

# TRUNGSTEN

 Lan Hoe 聯和  
GROUP 集團

*Building a legacy in*

***AI - Enhanced***

**CLIMATE CONTROLS  
SOLUTIONS**

**HEATING, CHILLING &  
FREEZING**

# OUR ORGANISATION

**LAN HOE GROUP IS ONE OF HVAC & REFRIGERATION INDUSTRY PIONEER & HAS MORE THAN 40 YEARS INDUSTRY EXPERIENCE & EXPERTISE**



## **LAN HOE HOLDINGS (1979) SDN BHD**

(Overall Financial, Administrative & Operation Management)  
(Import, Export & Projects Management)  
(Representatives & Agencies of Principals Brands)



## **TUNGSTEN INNOVATION & SOLUTIONS SDN BHD**

(Wholesale, Distribution & Project Supplies for  
Malaysia, Singapore & Brunei)



## **CULMI AIR-COND & REFRIGERATION PARTS SUPPLY SDN BHD**

(Residential & Commercial Air-Conditioning Parts Specialist)  
(Malaysia's Top 3 Daikin Spare Parts Genuine Distributor)



## **JMH BROTHERS SDN BHD**

(Investment & Real Estate)



## **GREFAC (M) SDN BHD**

(PMC & EPC - Turnkey Refrigeration Project Management  
Engineering, Design, Procurement & Construction)

# INTRODUCTION



**Lan Hoe Group & Tungsten Innovation & Solutions Sdn.**

**Bhd.** is a leading provider of **AI-Enhanced Climate Controls Solutions (across all Heating, Chilling & Freezing Applications)**, a pioneer with **over 40 years of industry expertise.**

Specializing in **Energy-Efficient, ESG-Compliant**

Climate Controls Systems Solutions, we deliver cutting-edge technology for **Commercial and Industrial Temperature Controls Applications**, ensuring sustainability, cost savings, and superior performance.

