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Interregional Workshop 2

REPOWER INDUSTRIES

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Dec 3-4, 2024 | Milan, Italy



The Market Assessment structure and content for Industrial Energy independence and security in South East Region of Ireland

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<https://www.interregeurope.eu/repower-industries>



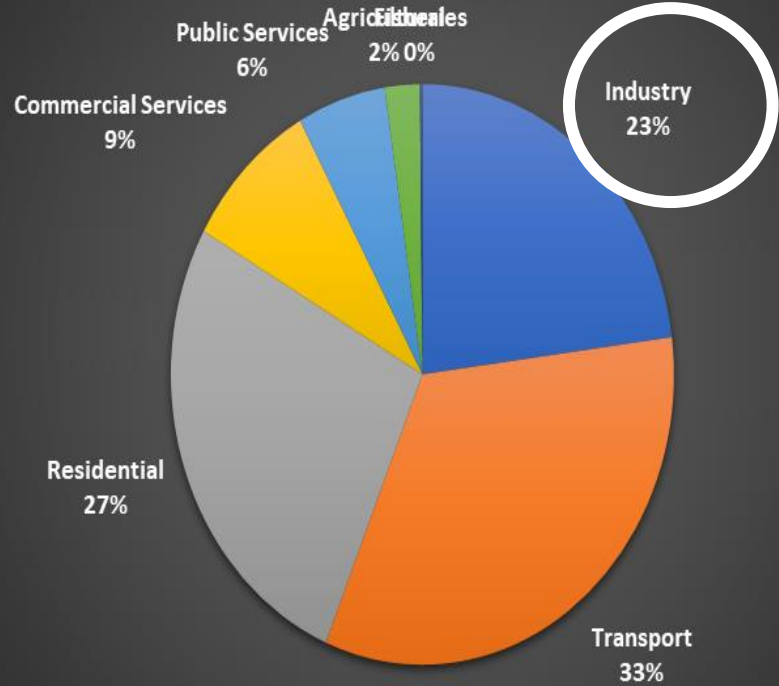
April 2024
June 2028

TOTAL
1.65 MEUR

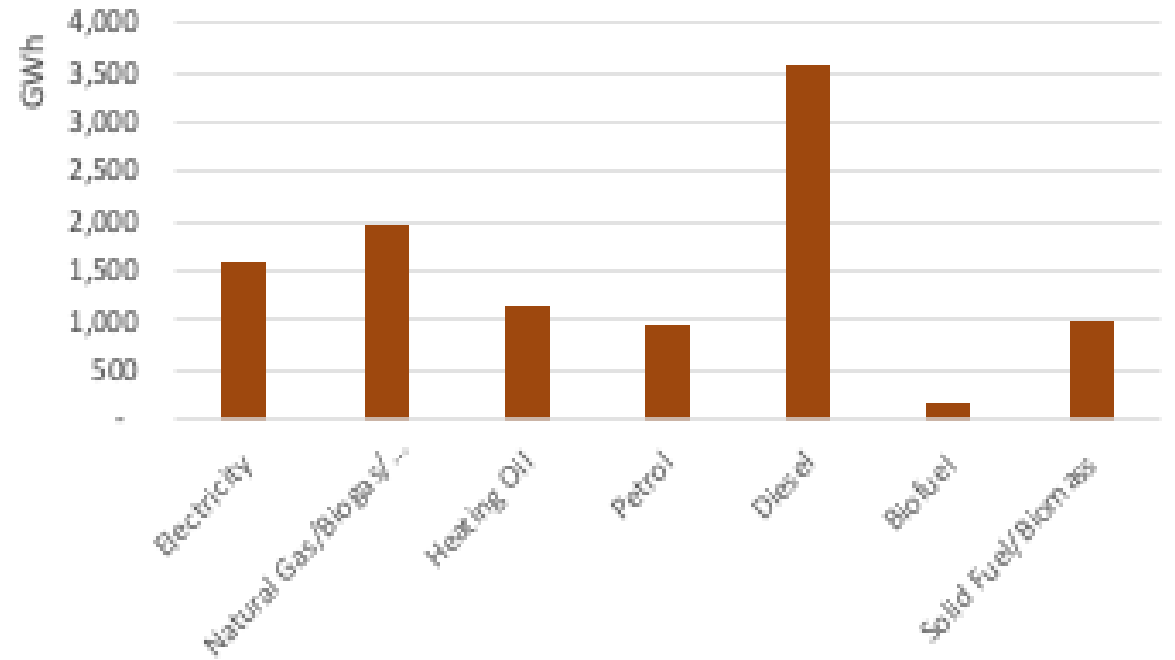


Overview of the Market Assessment

4 counties 2020 Energy Consumption

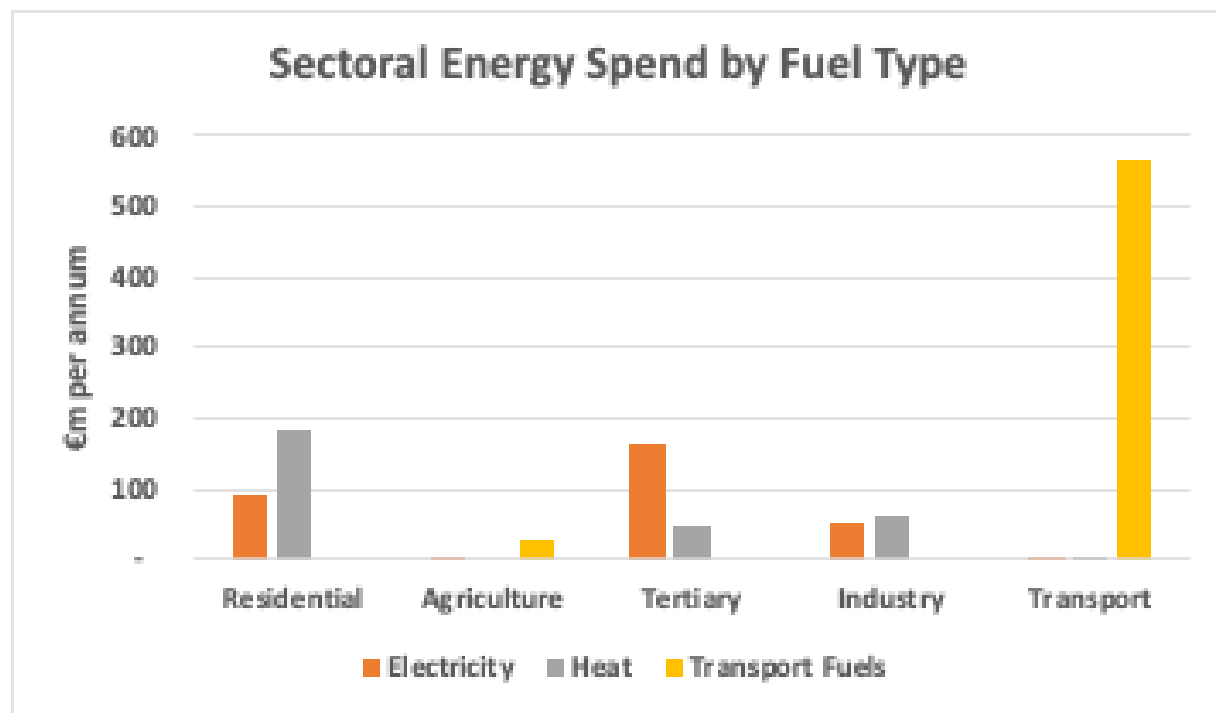
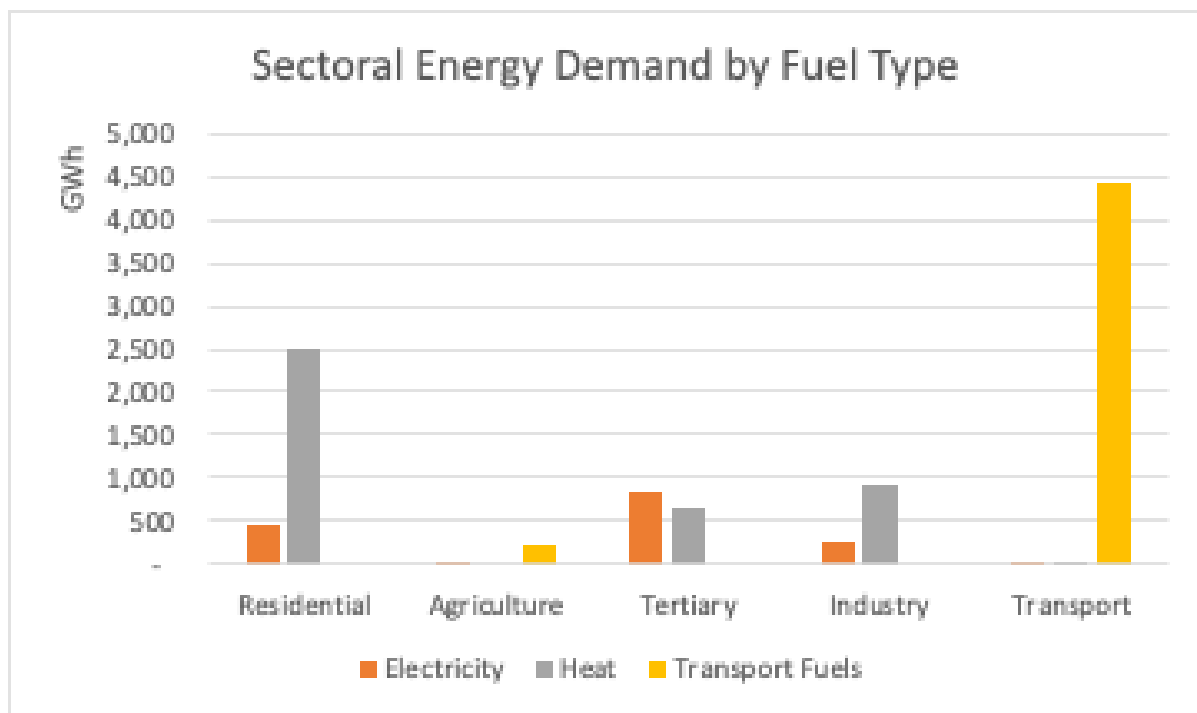


