

Bachelor's Thesis, Term Project

Experimental Supervisory Control and Data Acquisition System on PV Panels Based on Aerodynamics vibrations for Dust Mitigation

Supervisor (s): (Assist. Prof. Dr. Eng. Amir Roushdy)

A dust mitigation technique has been developed by the current research team based on vibrating the PV panel once in a while, such that the dust on the panel can fall off by gravity. The mechanical vibration is based on rotating an unbalanced mass attached to the back of the panel. This technique is the most suitable technique for PV panels operating light posts at elevated heights; however, there are several concerns that should be taken into consideration. **There is a Master's student from Mechatronics engineering Department and the Lab Engineer from ARATRONICS, guiding and directing the student with Assist. Prof. Dr. Eng. Amir Roushdy**

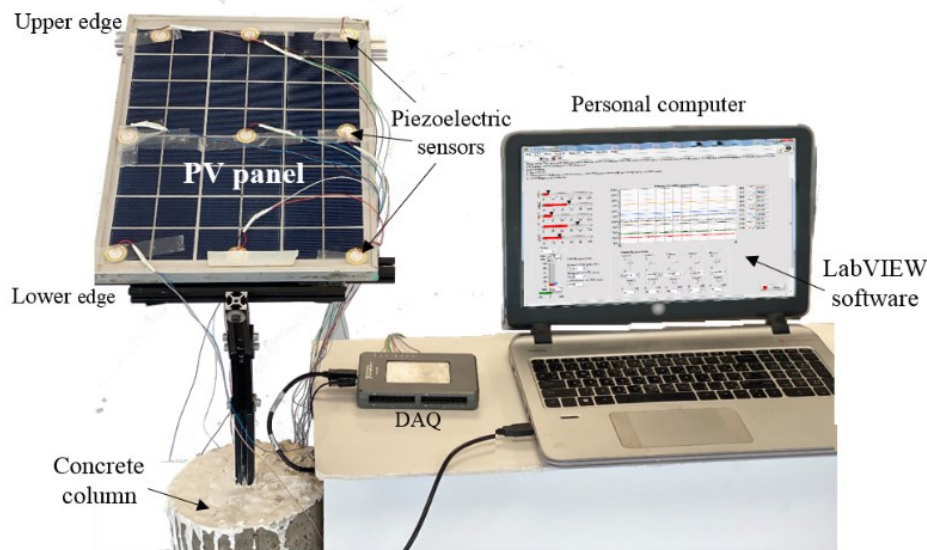


Fig.: A photo of the experimental setup of a PV panel

Project description and objective:

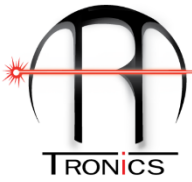
In this project, a fully controlled SCADA (Supervisory Control and Data Acquisition) system for a PV panel Based on Aerodynamics vibrations for Dust Mitigation. An experimental setup will be developed to validate the mathematical model.

Research focus of this project:

- Literature review on the project should be studied properly.
- Not only, creating a software control system for the project but also the hardware.

For more details please contact:

Assist. Prof. Dr. Eng. Amir Roushdy, Room: C7.108, E-mail: amir.ali@guc.edu.eg, Web site: www.aratronics.com



- Experiments using the gadget and control system should be built properly.
- The outcomes must be documented.

Requirements:

- Passionate to learn more about Automation, SCADA, 3D Printing design, and Control.
- Prior mechatronic design expertise is desired like “SolidWork, Arduino”.
- Enthusiasm for completing actual practical work with 3D printing staff (design fabrication and construction).
- A method of working that is both structured and self-contained.

General tasks of the project:

- The complete methodology is already available in the ARATRONICS Lab, so we will discuss it from the first day to start the automation process for it
- Fabricate the machine/system using 3D printer/CNC machine (small parts).
- Assembly all parts of the system.
- Changing the working variables and see the effect on the system.

Other notes:

- A weekly meeting with the advisors will be required for this project, as well as weekly progress updates (*The meeting could be more than once during the week based on your progress and based on your achievements*).
- You should to be in the Lab two days per week (*It could be more than two days based on your progress and based on your achievements*).
- All reports must be prepared in the style of a research paper.
- The outcome of this research will be published in one of the coming international Conferences and , or Journal