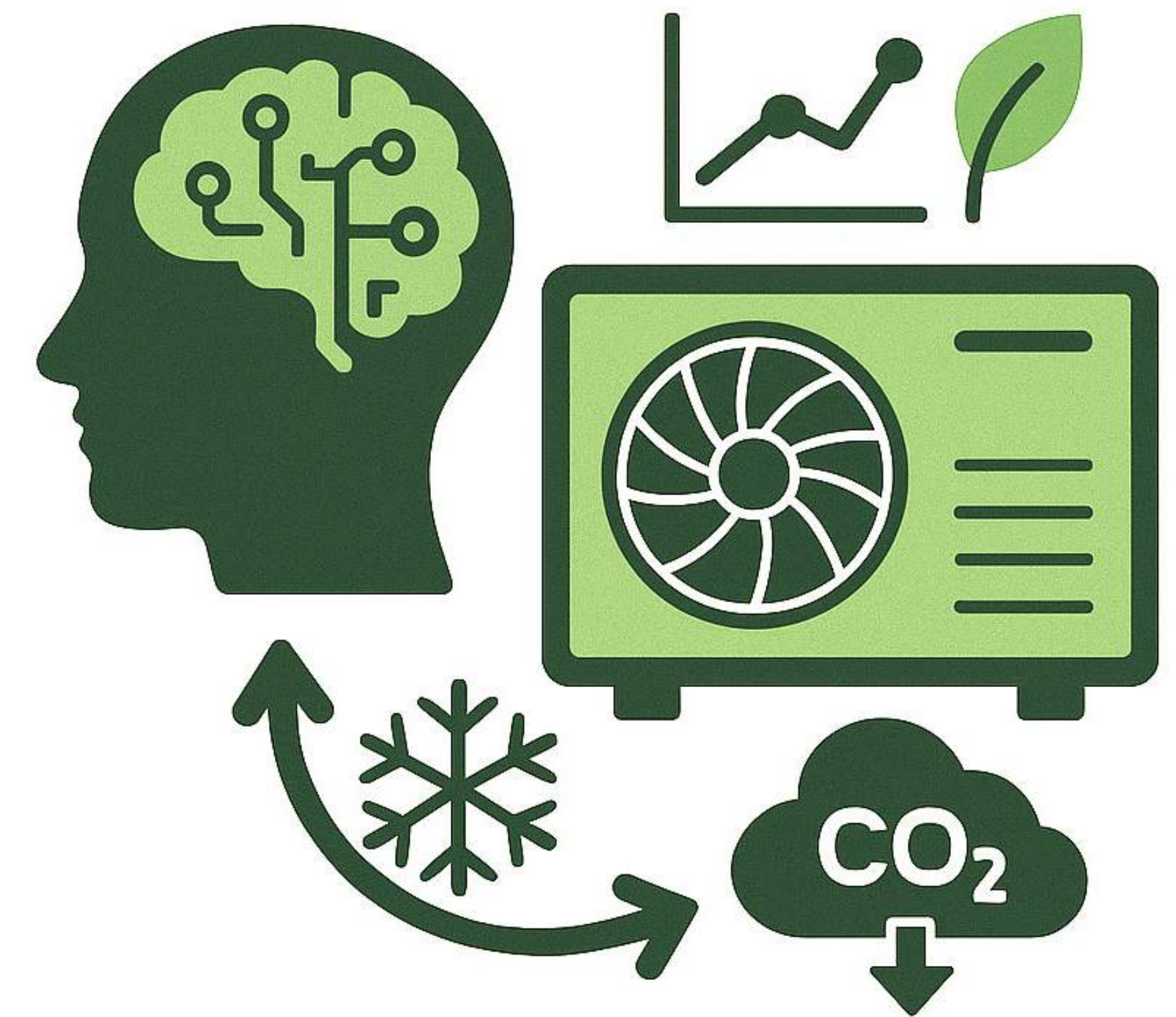


# VISION & MISSION

## VISION

To drive a worldwide transition toward climate-responsible infrastructure, ensuring that operational efficiency directly translates into environmental stewardship, enabling all clients and communities to achieve truly **Sustainable and Profitable Operation** while safeguarding resources for future generations.

- *Focus: **Aspiration*** (Worldwide transition, Environmental Stewardship) and **Ultimate Outcome** (Sustainable and Profitable Operation).
- *Inspirational Goal: **Safeguarding Resources*** for future generations through technological excellence.



## MISSION

To empower clients involved in climate control applications by **optimizing system performance** through advanced technology, consistently guaranteeing superior **energy efficiency** and measurable cost savings.

- *Focus: **Optimise** Performance & **Empower** Clients*
- *Measurable Results: Superior Energy **Efficiency** & Maximising Life Cycle **Cost (LCC) Reduction***



# OUR SUSTAINABLE SOLUTIONS

## COMMERCIAL REFRIGERATION

uSMART AI Refrigeration Systems (R410A)  
Global Exclusive (Except China)



## INDUSTRIAL REFRIGERATION

Leader in CO2 Transcritical  
Booster System with  
Advanced AI PLC & Monitoring

*ESG-Friendly / Compliant*



**R404/507 GWP > 3900**

**R 410A:GWP - 2088**

**R410A GWP < 2100 (-46%) & Co2 = 1**



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GROUP  
TUNGSTEN



# BEYOND AMMONIA & FLAMMABLES

## The New CO<sub>2</sub> Standard for Industrial Cooling & Freezing

Carbon Dioxide (CO<sub>2</sub>)

ASHRAE Classification: A1  
Low Toxicity / Non Flammable



● Oxygen (O)

● Carbon (C)

Ammonia (NH<sub>3</sub>)

ASHRAE Classification: B2L  
Toxic  
Mildly Flammable



● Nitrogen (N)

● Hydrogen (H)

### Which is Better

# COMMERCIAL REFRIGERATION

## AI-ENHANCED COMMERCIAL REFRIGERATION SYSTEMS

### uSMART Inverter AI Technology

- ▶ **Variable-Speed** DC inverter compressors.
- ▶ **Same-Unit-Wide-Applications** -30°C ~ +15°C Room Temp
- ▶ **Precision** temperature control ( $\pm 0.5^{\circ}\text{C}$  to  $1^{\circ}\text{C}$ ).

