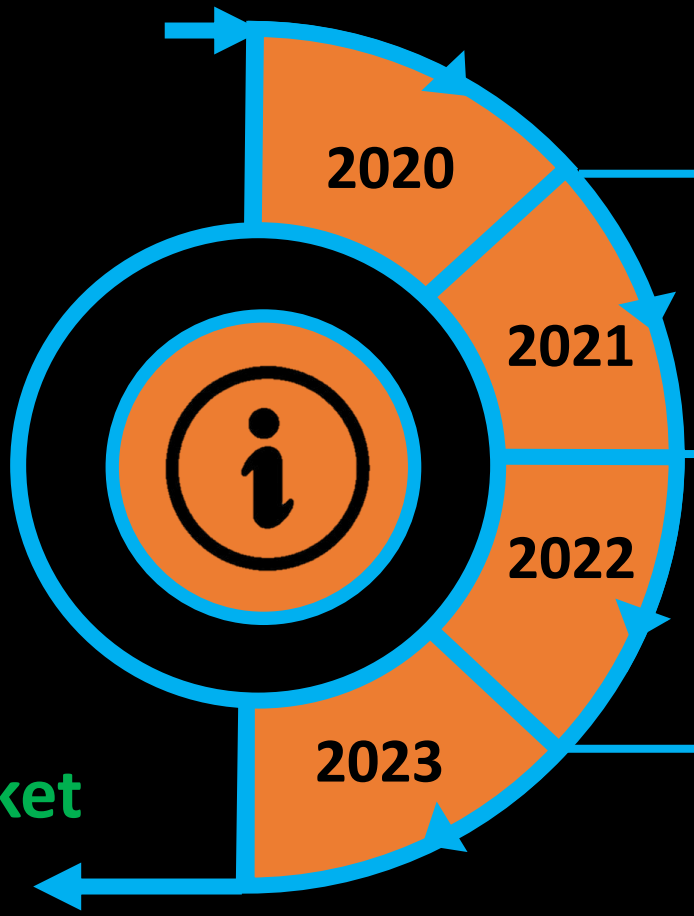
CeraPhi energy™

Multi Award Winning Start-up

Changing the way, we use Energy

Source : CeraPhi Energy

Key Facts…



Company Founded in UK
Privately Owned

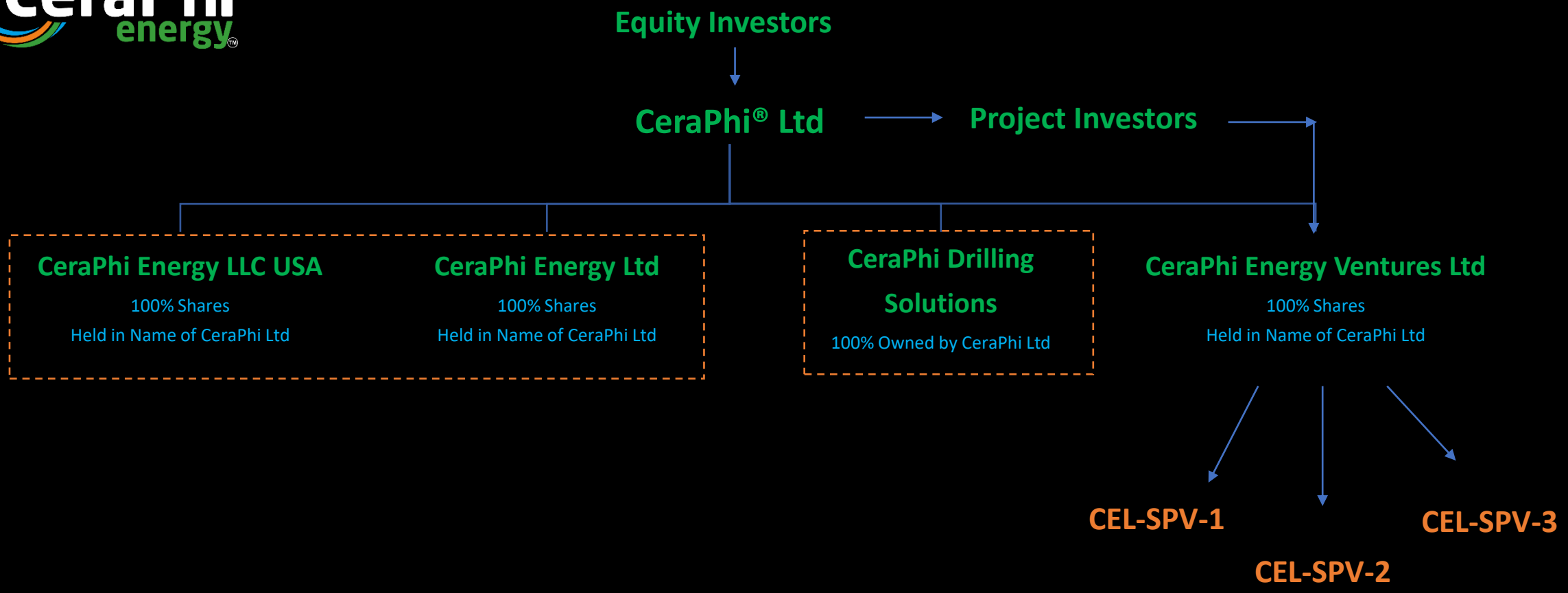
>30 Novel Innovations in 3 Patents
Registered UK, Europe, USA, Canada, Australia