Energy Demand by Vector



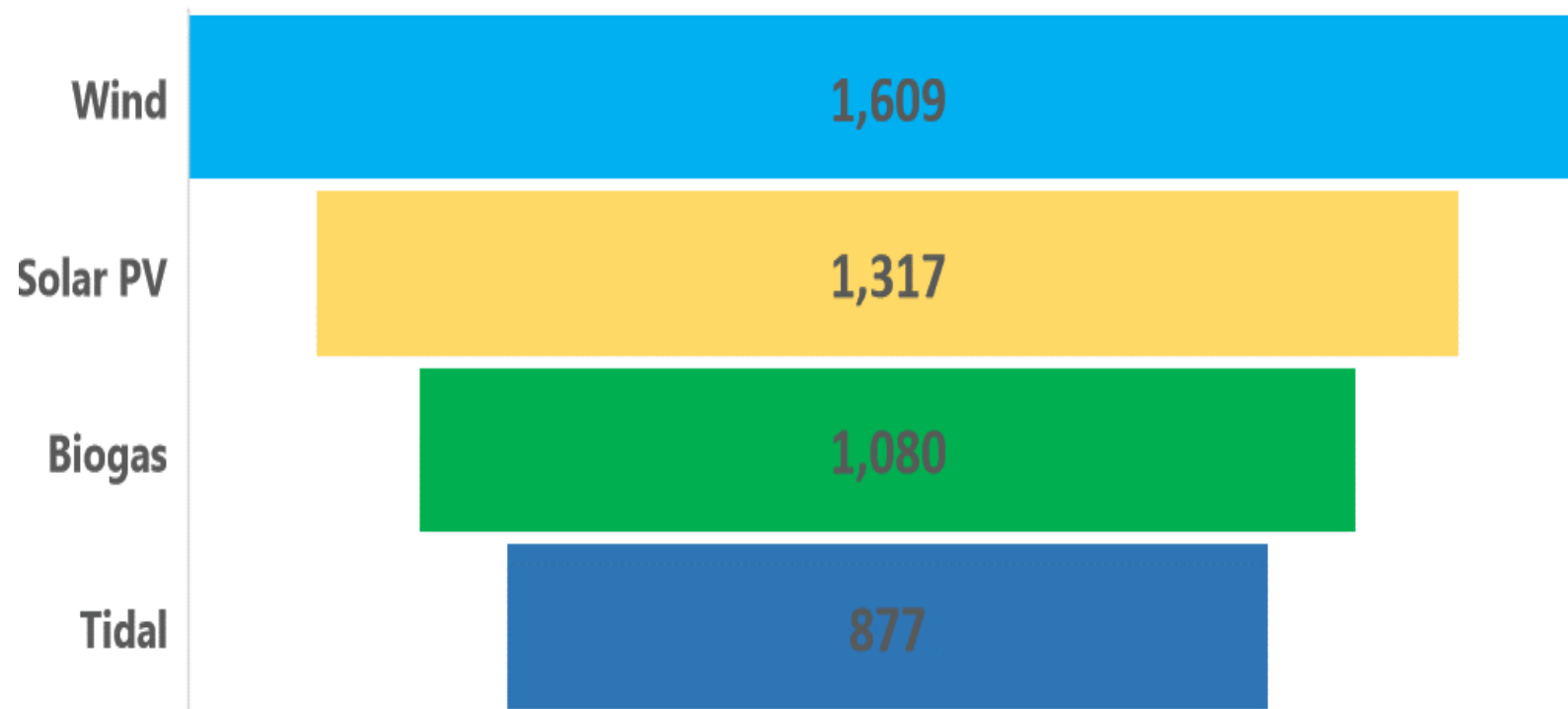
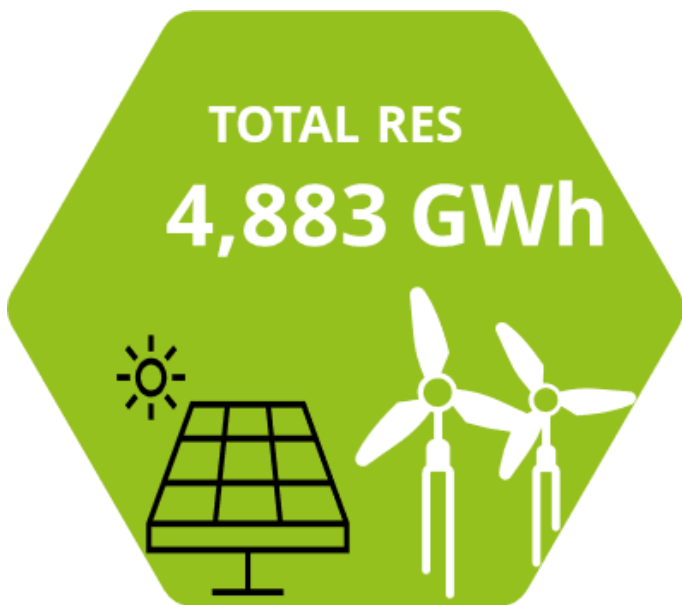
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Sectoral Demand by Energy Demand and Energy Spend



