

Growing Smarter, Greener: Sustainable Agriculture

Leong Tuan Teng

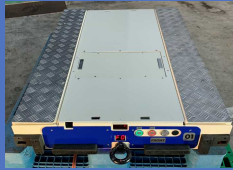
KA3 Technology Pte Ltd



2019 Founded as R&D firm specializing in engineering, design, and consultancy for industrial operations



2020-2021 Launched Pallet Shuttle Car (Made in Singapore)



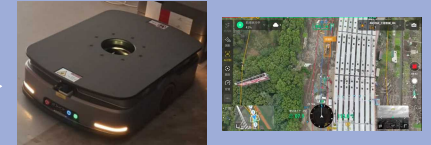
2022 Designed customized battery solutions for robotics, AGVs, and other applications (cold/standard room)



2023-2024 Expanded into logistics warehouse automation, AgriTech, Grow LED, Ultrasonic Spray



2025-Now Developed Singapore-made indoor AMR, Camera AI Capability Series (Universal Detection with Multimodal Large Models)



Leong Tuan Teng (TT)

KA3 Technology Pte Ltd

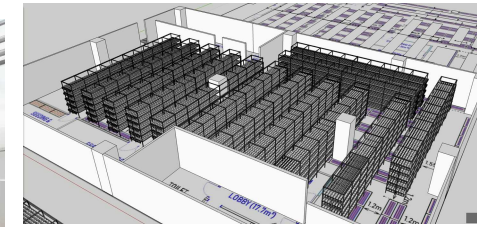
13 years in Semiconductor, 5 years in KA3 Technology

Email: tt.leong@ka3tec.com

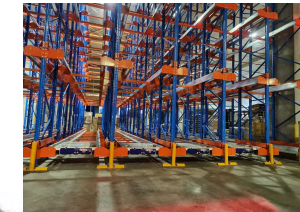
Website: ka3tec.com

Our AGRI Solution

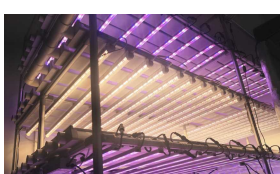
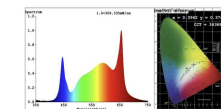
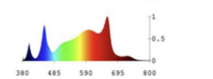
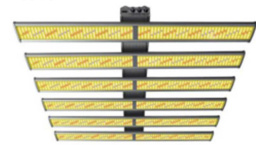
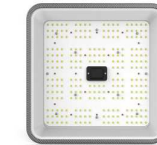
After Service
Engineering Labour /
Service Support



Design, Supply and Install
(Engineering Plastic, Metal,
Racking System etc)



Ready or Customize Grow
Light for cost, energy
saving

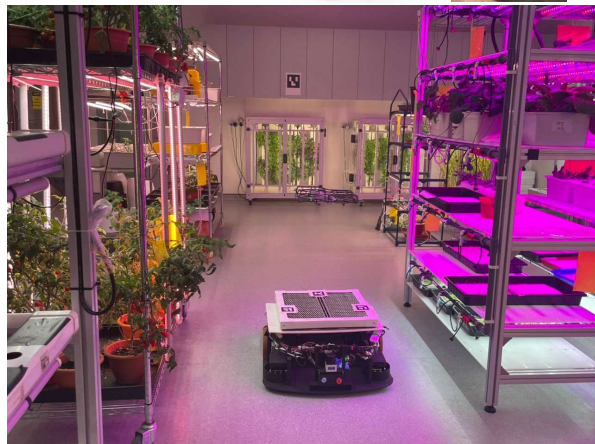
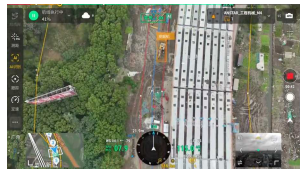
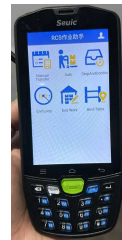


Humidity Sensor
Temperature Sensor
PH Meter
EC Meter
Level Sensor
PAR Sensor

Integration of
customizable IOT sensors



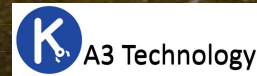
AI Camera,AGV,AMR and
Robotic Integration