### Reversed Cycle Defrost on Demand

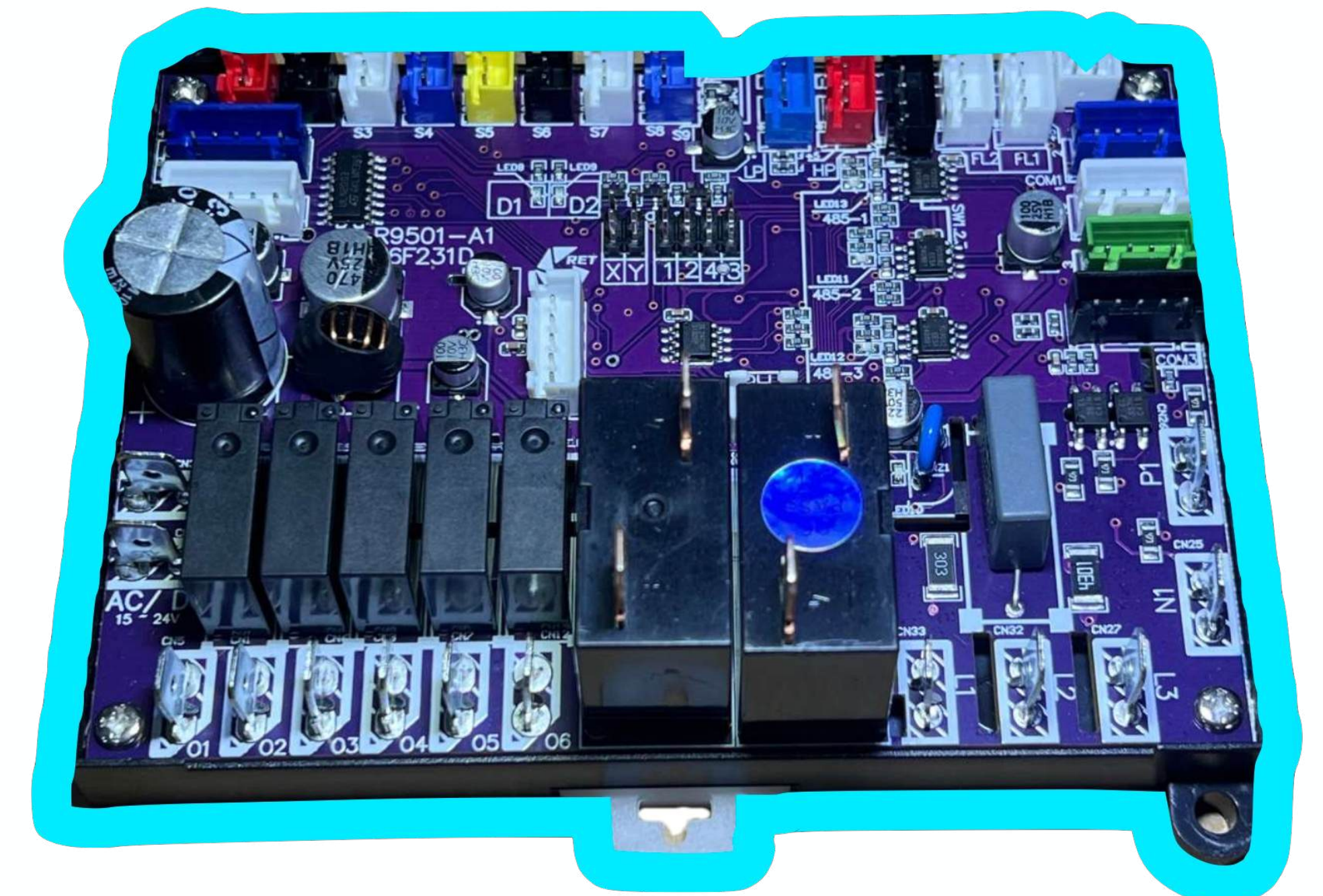
- ▶ Reverse-Cycle Defrost on Demand for **Faster Defrost Cycle & Maximum Energy Savings**

### Electronic Vapor Injection Economiser

- ▶ Precision Vapor Injection **Optimising System Performance**

### Remote Monitoring & System Protection

- ▶ Remote monitoring and system protection (pressure, temperature, alarm diagnosis).