RES Opportunities in the South East region

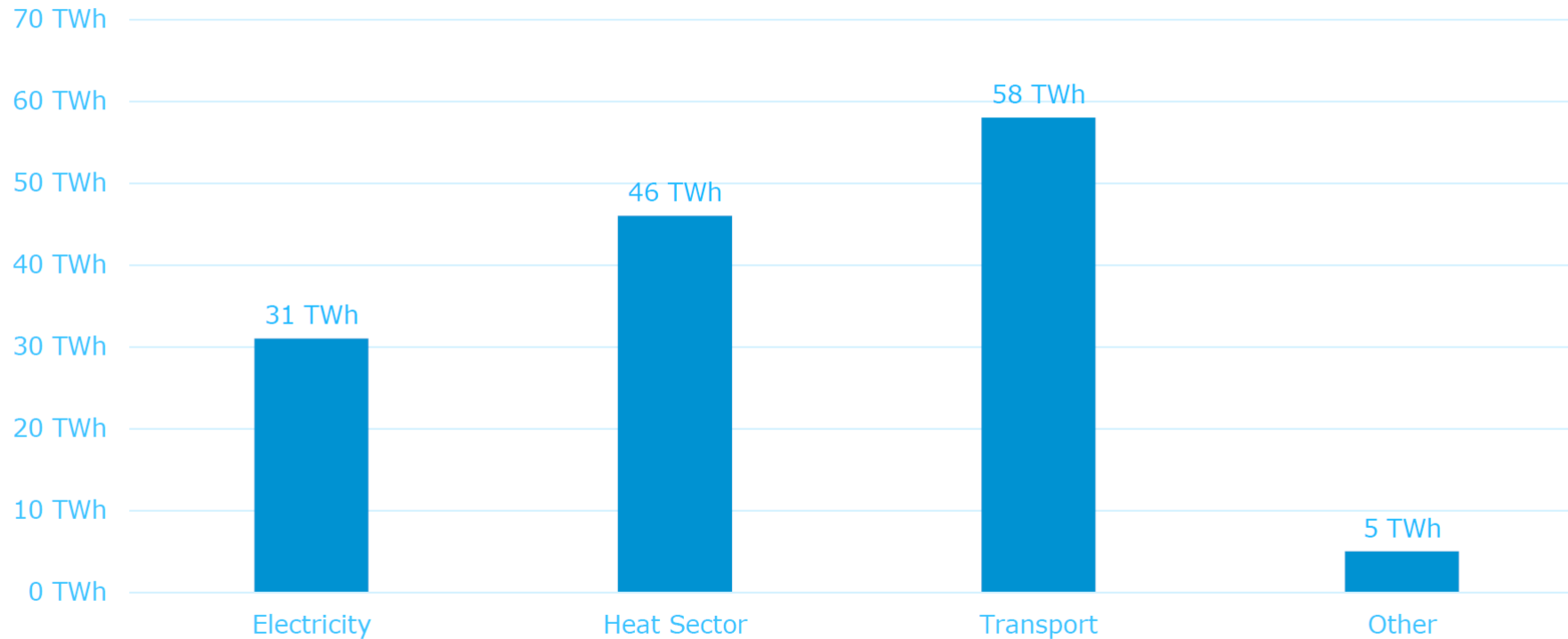
Indicative renewable energy in South-East region



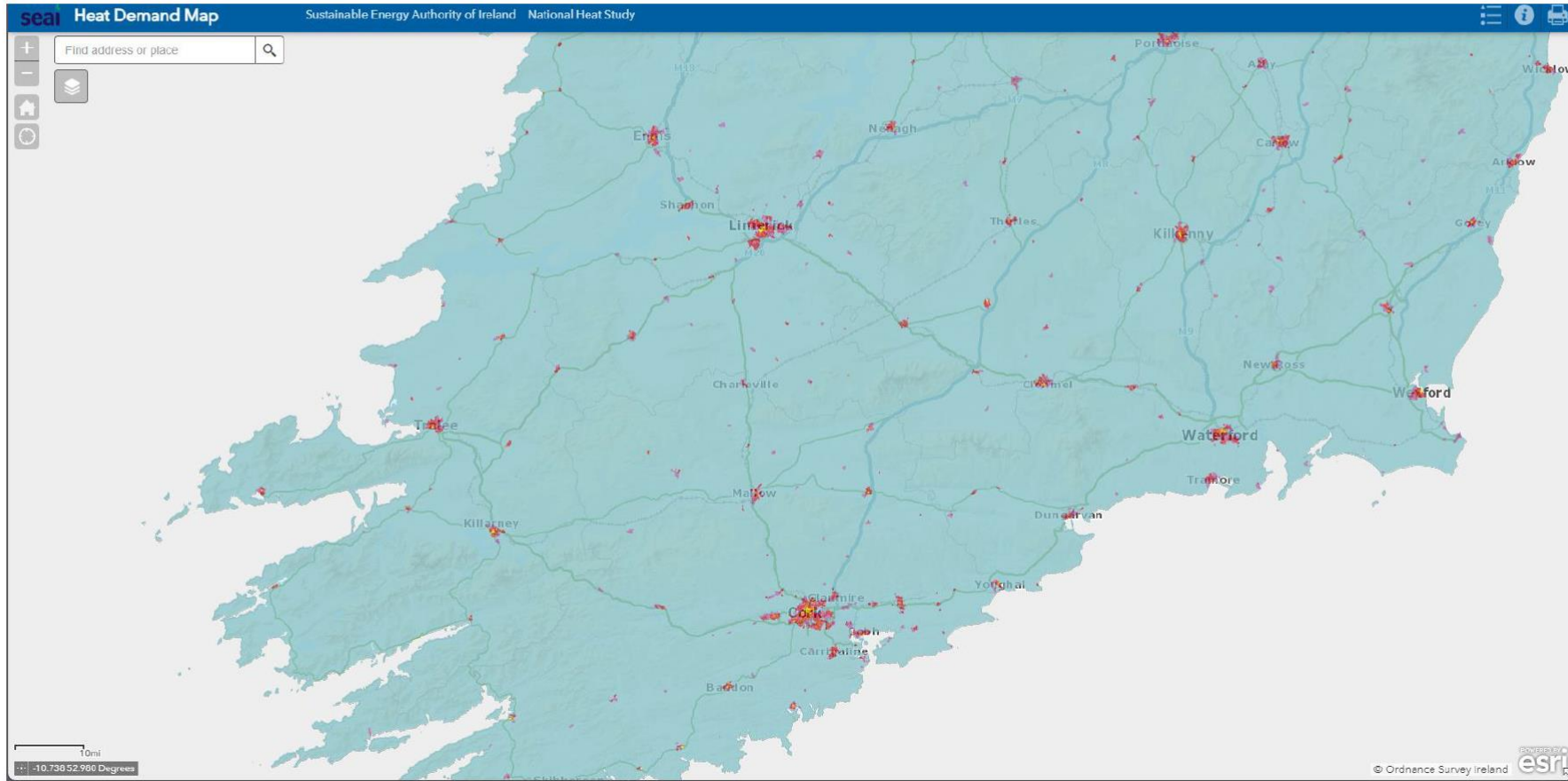
■ Potential Renewable Energy Production (GWh)

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Ireland's Final Energy Consumption

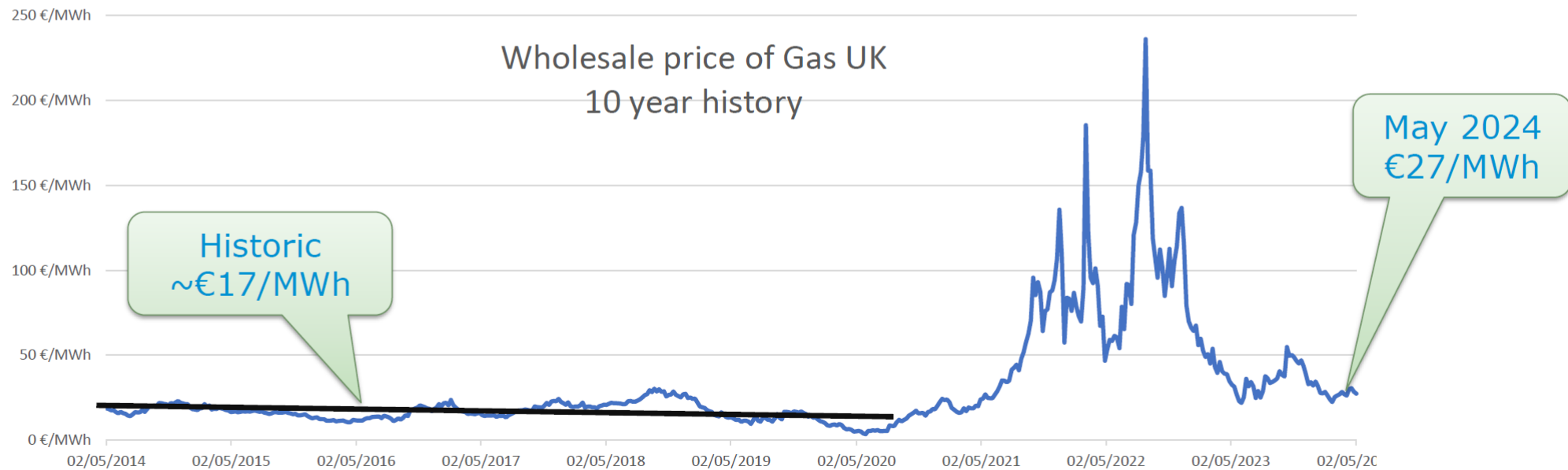


Distribution of Industrial Heat Demand



Gas - the incumbent

- Wholesale gas price currently €27/MWh
 - Historic Stability ~€17/MWh (before the invasion of Ukraine)
 - Stability allowed investment



Barriers to Achieving Energy Independence

Economic Factors

- High initial investment costs.
- Limited access to funding.

