



# ENERGY STORAGE IN ACTION

ENABLING THE TRANSITION TO **247.365 SECURE  
CLEAN ENERGY**, BY MAKING RENEWABLES MORE  
RESPONSIVE TO OUR NEEDS.



**HIGHVIEW POWER, BUILT TO BECOME A  
WORLD LEADER IN LONG DURATION ENERGY  
STORAGE, SYNCHRONOUS GENERATION AND  
INDEPENDENT GRID STABILISATION  
SERVICES.**



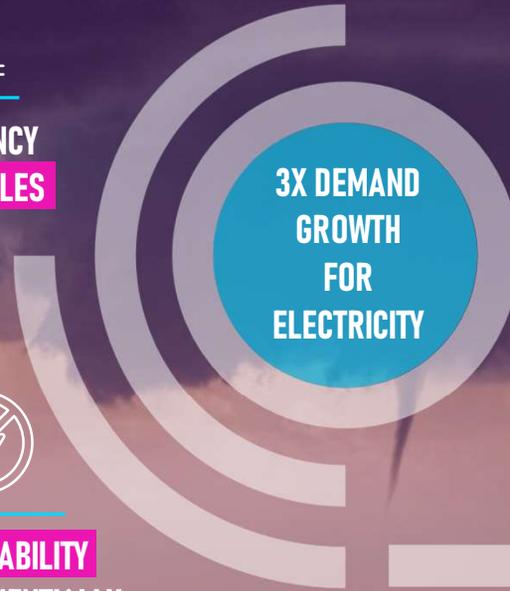
# NET ZERO PERFECT STORM



GLOBAL COMMITMENT TO  
**ENERGY TRANSITION**



INTERMITTANCY  
OF RENEWABLES



3X DEMAND  
GROWTH  
FOR  
ELECTRICITY



**GRID INSTABILITY  
RISES EXPONENTIALLY**

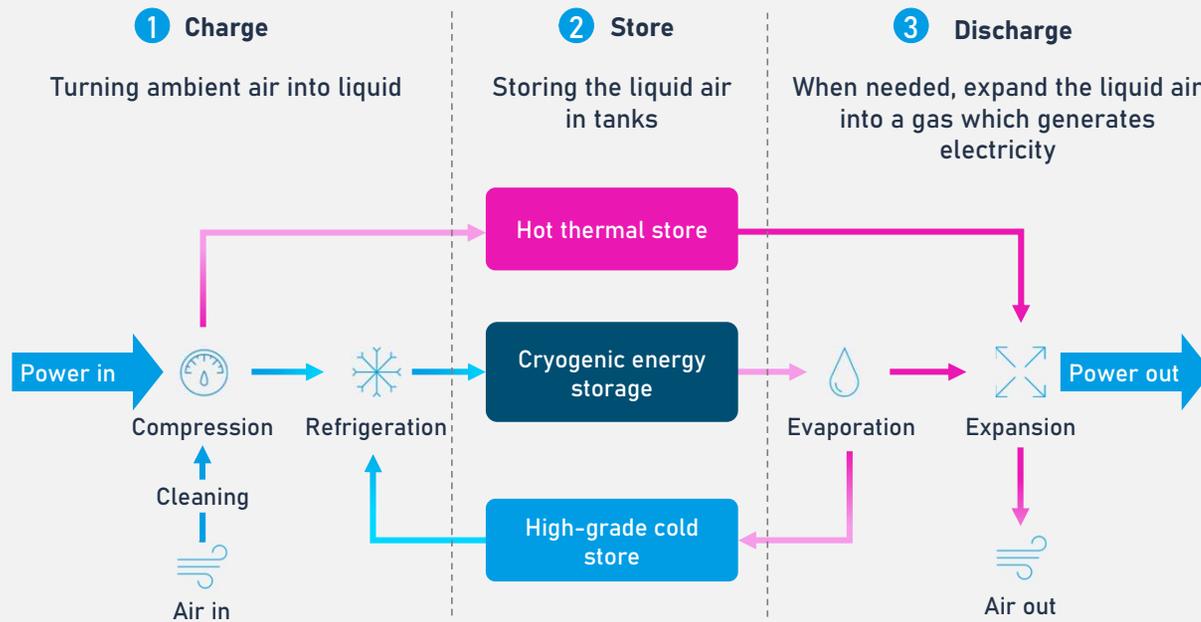


ONGOING RELIANCE  
ON FOSSIL FUELS



# OUR **LIQUID AIR ENERGY STORAGE** TECHNOLOGY STORES ENERGY FOR LONGER WITH GREATER EFFICIENCY

## Liquid Air Energy Storage (LAES) System



- Services Offered**
- Balancing Mechanism – Constraint Management and Energy Actions
  - Capacity Market
  - System Restoration
  - Wholesale Market – Energy Arbitrage