Air-Out Temp: 30.0 °C	Target SHT: 0.0 °C
Refrigerant Set: R410A /	Target Temp: -25.0 °C
Defrost Method: Auto /	Defrost Mode: HotGas /
Time defrost: 6 Hour	Indoor work: Cool /
MOP: 12.0 °C	Running Time: 0 Day
Running mode: Energy/	Show About: <b>CPURP01W01</b>
Indoor Sbout: 21401	2 1 1 1
Outdoor About: 41661	2 1 0 1

View ②

Ambient Temp: 30.1 °C	Discharge Temp: 29.6 °C
Suction Temp: 29.8 °C	Liquid-Out: 29.9 °C
Running Time: 0 Min	Input Current: 0.4 A
Condens Temp: 28.3 °C	Outdoor Press: 17.0 Bar
Discharge Exv: 0.0 %	Outdoor Fan: 36.2 %
Evaporat Temp: 28.6 °C	Indoor Press: 17.2 Bar
Suction Temp2#: 28.4 °C	Indoor Coil Temp: 29.1 °C
Master Exv: 90.0 %	Room Temp: 28.3 °C

View ①

Run Frequency: 0 Hz	Comp Code: 3449 /
Input Voltage: 248 V	Fault Code: 0 /
Input Current: 0.4 A	Alarm Code: 2 /
Phase Current: 1.4 A	Max Frequency: 85 Hz
Drive Temp: 30.0 °C	Min Frequency: 30 Hz
DC Voltage: 342 V	DC-FAN 72.0 %
PFC-SW: 0 /	AC-FAN 0.0 %
Inverter Status: 0 /	

View ③

# INDUSTRIAL NATURAL GAS REFRIGERATION

## CO<sub>2</sub> TRANSCRITICAL BOOSTER SYSTEMS WITH AI-ENHANCED PLC & PATENTED EJECTOR TECHNOLOGY

- ▶ **ESG-Compliant**
  - ▶ (GWP = 1 vs. conventional R404A's 3900).
- ▶ **Fast ROI** from Energy Savings
- ▶ **> 50% Energy Efficiency** for low temp (-30°C to -20°C) applications.

What make Co2 System in Refrigeration so high efficient ?



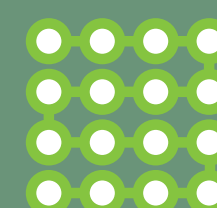
100% Natural & Non-Polluting with 1 GWP



Small Pipe-Line with S/S Schedule-40



Economical & Stable



High Vapouralized



Safe, Non-Flammable & Non-Toxic



High Energy Savings up to 50% or more



Excellent Cooling



Compact System

**More Than 23,000 Global Project References!**



**Storage Tank**

**Ejector**

Standard adjustable ejector, improving energy efficiency  
High-pressure power recovery to boost compressor suction pressure

**Touch Screen**

**Compressor**

**CO<sub>2</sub> Pumps**

MT Compressor **3-8** pieces  
LT Compressor Maximum **6** pieces

When the ejector cannot boost the pressure sufficiently under extremely low ambient temperatures, CO<sub>2</sub> pumps will be used to keep the evaporator expansion valve working normally.

**Refrigeration Capacity**  
Maximum **1.5** MW  
Heat recovery Maximum **2.2** MW  
All functions are managed through the controller, easy-to-use and flexible.

**Applicable Areas**  
Cold | Mild | Warm | Tropical climate

**Other Features**

- Air cooling or water cooling
- Active oil return management
- Used for air conditioning
- Used as chillers



# CLIENTELE & ACHIEVEMENTS



## TRUSTED BY

- Walmart China's hypermarket & last-mile grocery delivery satellite warehouse (**Sam's Club**)
- > 23,000 Global References for CO2 Systems by Carrier Commercial Refrigeration (CCR)

## PIONEERING MILESTONES

First in Malaysia to deploy **uSMART Inverters with Reverse Cycle Defrost on Demand.**