Technical Challenges

- Grid integration issues.
- Insufficient renewable infrastructure.

Regulatory and Social Barriers

- Complexity of permitting processes.
- Resistance to change.

National Taskforce 2024



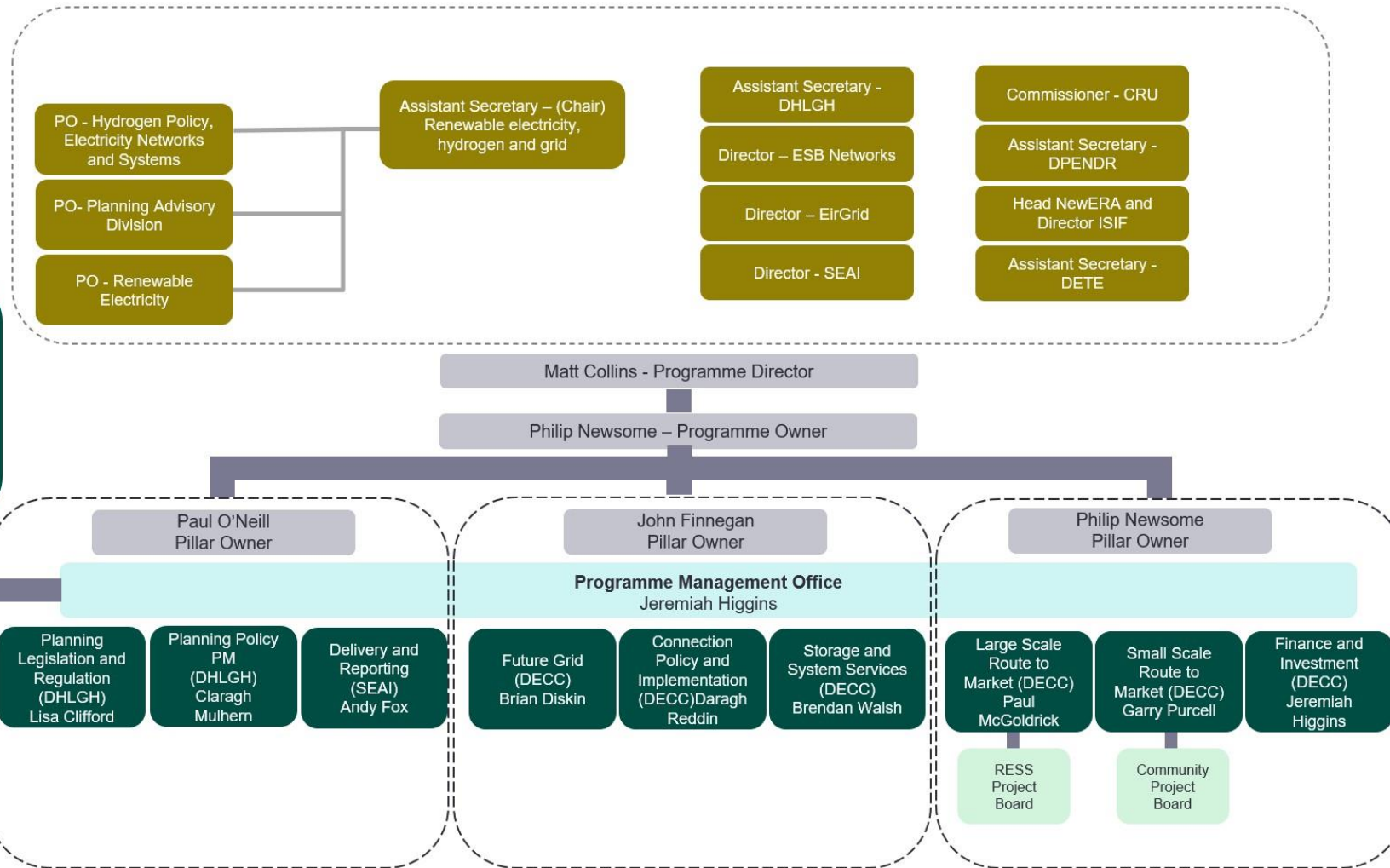
PMO structure for ARE Taskforce**

**Taskforce membership may be expanded in the future.

PMO*

- Governance and Risk
Dedicated
- Strategic Oversight
Quality Business Analyst
- Communications
Communications Lead

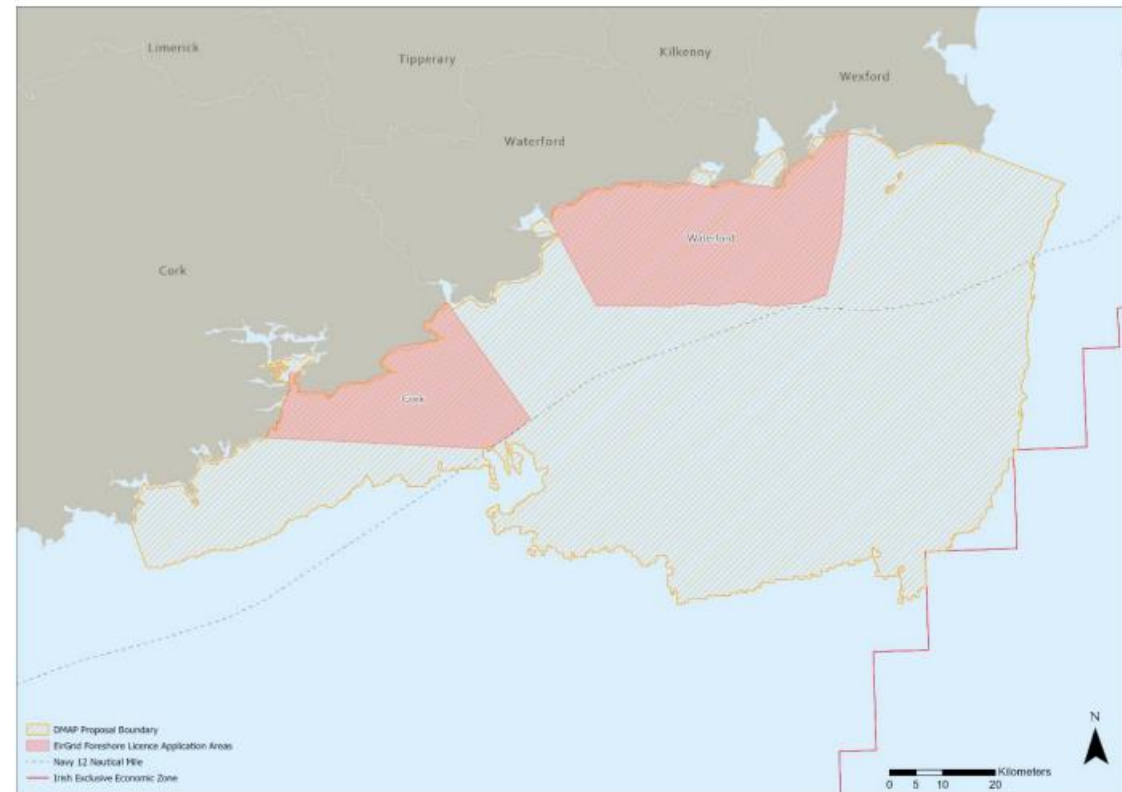
*Governance and Risk, Communications and Strategic Oversight apply across all WGs.