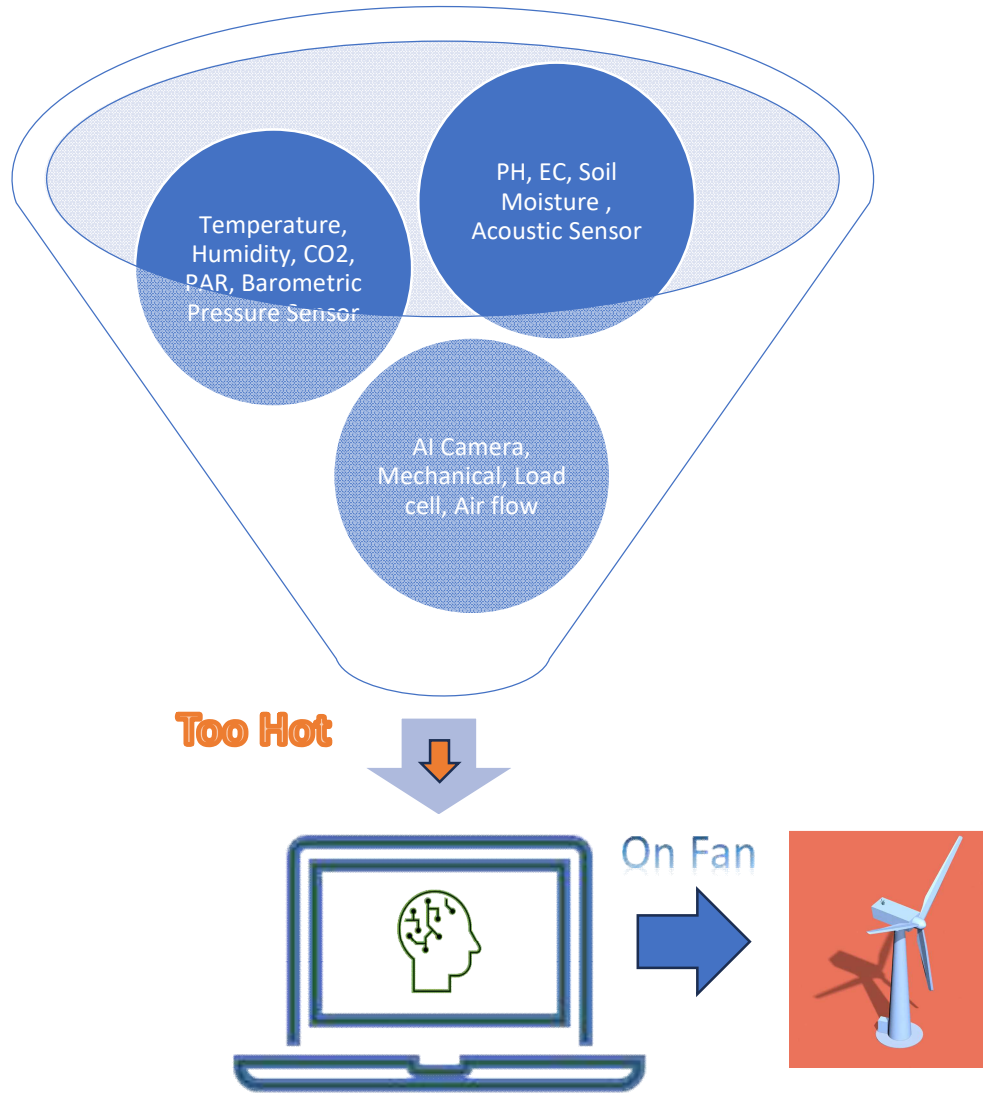
Farm Management
Solution (Semi to Full
Automation)



How does Automation Works ?



Sensors



Brain (Computer)

Sensors

Sensors act as sense organs for machines, detecting environmental changes and sending signals to the computer (brain).