Raised >£2.7m Investment
& >£2m Grants

Delivered first world's first gas well conversion to Geothermal at 2100m Using our Proprietary CeraPhiWell™

2024 Going to Market with >£300m of development projects

Facts Source : CeraPhi Energy



The Structure …

Stand Alone Project Specific SPV's for purpose of investment Allow more Equity Split for Investors

Structure Source : CeraPhi Energy

Locations ...


UK
Great Yarmouth
London
North America
Houston
Middle East
Dubai
South America
Rio De Janeiro

Meet the Team...

MANAGEMENT BOARD

Karl Farrow
Founder - CEO

Gary Williams
Founder - COO

Russell Hoare
Financial Officer

Management Team

Ken Seymour Ph.D.
Operations Manager

Nezar Afshar
Commercial Manager
MENA

Higinia Torregrosa
Commercial Manager
USA

Farley Vilaca
Commercial Manager
LATAM

Sital Joshi
Project Ventures

Ralph Hardwick
HSE Q

ADVISORY BOARD

Horacio Carvalho
40 Years
Carbon Markets, Fund Management

Chris Sladen PhD, CBE
40 Years Retired
BP President LATAM, Geosciences Energyv

Celia Anderson
20 Years Renewables UK Director, STEM, Skills for Energy Founder, DTI

Marc Jones
25 Years
Finance & Banking
RBS / JPMC

Catherine Rattray
Practicing Solicitor
Energy and Climate

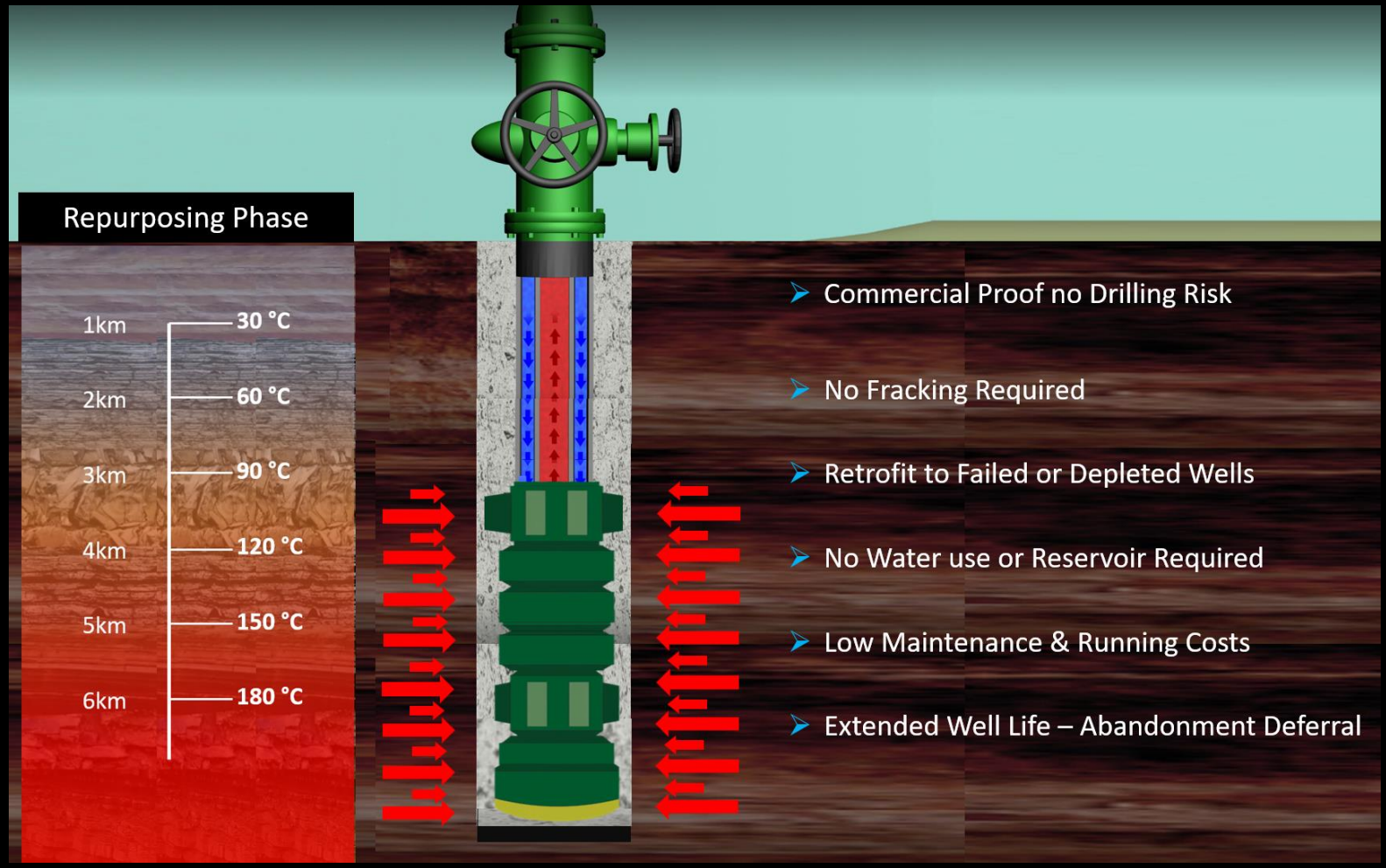
Ilse Bermudez
15 Years Corporate Responsibility Local Content