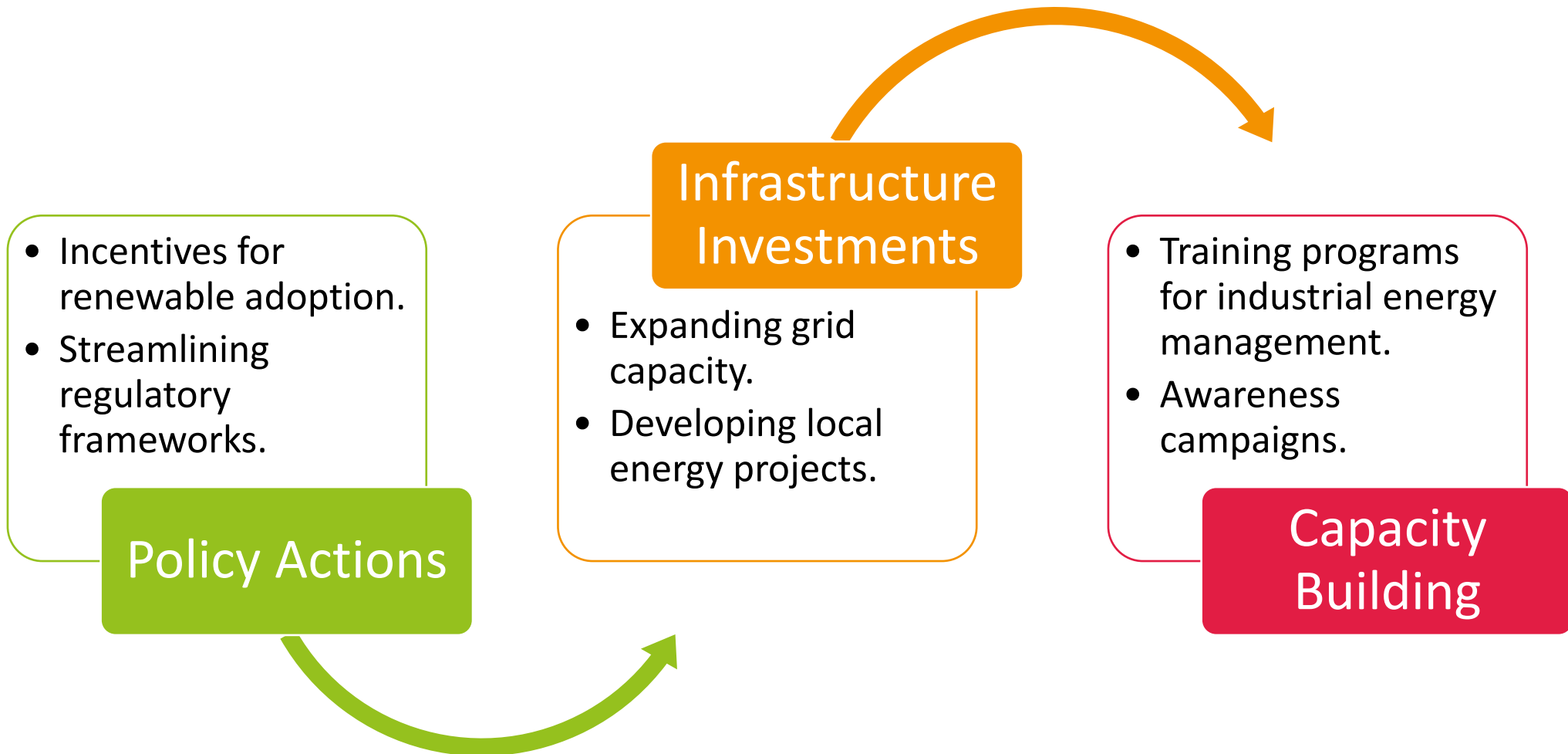
■ Taskforce members ■ Pillars ■ PMO Manager ■ Functions ■ WGs ■ Subgroups – data input only

Offshore Renewable Energy Strategy

- Initial deployment of up to 900 MW of offshore wind capacity in South coast by 2030.
- Additional deployment of 1.1GW by 2035.
- 2nd phase offshore renewable energy.
- Strategic for net-energy exports to Europe



Strategic Recommendations

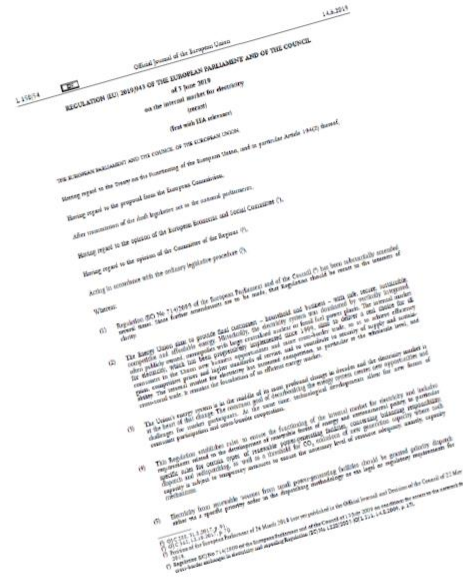


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Policy

Replace fossil fuels with renewable energy

Integrate renewables across heat, power and transport.....



2019/943 Electricity Market Regulation

Annex 1

"...non-discriminatory market access, empower consumers, ensure competitiveness on the global market as well as demand response..."

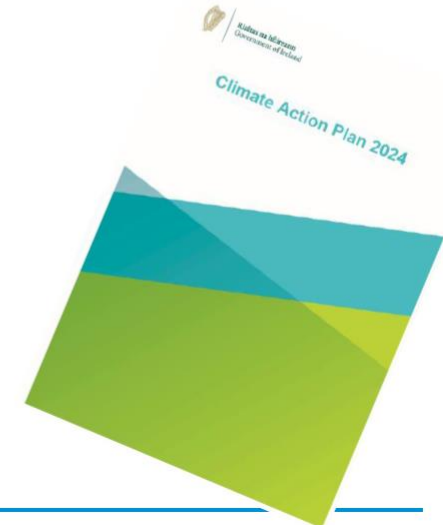
70-75% carbon neutral heating by 2030

Electrification ..displacing the use of fossil fuels ..

