SUMMARY OF WINNING PROJECTS

Project	About Project	Business Partner	Long-term implementation/Career opportunities for students
BMS Engineering & Trading Pte Ltd	The objective of this collaboration was to conduct an environmental review of BMS Engineering & Trading Pte Ltd (BMS), a subsidiary of Daikin Airconditioning Singapore Pte Ltd, focusing on their products and servicing procedures. Based on the students' findings, refrigerant leakage was identified as the primary source of greenhouse gas emissions. The students developed a solution — Smart Refrigerant Detector (SRD) — to address this issue. This resulted in a projected 20% reduction in Scope 1 and 2 emissions. The SRD enables early leak detection, reducing energy use and refrigerant loss. An estimated 5,097 tons of CO_2 emissions can be avoided. The solution offers scalable benefits for the wider HVAC industry.	Founded in 2006, BMS Engineering is a System Integrator and Controls company that supplies and installs Integrated Building Management System (IBMS) and BMS Control System services to buildings island-wide. It became a subsidiary of Daikin Industries Ltd in 2019. Under the group of Daikin Industries Ltd, it is one of the world's largest manufacturers of air conditioning equipment and the only integrated air conditioning manufacturer in the world.	BMS and Daikin have expressed interest in commercialising the project. ITE is **currently working with Decarb123**, which was invited by NYAA to evaluate the project, to **explore opportunities for commercialisation** and to scale up the prototype. Daikin has also indicated interest in engaging the students as interns during their diploma studies, and in employing them upon graduation.
Hoh Say Pte Ltd	Hoh Say Pte Ltd participated in this project at a mosque located in a densely populated area with a significant Muslim community. The mosque experiences high water usage, especially on Fridays, due to the ritual of ablution before prayers.	The company involved in this project is a mosque located in a densely populated area with a significant Muslim community. The mosque experiences high water usage, especially on Fridays, due to the ritual of	

Project	About Project	Business Partner	Long-term implementation/Career opportunities for students
	The team of students successfully designed, prototyped, and tested a water-saving device that integrates a touchless sensor faucet, a water flow meter, and a microcontroller (ESP32) to regulate water usage. This device was installed at Masjid Ahmad Ibrahim, reducing water consumption per ablution from 5.21 litres to 0.775 litres - a reduction of 85%. Additionally, this resulted in an estimated 17.3% annual reduction in carbon emissions compared to previous water usage.	ablution before prayers.	
Stewart Engineering Works Pte Ltd	A collaborative project between ITE College Central students and Stewart Engineering Works (S) Pte Ltd aimed to enhance environmental sustainability for companies. Students from the *Higher Nitec* in Marine & Offshore Technology course audited the company's cleaning processes for machinery components, specifically focusing on the introduction of a Parts Washer machine. The findings demonstrated significant improvements, including reduced water and electricity consumption, leading to	Stewart Engineering Pte Ltd has been serving customers in both the marine and oil & gas industry for the past 48 years. It has its own engineering facilities to perform engineering projects, such as fire pump, power pack, wire-line unit, pump for oilfield application, many diesel engine driven equipment and overhaul services for diesel engine of various brands.	After starting the sustainability project, students Muhammad Aqil and Hilman later went on to intern at the company so they could spend more time and effort looking into the solution. Their Parts Washer machine has since been integrated into the company's cleaning processes for machinery components, and is used as needed.

Project	About Project	Business Partner	Long-term implementation/Career opportunities for students
	lower carbon emissions and operational costs.		
Park Royal Collection	Seafood shell waste is a major by-product of the hospitality industry, often discarded in landfills or returned to the ocean, causing environmental degradation. The team has proposed to PARKROYAL COLLECTION Pickering to transform seafood shell waste into valuable resources through four eco-friendly solutions. These include converting shells into: 1. Powder for candle holders and bouquet souvenirs using treated cooking oil as candle wax 2. Developing abrasive detergents for utensils 3. Producing modified cement for construction repairs 4. Creating food seasonings from processed shells.	PARKROYAL COLLECTION Pickering, located at 3 Upper Pickering Street, is a Singapore-based property development and investment company, operated by the Pan Pacific Hotels Group with approximately 100 staff.	
Food Fest Pte Ltd	ITE College West students conducted an environmental audit on Food Fest (F&B) Pte Ltd, specifically its fruit juice stall, to address fruit waste. The project revealed that the stall generated approximately 4,710 kg of	Food Fest (F&B) Pte Ltd, a subsidiary of Jun Hang F&B, operates a drink and fruit juice stall at ITE College West.	

Project	About Project	Business Partner	Long-term implementation/Career opportunities for students
	fruit waste per school term. In response, students repurposed watermelon rinds into biodegradable plant pots called Fruvas, reducing waste and CO_2 emissions. Their initiative resulted in a projected 54.1% decrease in carbon emissions related to watermelon rind disposal.		
Wholesome Savour Pte Ltd	In this collaboration, ITE students and Wholesome Savour have worked together to develop the "Kindness Meat" burger, a new clean-label sustainable meat alternative that goes beyond traditional plant-based options. This burger boasts a low carbon footprint, promotes human health, is environmentally friendly, and contributes to the elimination of animal cruelty. The students conducted an environmental audit which revealed an opportunity to significantly reduce carbon emissions by using a clean-labelled plant-based beef patty. This is projected to reduce carbon footprint by 94% when compared to a traditional beef burger.	As a holding company, Wholesome Savour invests in innovative functional culinary solutions aimed at inspiring individuals to adopt a healthier, more sustainable, and compassionate lifestyle through the concept of food as medicine.	Wholesome Savour will be implementing the 'Kindness Meat – a plant-based burger patty developed by the team, in their next menu planning. The students are currently pursuing their *Higher Nitec* studies in ITE. Wholesome Savour has indicated interest in employing them upon graduation.

Full details can be found in the third phase's report here: https://online.flipbuilder.com/oryu/xgqo