

# SMART COMBAT SOLUTIONS

## The Force Multiplier

In today's world, soldiers operate in a highly complex and digitised battlefield. To maximise effectiveness and to achieve a force multiplier effect, fighting forces require smart combat solutions that provides superior protection and longer-lasting energy supply for extended mission endurance and improved situational awareness.

Using the latest technologies and advanced materials, ST Engineering has developed the Army Individual Eco-Lightweight Equipment (ARIELE™) Soldier System for maximum comfort, protection, mobility and enhanced capabilities. Four main systems are available:

- Clothing & Protection Equipment
- Sensors & Individual Equipment
- Power & Energy Management System
- Medtech & Human Augmentation System

To achieve the highest standards of quality and customer assurance, all our products are subject to stringent quality testing to verify performance and safety.



## Sensors & Individual Equipment



### Shielded Advanced Eyewear System (SHADES)



Intelligent see-through Head-Up Display (HUD) system provides real-time Augmented Reality (AR) information to the soldier for improved situational awareness, command & control over wireless weapon stations, communication & coordination, navigation, and identification & tracking of friendly forces.

#### Key features:

- Lightweight and compact helmet-mounted see-through display
- Intuitive real-time AR overlay of situational awareness information
- Non-verbal and non-line-of-sight data communication
- "Few to many" control of forward sensors coordinated interactions
- Digital tagging of objects-of-interest
- Bright and low light visual adaption through human algorithm and thermal sensors
- Holistic integrated power, computing, communication and image projection system



### Adaptive Real-time Core Temperature Intelligent Cooler (ARCTIC)



Combination of modular active-cooling vest integrated system and passive-cooling uniform to enhance the efficiency of heat extraction from the body.

#### Key features:

- Synergistic cooling effect from the active Load Bearing Vest (LBV) and passive uniform for up to 15% reduction in body temperature @ 40°C
- Intelligent self-adjusting system for optimal wearer comfort and efficient energy usage
- Lightweight and compact wearable cooling solution
- Novel heat dissipation design
- Modular design to integrate with LBV
- Multi-modal cooling formulation deposited on uniform that enhances heat extraction from body to active-cooling LBV
- Multi-directional operation
- Self-contained and rugged module



## Medtech & Human Augmentation System



### Real-time vital signs monitoring & alert system

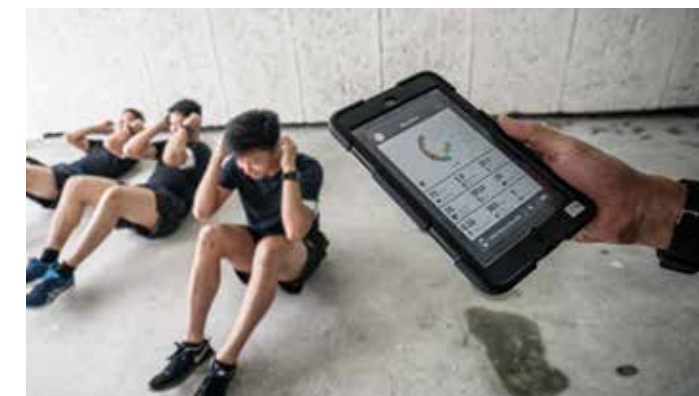
### Soldier Enhanced Sensing Equipment (SENSE)



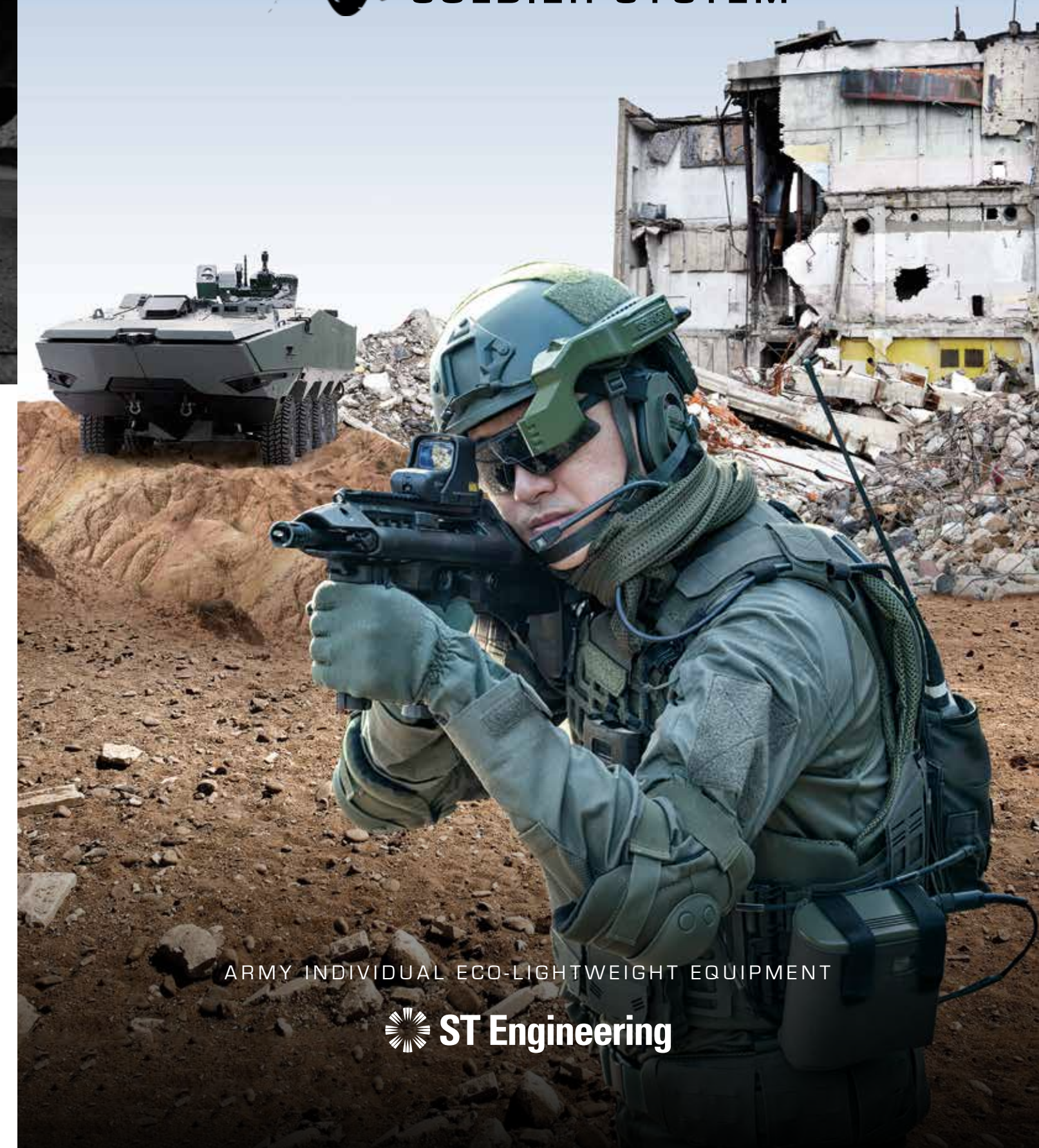
Holistic and non-intrusive vital signs monitoring & alert system to enhance soldier training effectiveness whilst minimising exhaustion related injuries.

