UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE of ENGINEERING

UNC Charlotte – Lee College of Engineering Senior Design Program
Company Information

Company Name	*Engineering Technology*	**Date Submitted**	*03/18/2019*
Project Title	*Occupancy-Based Control of Variable-Air-Volume Terminal Boxes* **UNCC_VARI**	**Planned Starting Semester**	*Fall 2019*

Funding:

What is the source of funds that will be used to cover all of the direct costs of this project?
Grant_____

Is this source of funds already secured? Yes ___x____ No _____

Technical Contact(s)*

	Technical Contact 1	**Technical Contact 2**	**Technical Contact 3**
Name	Weimin Wang		
Phone Number	704-687-5066		
Email Address	Weimin.wang@uncc.edu		

*We would like to have more than one technical contact, so there is a back-up in case of travel, sickness, job re-assignment, etc.

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:

Discipline	**Number**	**Discipline**	**Number**
Mechanical	2	Electrical	1
Computer	1	Systems	
Other ( )			

Project Overview and Requirements:

The proposed project intends to design, build, and test a workbench apparatus that enables occupancy-based control for existing VAV terminal boxes. The conceptual diagram of the workbench apparatus is shown in Figure 1 below. In this diagram, there is a commercial VAV terminal box and its associated controller, a supply fan, an occupancy-based controller, and a fabricated thermal zone. A temperature sensor and an occupancy sensor are located in the thermal zone. The tentative plan is to use an Arduino board as the occupancy-based controller, which communicates with the occupancy sensor, hosts the algorithm that calculates the minimum air flowrate based on the sensed occupancy information, and sends commands to the VAV controller regarding the minimum flowrate setting.

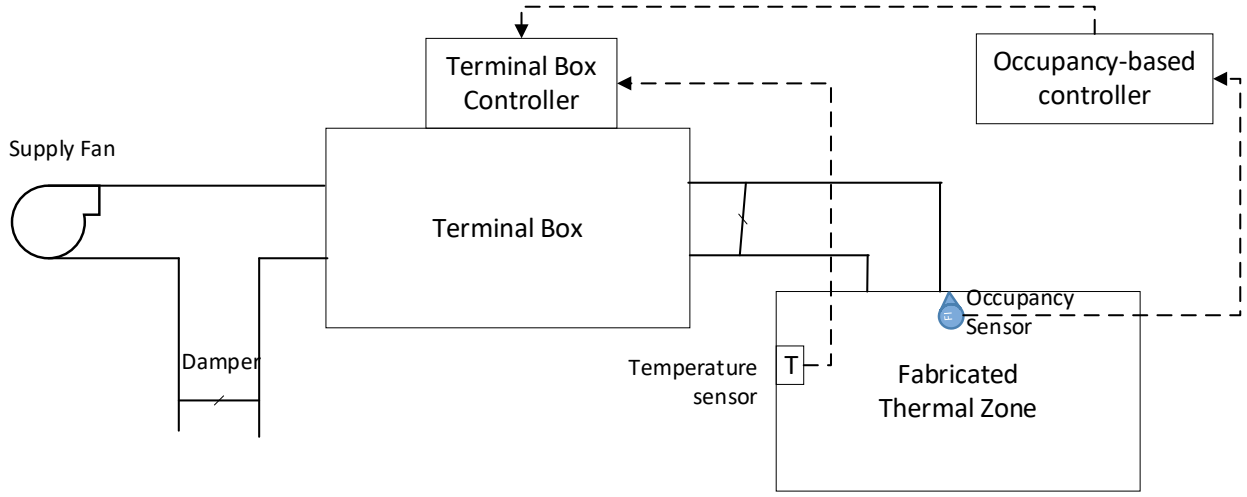

Figure 1: Conceptual diagram of the workbench apparatus for occupancy-based VAV controls

Expected Deliverables/Results:

Deliverables include:

- A functional workbench apparatus
- A project report

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

- Familiarity or interest with building HVAC or/and building automation systems
- Knowledge of Arduino programming and communication