# ESG COMMITMENTS



to replace



>46% GHG  
CO2e Reduction

## For Commercial Refrigeration

**ENERGY** EFFICIENT Frozen & Chilled Storage Solutions

> **30 ~ 50% SAVINGS** vs. conventional systems

Room Temperature Stability (**1°C +/-**) **Deviation**



to replace



>99% GHG  
CO2e Reduction

## For Industrial Refrigeration

**ENERGY** EFFICIENT Frozen Storage Solutions with

> **70% SAVINGS** vs. conventional systems



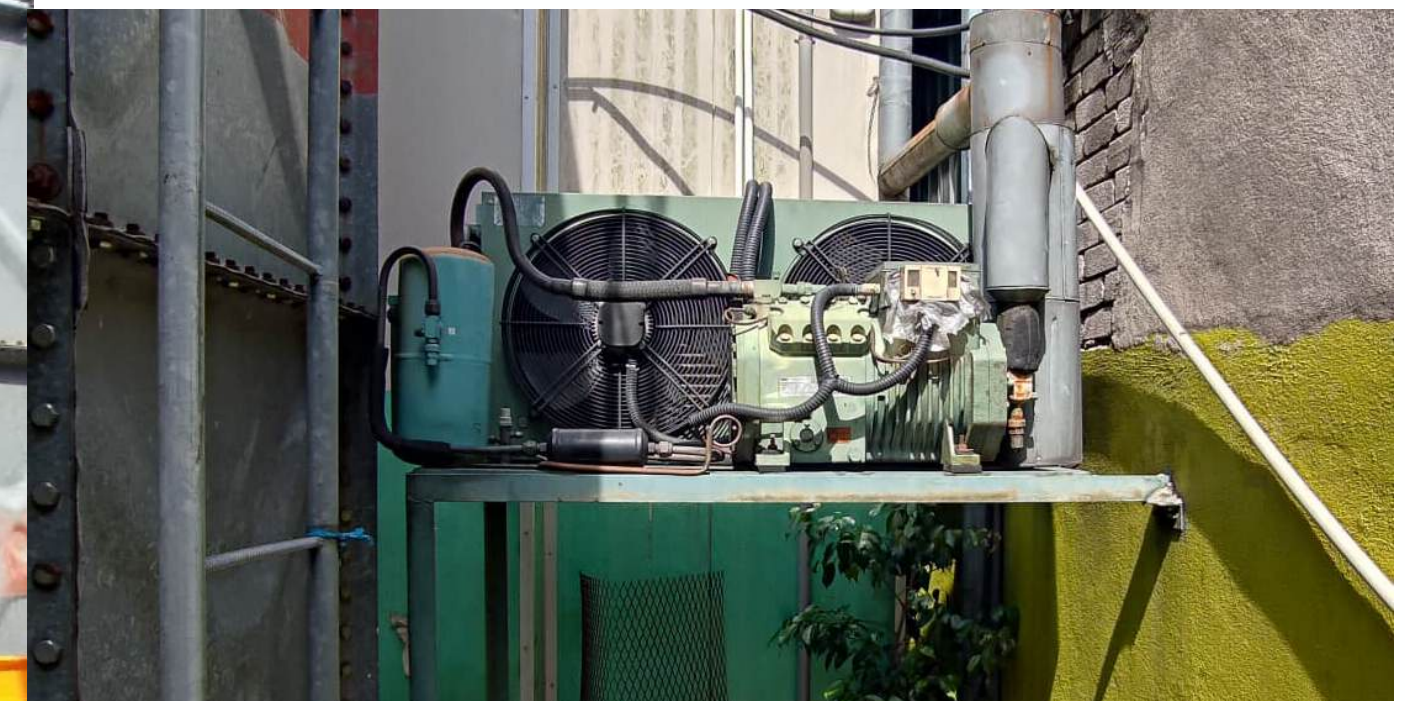
# ESG COMMITMENTS



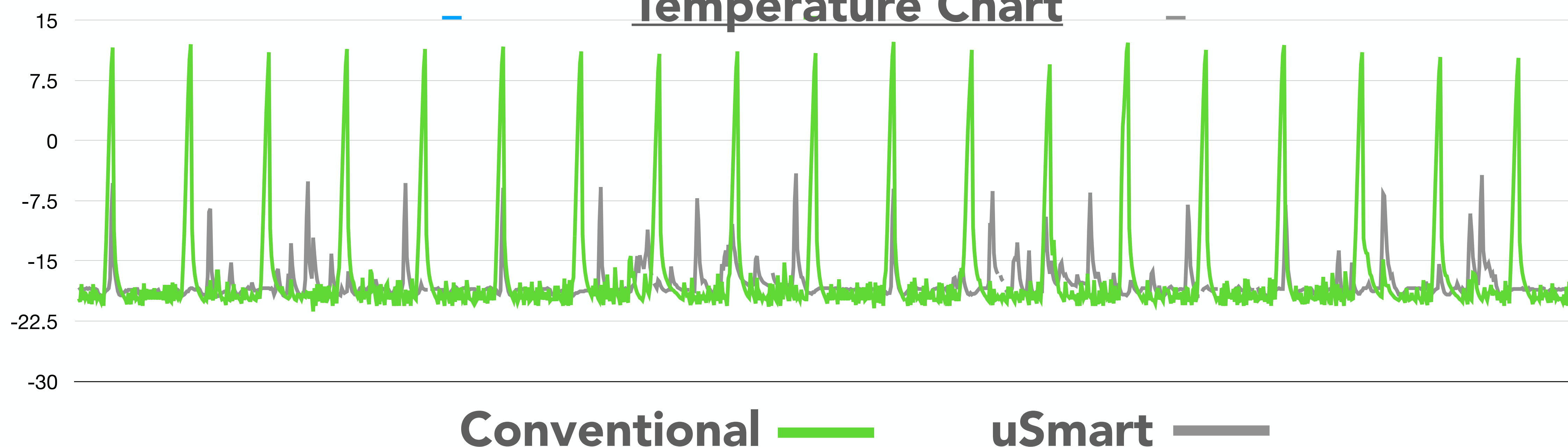
to replace  
**R507** GWP 3985  
**R404A** GWP 3922  
**>46% GHG  
CO2e Reduction**

## For Commercial Refrigeration

Frozen & Chilled Storage Solution with  
Minimal Temperature Fluctuations



**Temperature Chart**



**Room Temperature  
Stability  
+/- 1°C Deviation  
Maintained below  
-5°C even After  
Defrost**

**\*Data Verified By ASHRAE-  
Universiti Student Branch**



# ESG COMMITMENTS



to replace



**>46% GHG  
CO2e Reduction**

## For Commercial Refrigeration

**ENERGY EFFICIENT** Frozen & Chilled Storage Solutions

**> 30 ~ 50% SAVINGS** vs. conventional systems

### Energy Consumption Table

Day & Time	BITZER 4TES-9Y (9HP)		U-Smart VRL080PCS (8HP)	
	From 23/04/2025 12.05AM to 29/04/2025 12.00PM (7-Days)		From 03/05/2025 12.05AM to 09/05/2025 12.00 PM (7-days)	