Musa Taramov
30 Years Well Stimulation Fluids Specialist

Richard Nugee CB CVO CBE
30 Year Army - Retired
Lieutenant General MOD
Climate Policy

Technology & Innovation

Advanced Closed Loop Geothermal

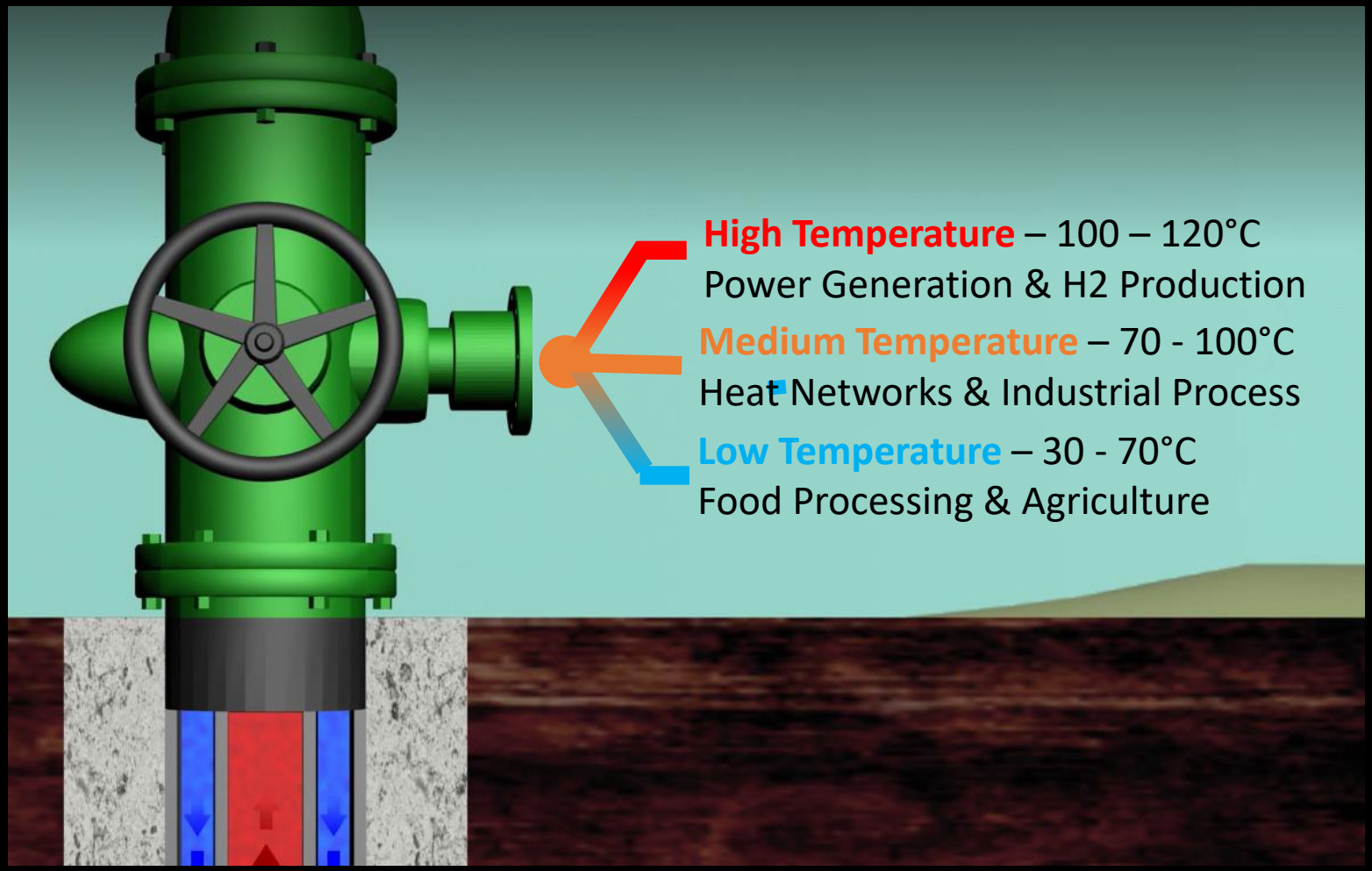


Europaisches Patentamt
European Patent Office
Office européen des brevets

Intellectual Property Office

* 3 Patents Filed >30 Technical Innovation Claims – EIS Qualifying

Energy Offtake

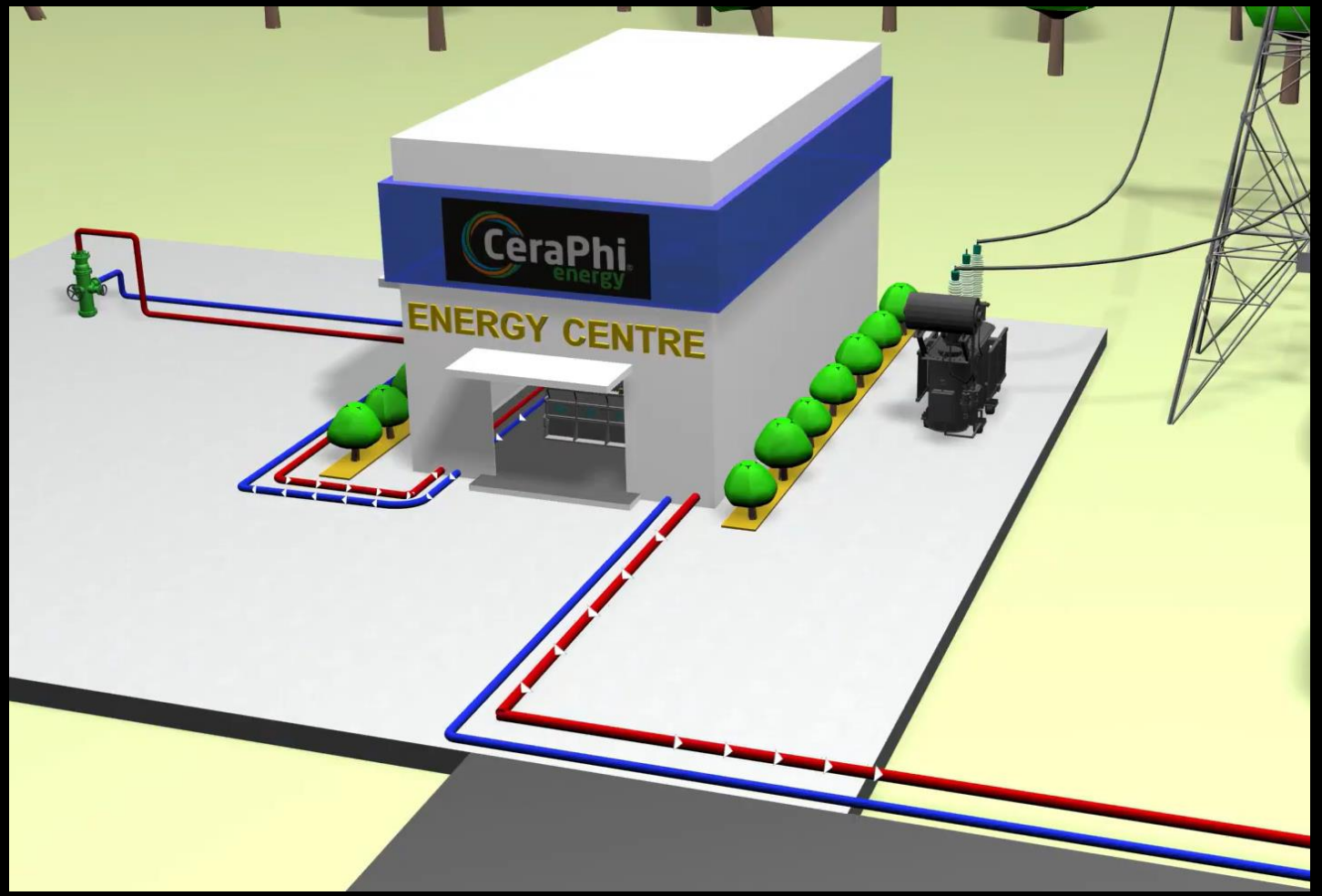