Flexible demand

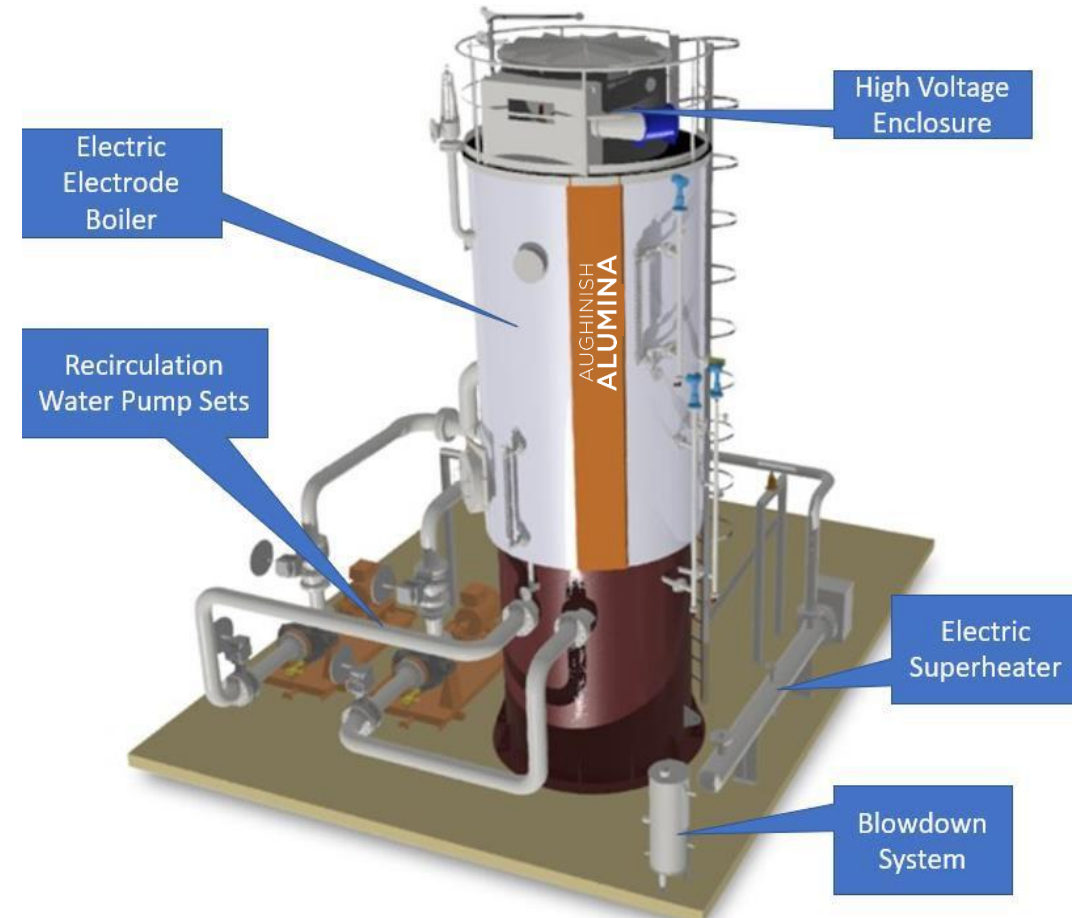
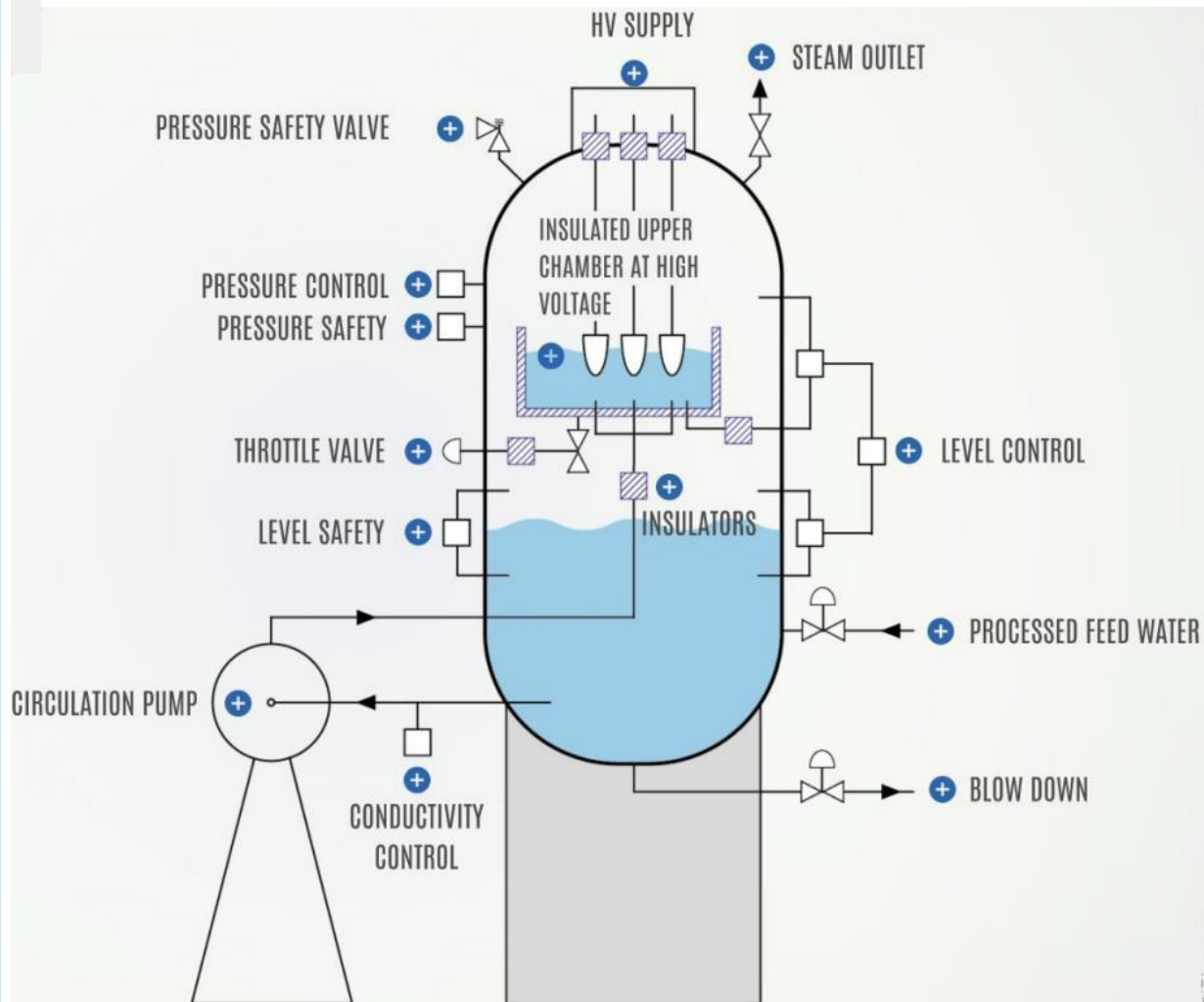
22GW RESe

Energy security of supply



Technology to electrify high temperature heat

ELECTRIC BOILER 25MW



CONSTRUCTION

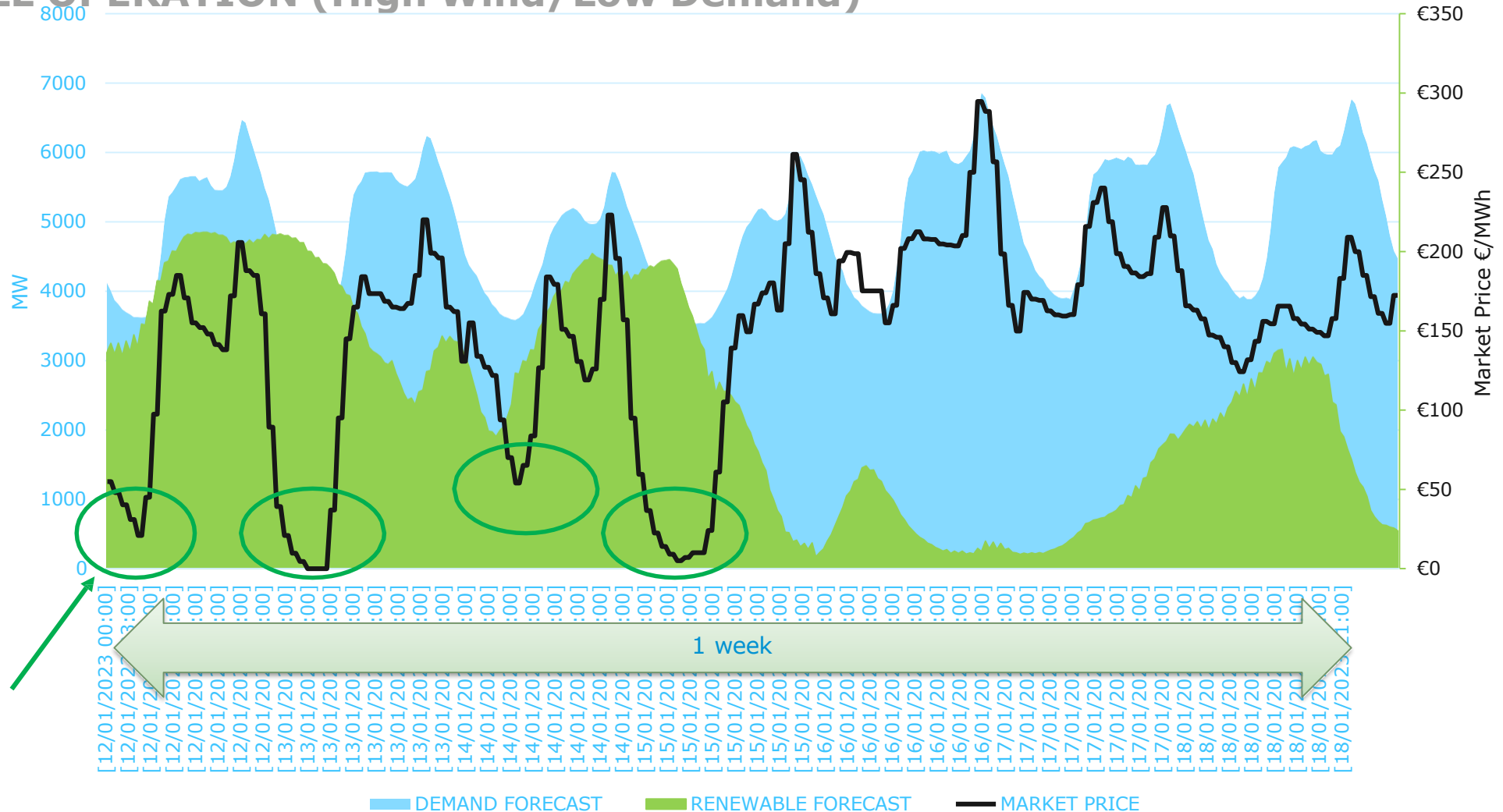
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WHEN DOES IT OPERATE

FLEXIBLE OPERATION (High Wind/Low Demand)

