

Project Description

Honeywell is sponsoring this project with the goal of improving air quality at indoor hotspots in FAMU-FSU College of Engineering. The motivation of this project is the negative effect that indoor air pollution has on individuals, especially during the present time with viral pathogens and other contaminants.

Key Goals

A key goal for this project is to improve the air quality of public spaces. Being able to measure and decrease or eliminate pathogens and other contaminants is important for a suitable system. Another key goal is to improve user experience and safety, while keeping cost at a relatively low price point. The air quality project is aimed at commercial properties which will accommodate large numbers of people.

Primary Market

The project will be made for Honeywell and is intended to be used by users of the FAMU-FSU College of Engineering; this includes students, faculty, and visitors to the university. Anyone using the building will benefit from improved air quality.

Secondary Market

While this project is being designed with visitors to FAMU-FSU College of Engineering in mind, it will also be useful to several other groups of people:

1. Homeowners – According to a report from the Environmental Protection Agency (EPA), it is important to improve air quality in the places where people spend the most time. The report also found that most people spend most their indoor time in their homes and, therefore, it is important that air quality of their home is good (Environmental Protection Agency, 1989).

2. Commercial Buildings – The EPA report found that the indoor space where people spend the second largest amount of time is their workplace (Environmental Protection Agency, 1989). Bad air quality can negatively impact health, so good air quality in commercial buildings is beneficial to both employers and workers .
3. Public Transport Services – Many people, especially those living in cities, rely on public transport to get them to and from work every day. However, it has been documented that the air quality of transit systems, such as the New York City subway, is poor (Moreno & de Miguel, 2018). Improving the air quality of these services will protect the people who use them.
4. Schools – Children and young people are especially vulnerable to the health risks associated with bad air quality (Environmental Protection Agency, 1989). They spend a considerable amount of their indoor time in schools and, therefore, these spaces would benefit from improved air quality.

Project Stakeholders

There is a wide range of stakeholders for this project, the largest being the primary sponsor, Honeywell. Honeywell stands to benefit the most from this project being completed as they could potentially sell it or utilize the design in some larger project. Our points of contact at Honeywell, Danny White and Lauren Cobb, are both stakeholders as they will be involved in defining expectations and specifications, as well as assisting in obtaining the systems that our project will interface with. The project adviser, Dr. Yahgoobian, is also a stakeholder, as she will be providing assistance with keeping the project on track and utilizing campus resources. Another stakeholder is Dr. McConomy, the professor of mechanical engineering senior design course, who organized the project and assigns the documents that must be completed to

effectively complete the project. Finally, owners of enclosed spaces that accommodate lots of people, such as a retail stores or other stadium bathrooms, are stakeholders because they stand to benefit from a system that can reduce the cost of ventilation by dynamically controlling it depending on the occupancy or air quality factors. This is especially relevant within the context of the current pandemic as companies and venues are reopening at limited capacity; proper ventilation in locations where people are more concentrated can make the venue safer.

Assumptions

This project will work in tandem with existing Honeywell products. The project will use the existing Honeywell software interface, a new software interface system will not need to be created. The project will not have its own internal power source, an external power source will be used. The project will be compatible with existing building infrastructure; no new building infrastructure will need to be designed to accommodate the project. The project will not be self-maintaining. It will require general maintenance work, such as filters and batteries being replaced.

References

Environmental Protection Agency. (1989). *Report to Congress on Indoor Air Quality*.

Moreno, T., & de Miguel, E. (2018). Improving air quality in subway systems: An overview.

Environmental Pollution , 829-831.