Europaisches Patentamt
European Patent Office
Office européen des brevets

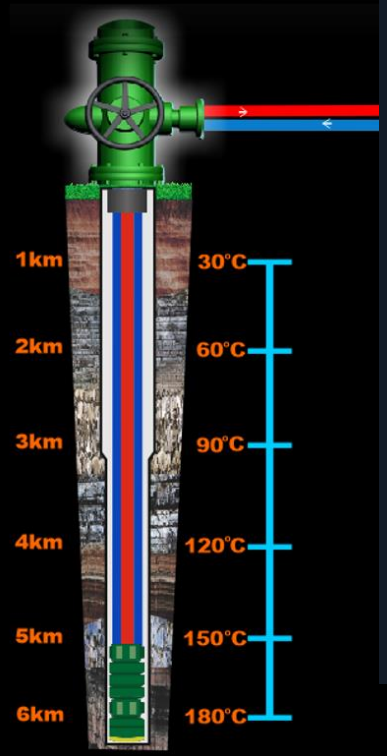
Intellectual Property Office

Energy Centre

- Power
- Heat
- Cooling

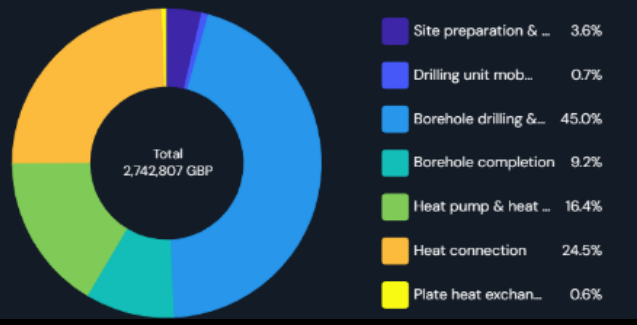


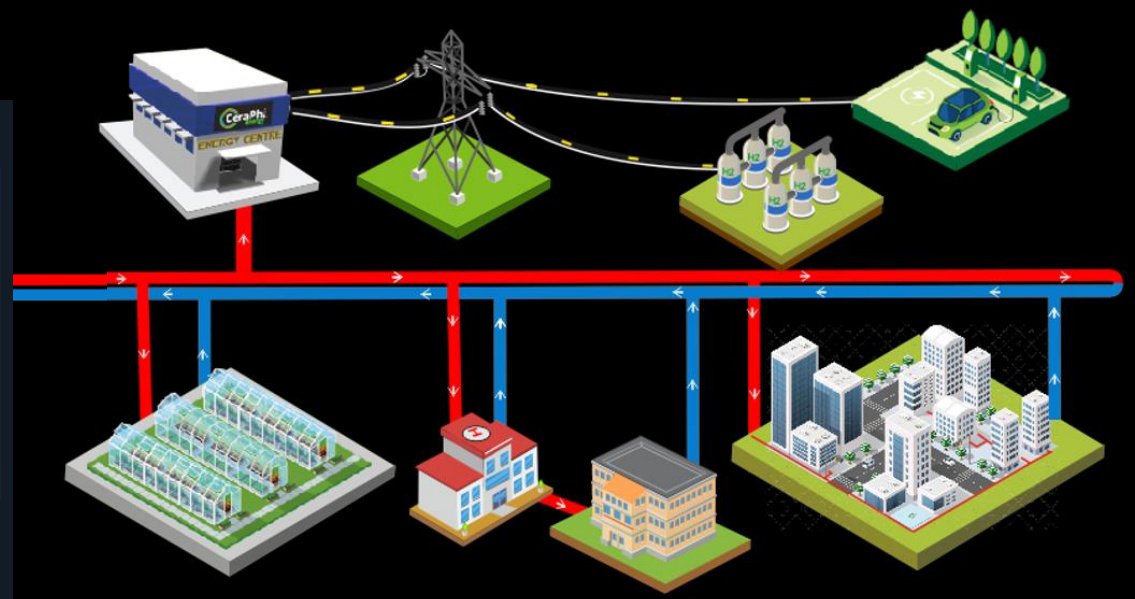
CeraPhi gen



Heat Pump Assisted Borehole

CAPEX Operation	Cost (GBP)
Site preparation & civil engineering	100,000
Drilling unit mob/demob	20,000
Borehole drilling & construction	1,233,000
Borehole completion	252,000
Heat pump & heat exchanger installation	450,000
Heat connection	672,000
Plate heat exchanger	15,807
Total	2,742,807





Dispatchable Energy Anywhere

Europaisches Patentamt
European Patent Office
Office européen des brevets

Intellectual Property Office

CeraPhi pro

Business Model

Repurpose Reuse…

Million’s End of Life Oil & Gas Wells

Liabilities on companies balance sheet
Ultimate Responsibility Taxpayer
Environmental Issue