Computer

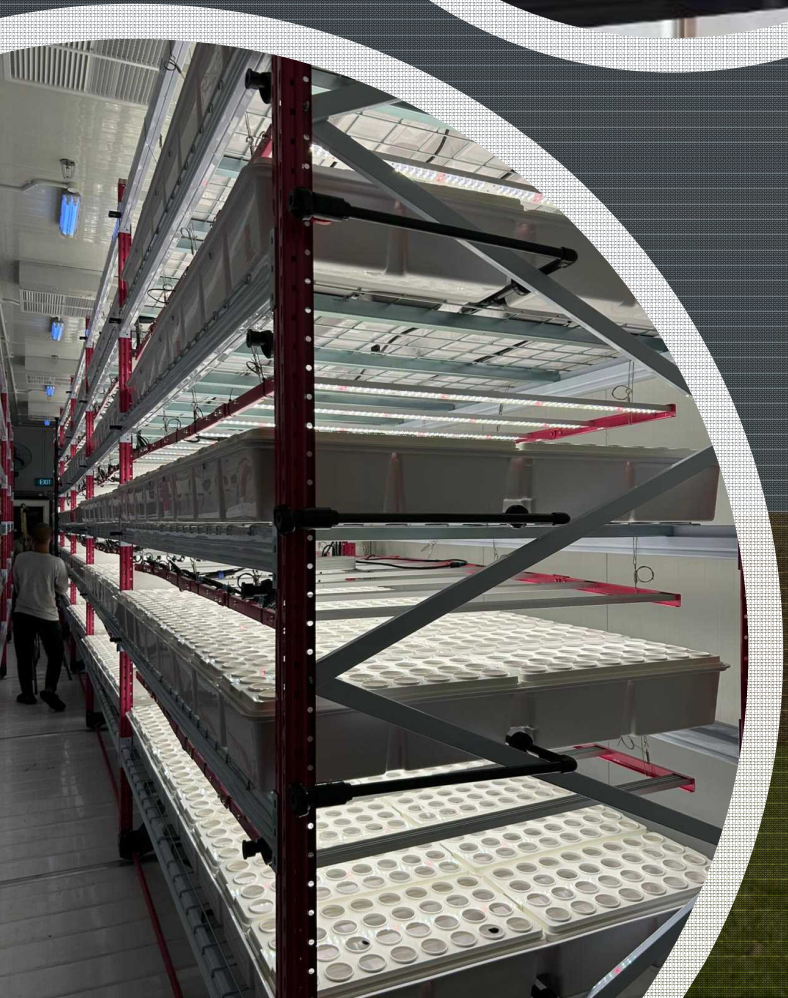
The computer processes sensor data and triggers appropriate actions (e.g., turning on a fan if temperature is too high).

Example

- Temperature = 38 Degree (Too HOT)
- Sensor → Sends data to Computer
- Computer → Turns on the Fan automatically



Past Case Study Project



Case Study 1

Indoor Aeroponics Farm

Problem Statement

Current Cleaning Limitations

- Tray cleaning is slow: **1 operator needs ~8 hours to clean only 7–8 trays.**
- Nozzles require long soaking and manual brushing but **still cannot stay clean for one full plant cycle.**

Impact on Operations

- Incomplete nozzle cleaning leads to **yield loss.**
- Nozzles must be **replaced every 6 months**, increasing cost and downtime.

User Requirement

- **Minimal water usage** required.
- **No chemical cleaners** permitted.
- **Very limited space** — cannot install large equipment.



Case Study 1

Indoor Aeroponics Farm

Solution

- Introduction a Hot Stream Gun with integrated brush.
- Cleaning method uses only hot water + brushing, no chemicals.
- High-temperature steam loosens algae, biofilm, and dried nutrient residue quickly.
- Direct steam + brushing provides **faster cleaning, better hygiene,** and **improved nozzle reliability** without needing large equipment or extra cost.



Now use 2 liter of water to clean 20 tray and every tray now only take 2-3 min to clean



Save **90%** of Water and efficiency up **20** times !