- Operate at high wind & High SNSP
- Do not operate at peak demand



Operation

1 week

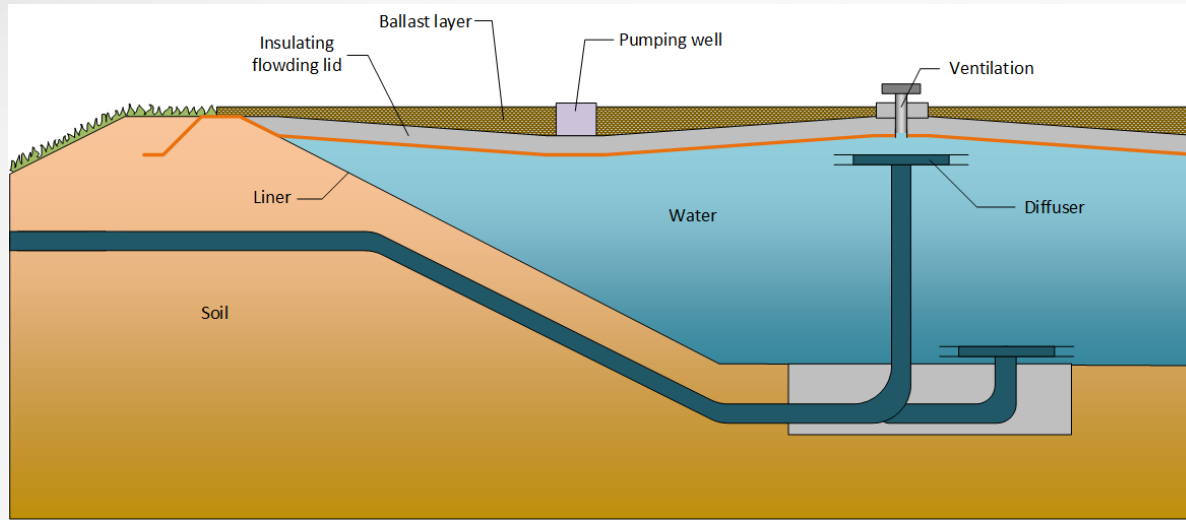
DEMAND FORECAST RENEWABLE FORECAST MARKET PRICE

RENEWABLE FOLLOWING ELECTRIFICATION

- ❑ High temperature heat electrification in manufacturing
- ❑ Decarbonisation
- ❑ Utilise indigenous renewable power better
- ❑ Demand flexibility – retain existing gas boilers
- ❑ Use existing grid capacity
- ❑ Carbon neutral heat



Low temperature thermal storage is cheap



Applications:

- District heating
- Lower temperature industry



Study finding:

Thermal storage Vs battery storage

- Multiple life span
- Small foot print
- Fractional cost

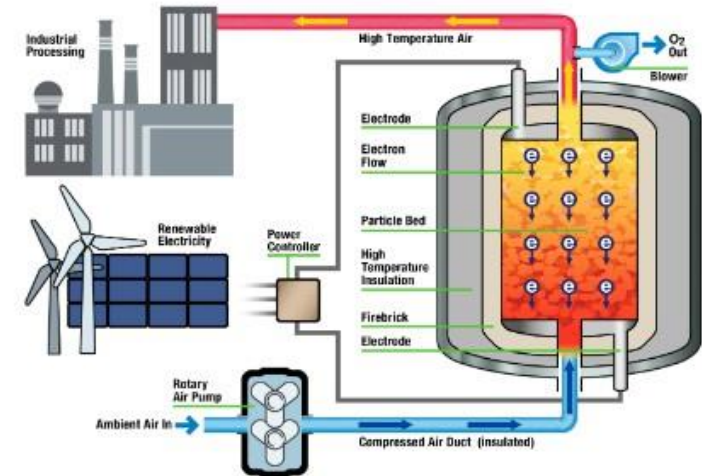
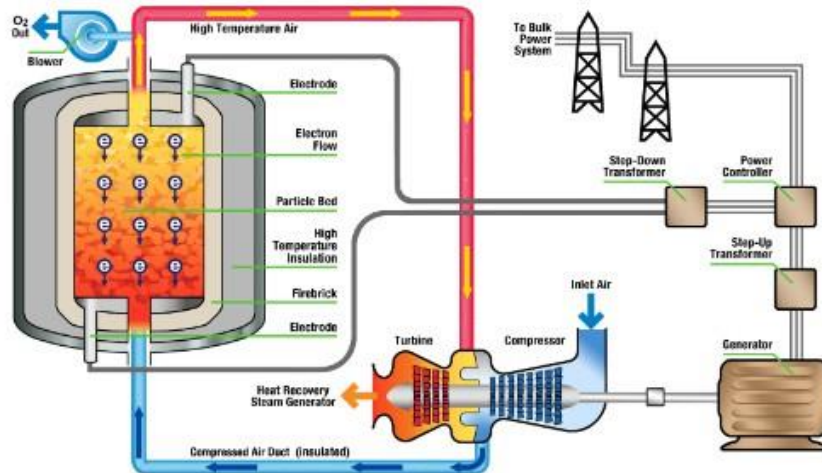
Thermal Storage is coming


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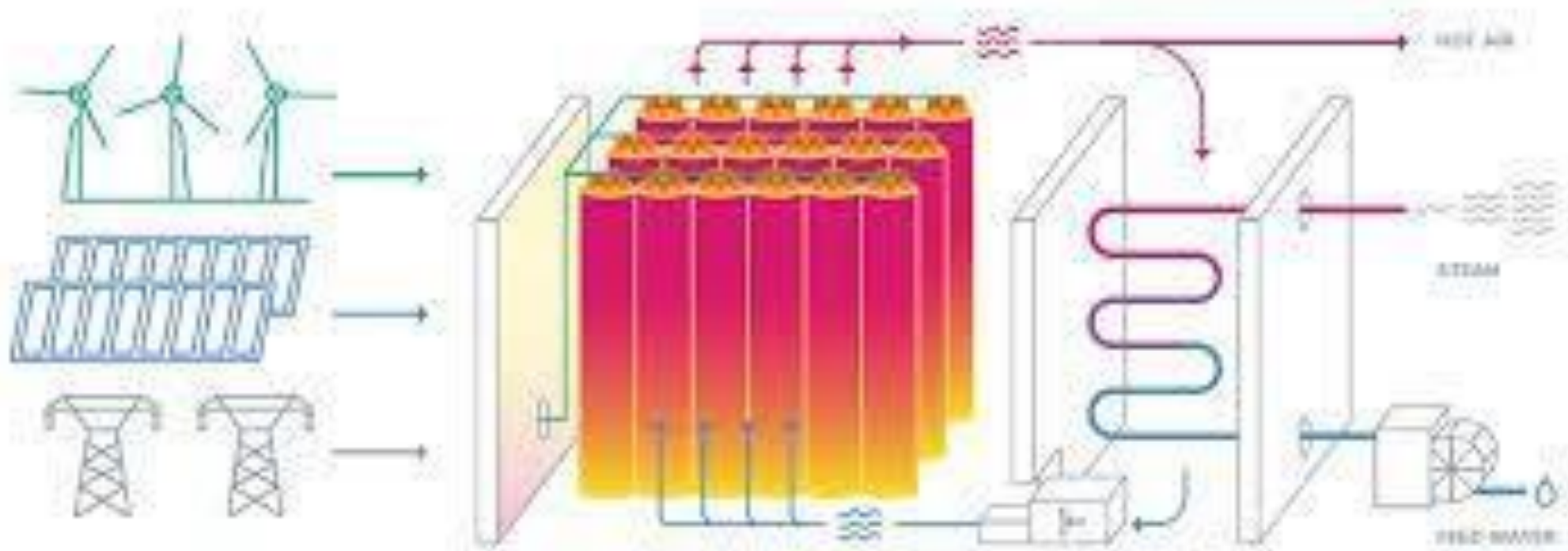
TECHNOLOGY

How it works

A technology that enables zero-carbon reversible combustion.