End of Life, No Value, Abandoned

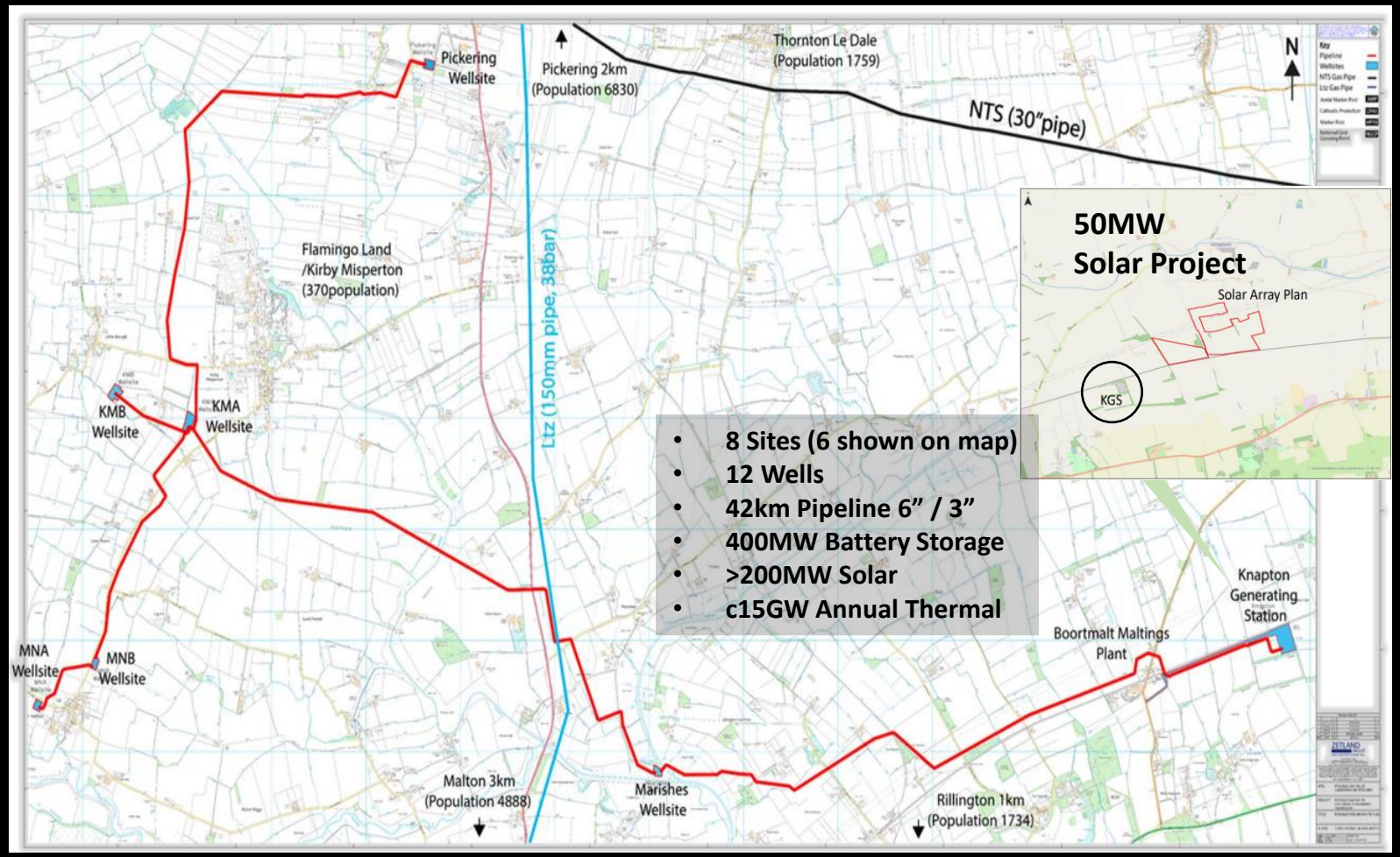
Cost to Close, Zero Upside, Zero Incentive
Transfer of Liabilities
Deferring the P&A, No Capital to Rectify

Change of usage to Clean Energy

Change of ownership
Change of usage, Re categorize Status
Flipping liabilities to Assets
Supporting Energy Transition

Acquisition of Third Energy…

- Relinquished Licenses
- Request to removed P&A notices
- Maintaining Liability to P&A
- Working to recategorize Wells



District Heating Projects…

Existing Wells (KM5 & KM4)

