ST. CLAIR COLLEGE
RESEARCH AND INNOVATION

AT A GLANCE

5 Student Researchers 5 designs, analysis, and testing. Battery management system + 120 batteries. 13 prototypes. 7 Innovations; 3D print material suitability, heat transfer & conductivity, fluid pump system and pressure, consistent flow rate and leak tests.

Lithium-ion Batteries Project

Project Overview

The partners Funding provides an ongoing framework for St. Clair College to help industry and students innovate on new or improved product, service, or process that creates added value to those impacted or influenced by it. Examples of innovations could be the application of state-of-the-art digital simulation technologies in advanced manufacturing practices to improve product quality and manufacturing time; the development of a new wearable medical monitoring device that predicts the need for medical assistance; the implementation of an improved method for monitoring differences in the use of specific social services across a city with diverse demographics. Innovations are important to historical and modern times, each collectively contributing to societal advancements and satisfying human's innate desire to explore, create, and drive change for future generations.

Purpose and Objectives

The partners solution is based on stabilizing the impact of temperature on Lithium-ion batteries. The approach includes prototype methods to develop a battery pack and immersion cooling technology that is already used in hyper cars. The services involved students from the College Mechanical Engineering APD (Auto Product Design), Mechanical Engineering Robotics, Electronics Engineering, and Data Analytics Programs. The partners solution requires innovation to make cost effective for mainstream industries ranging from energy storage to electric mobility. The main outcome is to stabilize temperature change capacity by 10-20% in extreme cold and warm environments. When such variations in cell capacity are observed, then Lithium-ion cell life drops significantly, and costs increase.

Impact

The approach includes prototype methods to develop a battery innovation to make cost effective for mainstream industries ranging from energy storage to electric mobility. The immersion cooling involves lithium-ion cells partially or fully submerged in a non-combustible, non-toxic dielectric liquid proven in hyper cars. The industry impact attracts new customers who need to maintain optimum battery temperature between 20-25 degree Celsius. The optimized battery in dielectric coolant means that industry leaders goal is to introduce a new and more efficient battery solution. The College Impact helps students gain real-world experience with hands-on learning to showcase their knowledge.