	KWH Accumulated	Energy Bill (RM)	KWH Accumulated	Energy Bill (RM)
Day 1 12:05:00 AM	0.60	RM0.33	0.30	RM0.17
Day 1 12:10:00 AM	1.20	RM0.66	0.50	RM0.28
Day 1 12:15:00 AM	1.90	RM1.05	0.80	RM0.44
Day 1 12:20:00 AM	2.30	RM1.27	1.00	RM0.55
Day 1 12:25:00 AM	2.50	RM1.38	1.30	RM0.72
Day 7 11:35:00 PM	996.20	RM547.91	621.50	RM341.83
Day 7 11:40:00 PM	996.30	RM547.97	621.70	RM341.94
Day 7 11:45:00 PM	996.80	RM548.24	621.90	RM342.05
Day 7 11:50:00 PM	997.00	RM548.35	622.10	RM342.16
Day 7 11:55:00 PM	997.50	RM548.63	622.10	RM342.16
<b>TOTAL PER 7 DAYS</b>	<b>*997.7</b>	<b>RM548.74</b>	<b>*758.6</b>	<b>RM417.23</b>
<b>TOTAL PER MONTH</b>		<b>RM2,351.72</b>		<b>RM1,788.13</b>
	<b>Savings/Week RM131.51</b>			<b>More Than</b>
	<b>Savings/Month RM563.59</b>			<b><u>31.52%</u></b>

\*Data Verified By ASHRAE-Universiti Student Branch





# ESG COMMITMENTS



## Tungsten Case Study & Pitching Competition



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# CONTACT US

TUNGSTEN INNOVATION & SOLUTIONS SDN. BHD.



[support@tungsteninc.com.my](mailto:support@tungsteninc.com.my)



<https://tungsteninc.com.my>



+603-9281 1323



+603-9282 4609

**Building a Legacy in AI-Driven,  
Sustainable Cold Storage  
Solutions.**

TUNGSTEN

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