[Learn more](#)

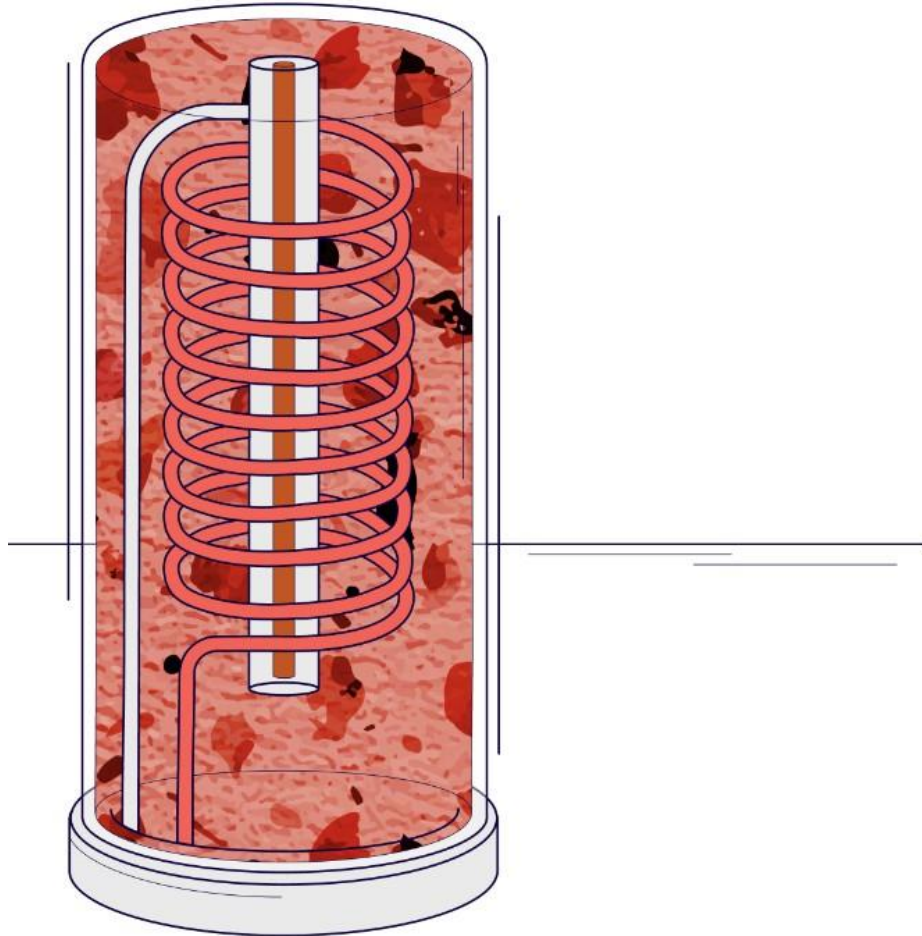
Thermal Storage is coming



Thermal Storage is coming



Thermal Storage is coming

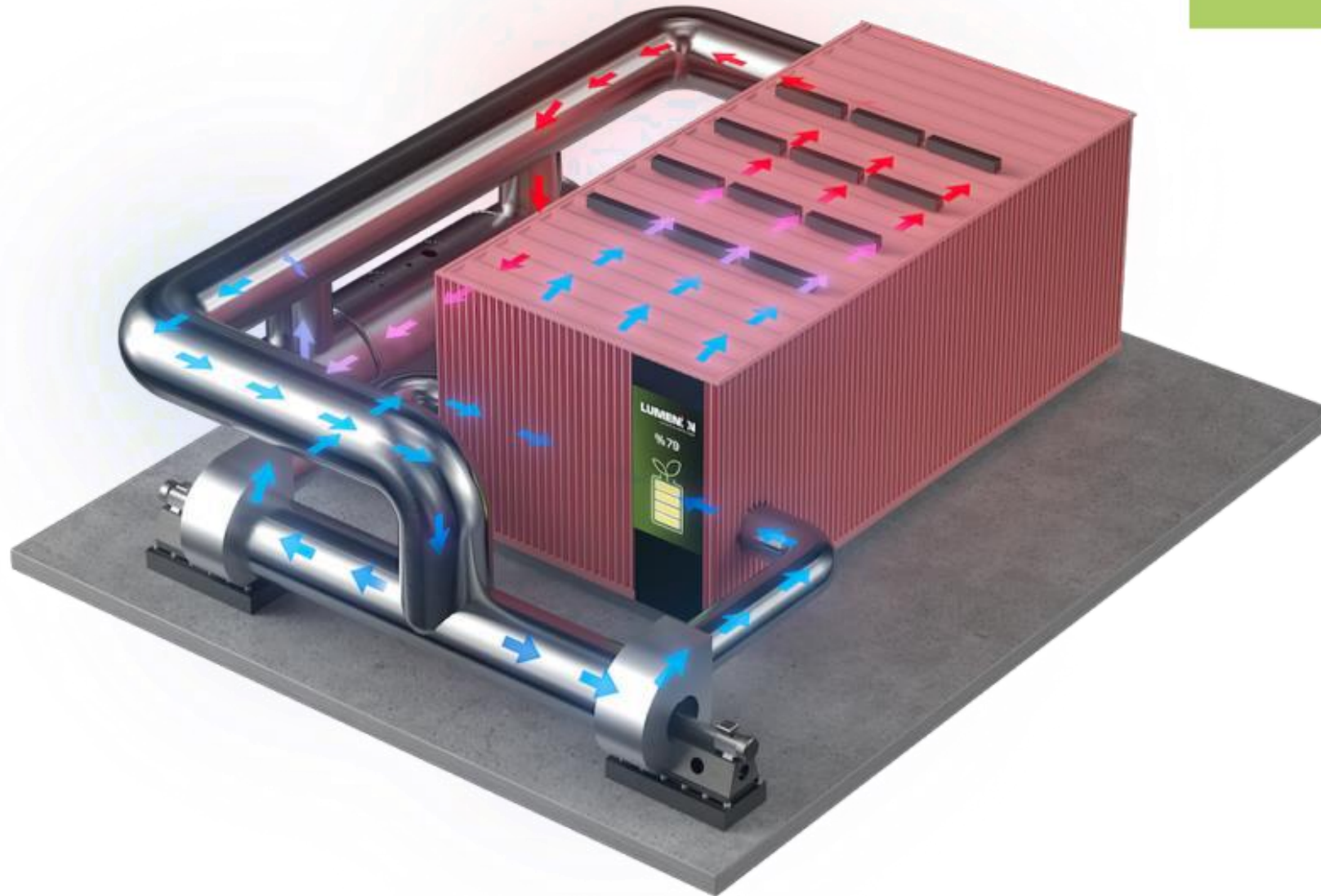


Solid Core

Each heat cell contains a solid core, made from Caldera's proprietary composite of recycled aluminium and volcanic rocks. This 'supermaterial' has a high energy density and is conductive, durable, and affordable. Recycled aluminium comes from sources such as used car engine blocks and incinerator waste, creating a demand for this low-grade metal. Molten aluminium is poured over volcanic rock to create a solid core, and this process can be reversed should product reach the end of its useful life.

Heat cell cores are heated from electricity using straight-forward electric elements. Thanks to the high conductivity the heat spreads throughout the block. Cores are considered 'full' when they reach 500°C. They are 'empty' when this temperature drops back down to around 200°C (depending on the application).

Thermal Storage is coming

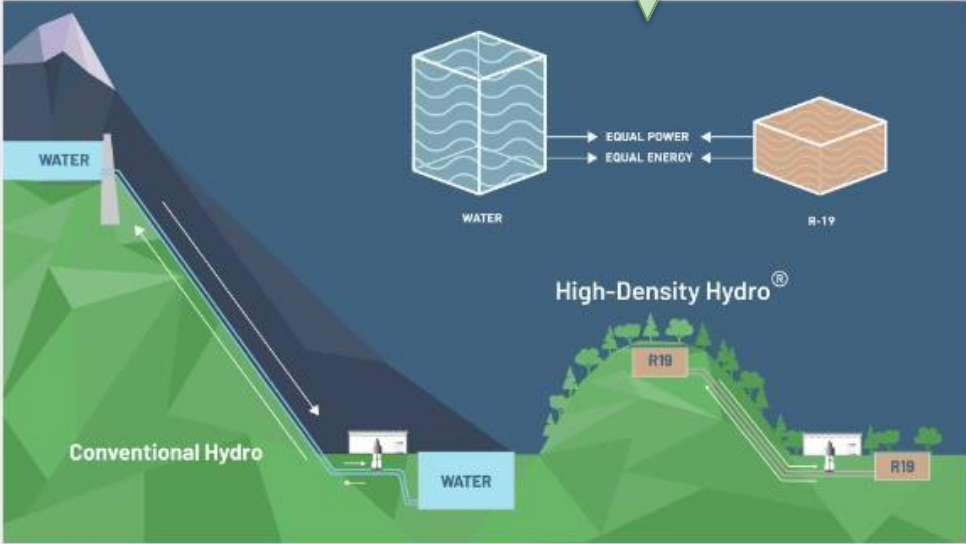


Gravity Storage is evolving



Suspended Concrete, 25MW/200MWh

High-density Fluid



Thank you!



www.interregeurope.eu/REPower Industries