



## Senior Design ENG EC 464



To: Professor Pisano  
From: Aidan McCall, Jonas Escobar  
Team: Smart Grid (30)  
Date: 04/29/22  
Subject: Customer Installation

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### 1.0 Introduction

Formal customer installation took place on April 27th with Professor Pisano in the Senior Design lab. However, because of the course format, customer installation involved meetings with Professor Pisano throughout the semester with prototype testing. This formal meeting focused on discussing how to start the test facility, things to watch out for especially in regards to safety, and answering any questions.

### 2.0 Requirements

1. Setup within 10-15 minutes
  - a. Original
2. Data acquisition unit (DAQ) able to be attached to different points on the grid
  - a. Original
3. Whole system is able to fit on the given cart (excluding computer) without the need for added benchtop power supplies or oscilloscopes to allow for easy transportation.
  - a. Original
4. GUI visually demonstrates different aspects of the system including RMS voltage, RMS current, waveforms, phase angle with phasor diagram, and power factor.
  - a. Original
5. Waveforms are not distorted and maintain a roughly sinusoidal shape
  - a. Final Product, updated and met after Final Prototype Testing

### 3.0 Assessment and Customer Acceptance

Overall, the product installation testing was a success and all requirements were met. The professor, during final prototypes testing and customer installation, witnessed the safe operation of the grid, and how each individual requirement was met.

1. The meeting only took about 10-15 minutes and included setup and operation of the grid with questions from the professor.
2. We showed Professor Pisano the process for connecting the DAQ to different points on the grid.
3. The whole system fit on one cart and only required plugging in two plugs into the wall with no other setup required.
4. Professor Pisano viewed the GUI and was particularly pleased with the phasor diagram.
5. Updated from Final Prototype Testing, the grid is able to maintain a relatively smooth sinusoidal waveform even when different loads are plugged in.

Furthermore, the Professor was able to ask questions and see how he could easily use the test facility without much extra work to run the test facility by himself in a classroom setting. Overall, he verbally accepted the project and declared our project a success (no email or letter because he is in charge of the course).