project work.

**Disposition of Deliverables at the End of the Project:**

All devices will be available for presentation during expo. We will make available visualization and flow diagrams to demonstrate results of all the inputs. Equipment and all work products to be turned over after display at Expo

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

- Ability to travel to the Denso Statesville, NC facility as required. Mileage will be reimbursed per ISL purchasing procedures.