#### Key features:

- Real-time vital signs monitoring - heart rate, skin temperature, HRV, respiration rate, GSR
- Able to detect onset of training exhaustion
- Incorporates detection, alert and location in a lightweight, wearable smart device
- Real-time information transfer to wearable smart interface
- Modality score for effective training regime
- Post-mission data analytics
- Daily data transfer to Cloud system via mobile gateway



### Data collection for post-training analysis



ARMY INDIVIDUAL ECO-LIGHTWEIGHT EQUIPMENT



249 Jalan Boon Lay, Singapore 619523  
www.stengg.com

DOP0920



# Clothing & Protection Equipment



## Personal Reinforced Outer Tactical Equipment Carrier (PROTEC)

Lightweight, modular and scalable load bearing vest designed for tropical and hot climates. It allows the soldier to adjust carriage capacity and protection level commensurate with the threat level and operating conditions.

- Key features:**
- Weight reduction
  - Local anthropometric data customisation
  - Superior comfort
  - Compatible with a range of mission profiles



## Pouches And Carriage Kit (PACK)

An extensive range of personal carriage kit including standard ammunition & equipment pouches and packs designed for sustainment or operational use.

- Key features:**
- High pressure injection molded frame, stable at extreme temperature
  - Pack frame designed to move in sync with wearer's back – reduce risk of injury
  - Pack-bag highly field-adjustable by wearer. Single or multi-compartments as needed
  - Suitable and tested for parachute operations
  - Active ventilation to reduce overheating



## Personal Lightweight Armour Technology (PLATE)

Lightweight and ergonomic construction to protect the soldier against operational threats without compromising movement and endurance.

- Key features:**
- Ergonomically shaped ballistic plate protects vital organs whilst enhancing mobility and firearm operability
  - Larger protective area and edge-shot capacity
  - Unique material properties and production technology reduces areal density and weight of plate

Offers customisation for protection level according to NIJ 0101.04 or NIJ 0101.06



## Garment Engineered by Advanced Research (GEAR)

A comprehensive combat-effective clothing system suitable for different operational needs.

- Key features:**
- Intuitive soldier-centered design ensures functional efficiency
  - Use of state-of-the-art materials to provide a combat-effective clothing system
  - Ergonomic design facilitates free range of movement
  - Design for soldier comfort through use of durable, lightweight and breathable materials suitable for tropical and hot climates

- Offers a range of high performing fabrics for added capability:
- Water repellent
  - Fire retardant
  - Anti-static climates



# Power & Energy Management System



## Power & Energy Management System (PoEMS) – Smart Power Manager

Comprehensive power and energy management system that uses a Smart Power Manager to serve as the power distribution hub. In combination with ARIELE's POWER fuel cell, it provides a high performance, reliable and compact power management system.

- Key features:**
- All-inclusive smart plug-and-play power manager that enhances flexibility, compatibility and scalability between energy sources and loads
  - Power awareness and logging capabilities for ease of profile viewing and setting changes on-the-fly
  - Intelligent algorithm predicts energy usage and prioritises loads

## PoEMS – Enhanced Wireless Charger

The Enhanced Wireless Charger incorporates state-of-the-art wireless charging technology, which allows spatial freedom during operation by reducing total system weight and need for charging cables.

- Key features:**
- Market leading transmission efficiency of up to 75%
  - Full spatial freedom – allows charging in any orientation
  - Intuitive charging methodology circumvents the vulnerabilities and inconvenience of conventional charging method
  - Ruggedisation - meets applicable MIL-STD-810G



## Portable Watt-hr for Extended Range (POWER)

A high energy dense, portable and lightweight fuel cell system to extend mission endurance for soldiers, increase mileage and/or payload capacity for unmanned systems.

- Key features:**
- High energy dense dry fuel cartridge – 160% increase compared to current state-of-art Li-ion batteries
  - Fuel cartridge can be hot-swapped
  - Intuitive usage and ease of maintenance
  - Ruggedisation – meets applicable MIL- STD 810G
  - Fully customisable