Little Barugh

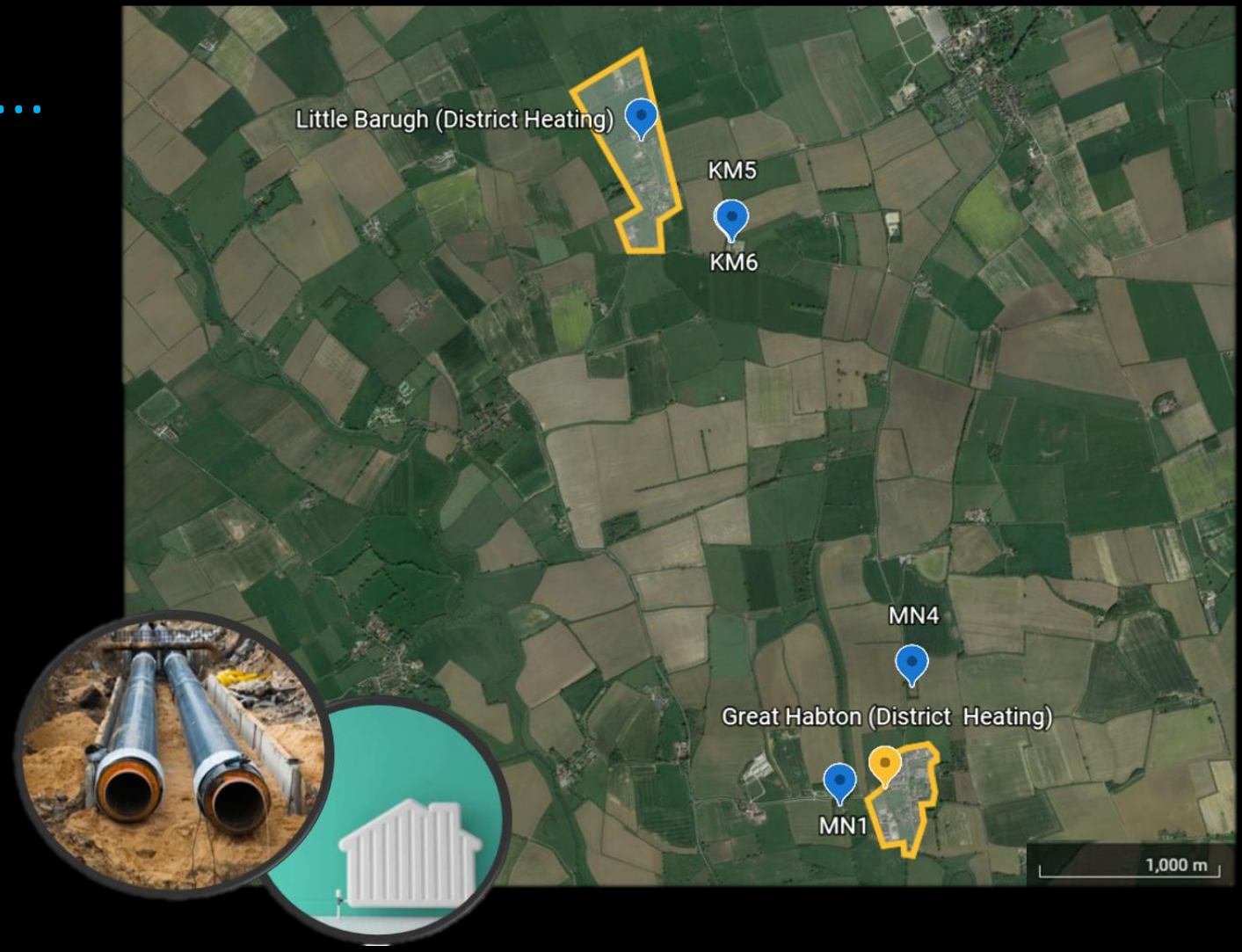
21 Connections 0.26 MWth Heat Demand

Potential Heat Supply of 1.025 MWth

Great Habton

76 Connections with 0.61 MWth Heat Demand

Potential Heat Supply of 1.3 MWth