Case Study 2 (Ongoing)

Orchid Farm

Problem Statement

- Customer plans to **utilize the space under the racking** to grow orchids.
- LED grow lights are currently installed at the **highest position**, far from the plants.
- As a result, orchids under the racking receive **insufficient light intensity**.
- Growth rate is **significantly slower** compared to orchids placed on tables that receive **direct sunlight**.



Case Study 2 Orchid Farm

Solution

- Install a **motorized lifting system** under the racking to adjust the LED height.
- LED fixtures can be **lowered closer to young orchids** during early growth stages
- Reducing the light-to-plant distance increases **PPFD** (Photosynthetic Photon Flux Density) reaching the canopy.



Use the same LED and power, and let the Orchid absorb more



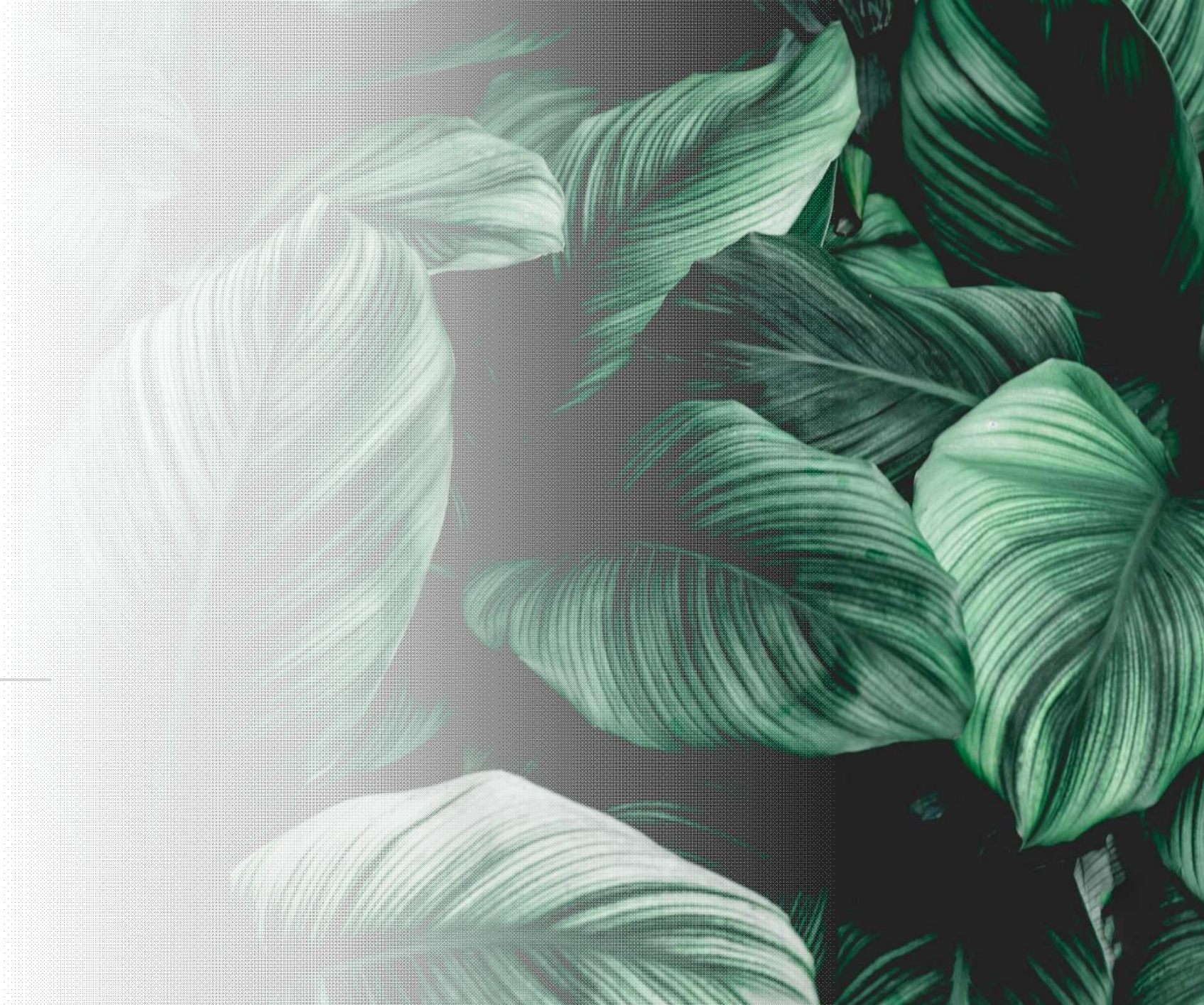
Grow rate up **10-20% !**





New Product release in 2026

Leafy by  A3 Technology



Features:

Automated hydroponic system for fresh vegetables with minimal environmental Impact. Smart technology and multi-layer air purification for cleaner air and sustainable living.

Built for Sustainability



Soil-Free Farming

Use NFT to reduce water-waste and eliminate soil degradation



Eco-Friendly Filtration System

EcoBreath delivers up to 99% air purification efficiency with a triple-layer design

Capture Large particles (PM10) with a filtration efficiency of over 90%.

Eco-friendly Filtration (EcoBreath, coconut shell activated carbon, triple-layer design)

Healthier Air and plants absorbs odors, chemicals, VOCs, reduces energy loss and noise.



Healthier Air + Healthier Plants

Grow Your Own Greens, Clean the Air, and Cut Carbon – All in One System.
Bring sustainable farming to the Space



Product Specification:

Size: 570mm (L) x 1280mm (W) x 2120 mm (H)



Leafy

GROW SMARTER, LIVE GREENER

Making Every Moment Count – for a Greener Tomorrow



Product Specification

Expansion:

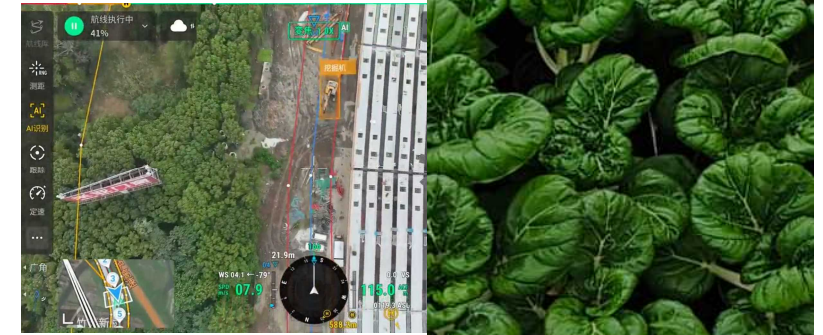
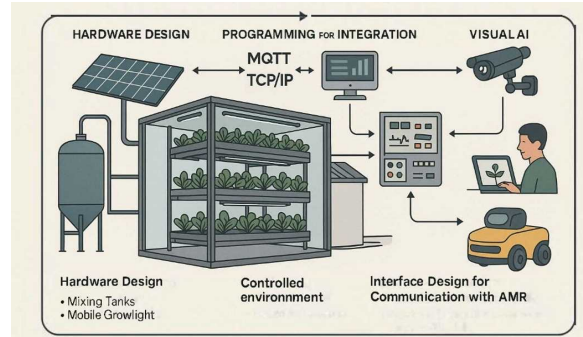
Size: 570mm (L) x 5120mm (W)
x 2120 mm (H)



The Essentials:

- Automatic pH & EC Monitoring
- Precise Dosing System
- Smart Environmental Control
- Clean & Healthy Growth
- Air Purification System

2026-2027 Development Plan



R&D Outdoor AMR/AGV for better cost efficiency to use in Agriculture

Cost Reduction

Autonomous Operation

Farm Efficiency

Develop Full Automation Farm

Smart Farming

Energy Efficiency

Workforce Efficiency

Build Big Data for Smarter Agriculture

Data Collection

Data Analytics

Decision Support

Thank You



KA3 Technology: Growing
Smarter, Greener, Together



Contact Detail



WE ARE LOOKING FOR LIKE
MINDED DISTRIBUTOR



COLLABORATION FARM FOR
BIG DATA COLLECTION



FARM LOOKING FOR SMART
SOLUTION

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