



Capstone Design Project Abstract

Project Title: Intelligent Fan Air Cooling System (IFACS)

Partner/Client: MathWorks

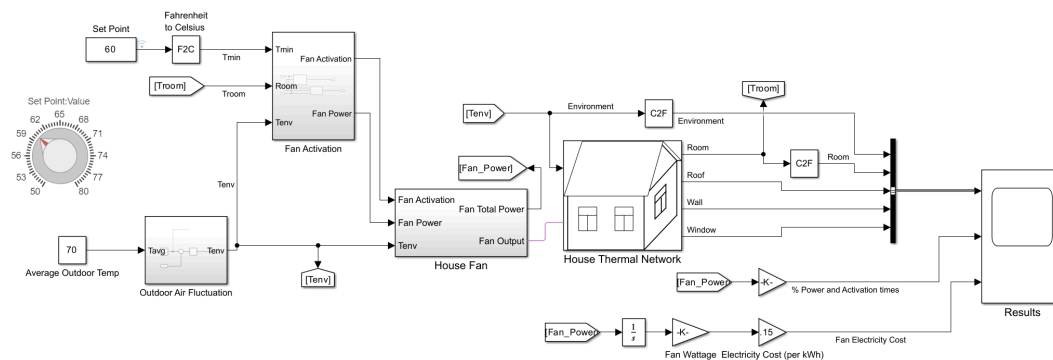
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Intelligent Fan Air Cooling System (IFACS)

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Due to the rising global temperatures caused by global warming and the high electricity consumption from traditional AC systems, it has become increasingly important for homeowners to find more efficient methods of home cooling. Many previous studies related to this topic have focused on home ventilation paired with extractor fans to create a cooling effect through air circulation. The IFACS project aimed to build on this previous research by combining it with a method known as “precooling.” By using a fan to pull in the cooler outdoor air at night, the heat storage within the home will start at a lower point in the morning, thus precooling the home and leading to a lower thermal load throughout the day. Furthermore, fans utilize less electricity in comparison to traditional AC systems because there are no compressors in the assembly, nor is there refrigerant needed. In order to test the viability of this solution, an intelligent fan system paired with real world weather data was simulated using Simulink, and the resulting in-home temperature, power consumption, and electricity costs were documented. The results concluded that an extractor fan system is capable of keeping a home within the ideal temperature range (68-72°F) while dramatically reducing the cost of electricity usage for cooling applications. Because the simulated system proved to be successful, the IFACS project has the potential for real world applications with next steps being physical prototype creation and testing.