Data Acquisition and Visualization for Vacuum Equipment Interfaces

Abstract

In ultra-high-vacuum science and technology, vacuum equipment data acquisition and visualization are important for critical analysis. RGA is one of such critical instruments that works on the principle of mass spectrometer. It identifies the chemical composition of the various remaining gases within a vacuum chamber by measuring their partial pressures. This data is essential for identifying leaks and monitoring contamination in vacuum chambers. This data must be acquired, stored and visualize successfully for future analysis purpose.
The primary goal of this project is to develop a python or any other open-source application that interfaces to RGA and other available device interfaces using standard communication protocols. This software application utility will acquire, store, and make insightful plots out of acquired data.

The students shall have knowledge of the following skills –
- Basics of Python programming
- Python libraries such as NumPy, Pandas, Matplotlib

This project offers an excellent opportunity to apply Python or other software packages and skills to real-world instrumentation and data visualization challenge in a scientific context.

Academic Project Requirements:

1) Required No. of student(s) for academic project: 2

2) Name of course with branch/discipline: B.E./B.Tech. Computer Engineering/IT/MCA

3) Academic Project duration:

(a) Total academic project duration: 18 Weeks
(b) Student's presence at IPR for academic project work: 5 Full working Days per week

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