## Stability Island

Operation of the synchronous generator as a synchronous compensator, simultaneously to LAES system



- Services Offered**
- Inertia
  - Reactive Power Control
  - Short Circuit Level

# A BUSINESS WITH A GLOBAL AMBITION TO DELIVER THE NET ZERO GRID



## UK

Work underway at Carrington – 50MWh/300MWh plant near Manchester that will store enough clean renewable energy to serve the needs of 480,000 homes.



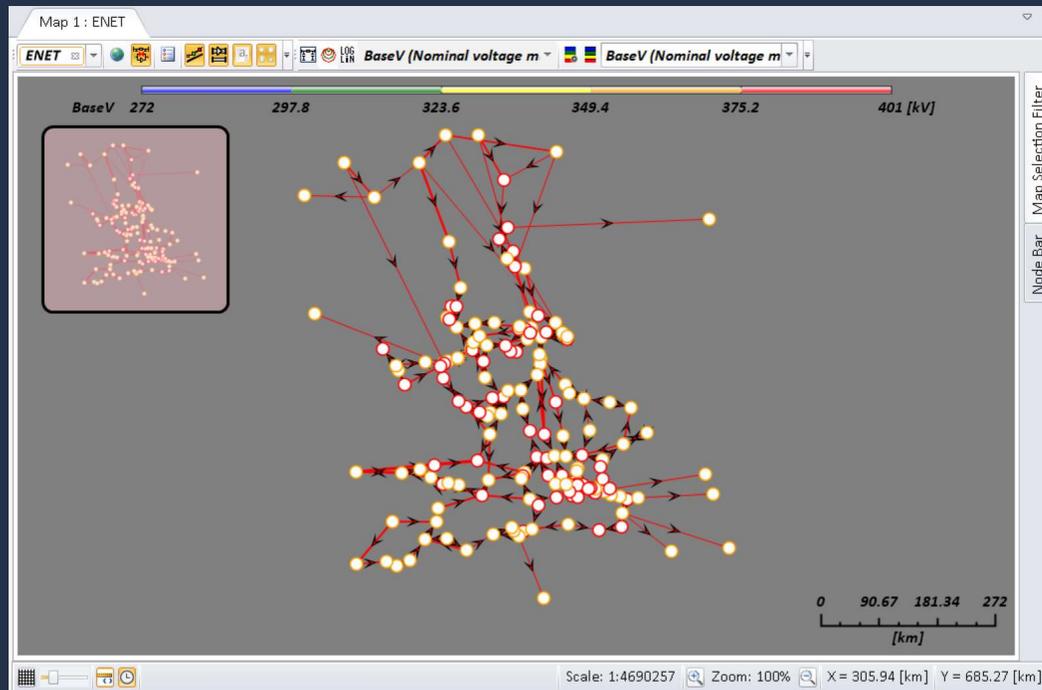
## AUSTRALIA

Finalising a programme to integrate LAES with solar to enable the retirement of coal generation & meet the Territory's objective to cut carbon emissions by half by 2030.



# A POWER SYSTEM APPROACH NEEDS TO BE TAKEN TO MINIMISE THE COST OF THE ENERGY TRANSITION

Whole grid system modelling ensures that LDES can be optimised and the benefits maximised all year round



- Benefits exceed a simple analysis of energy arbitrage
- Highview Power conducts detailed nodal modelling to confirm:
  - Constraint management
  - Voltage support
  - Inertia
  - Short-circuit level
- Stability island, compression MW, storage hours and generation MW can all be optimised

## **FOCUS ON SYSTEM BENEFITS OF LDES NOT DURATION OF STORAGE**

- A business case works in the UK using existing market mechanisms
- The challenges in the UK will soon become apparent in other regions
- Regulators, policy makers and system operators need to recognise the full benefits of LDES to allow further integration of renewables

# READY TO MEET THE CHALLENGES OF THE NET ZERO GRID TODAY

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