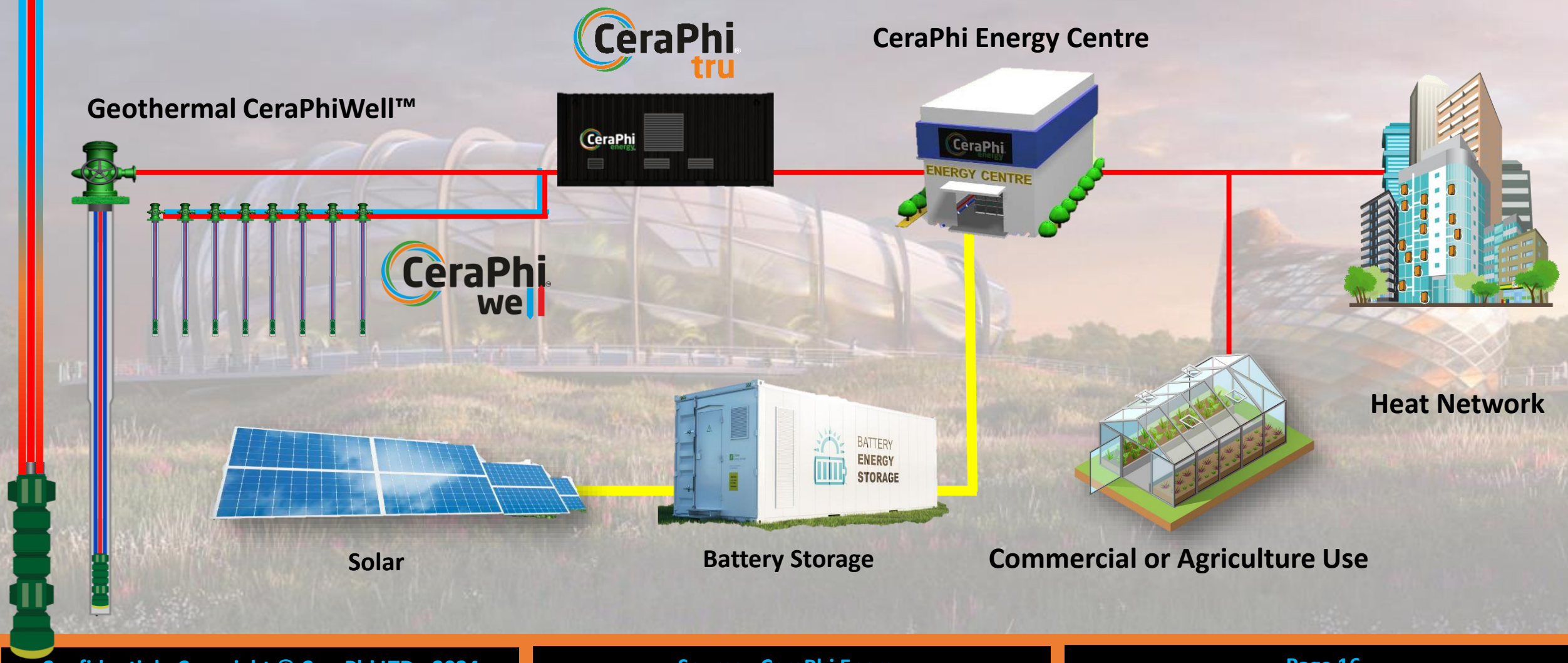


Source : CeraPhi Energy

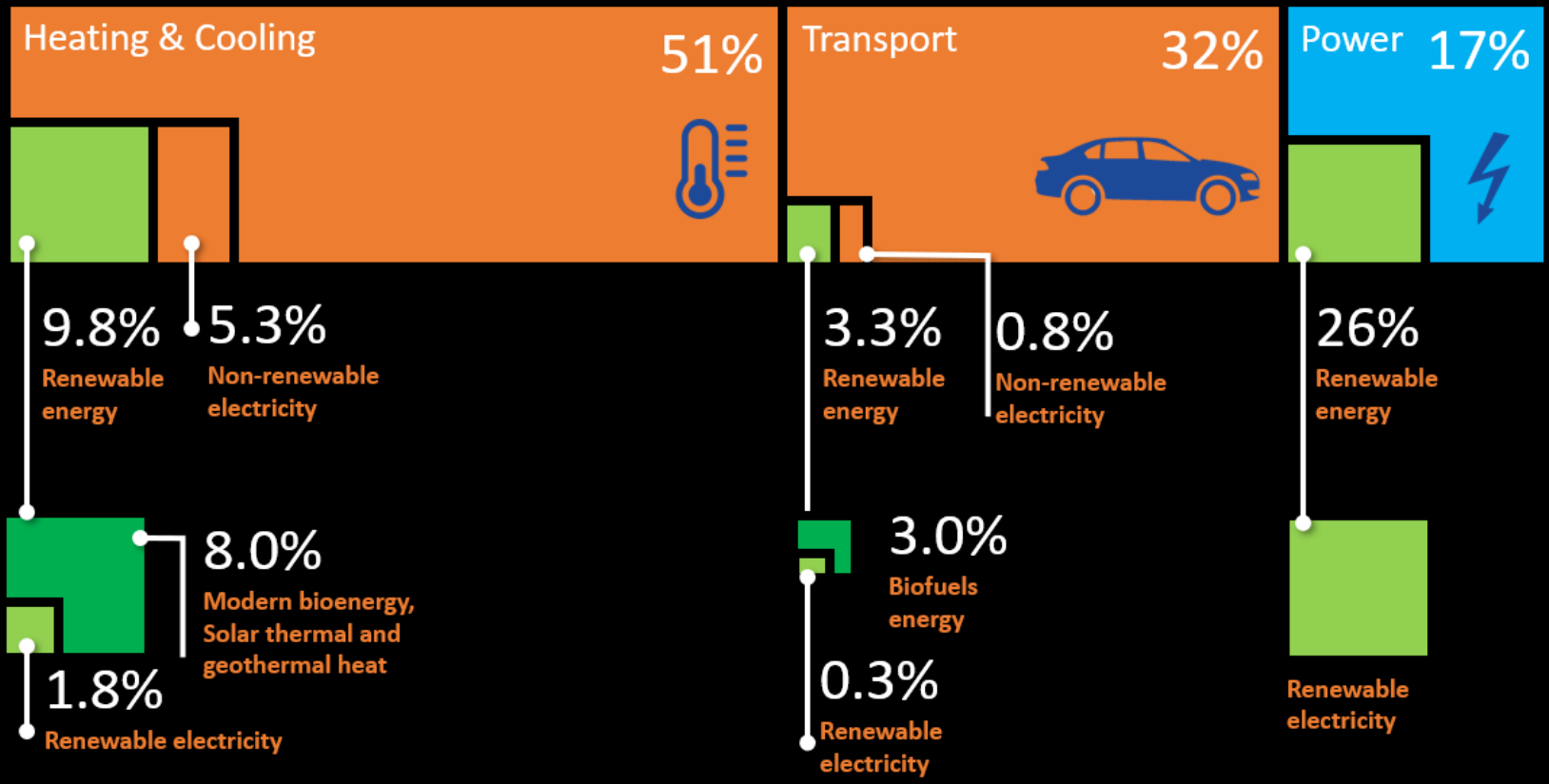
District Heating Projects…

- Shovel Ready Site no Planning Issues
- 87% Local Community Approval
- Local Enterprise Support
- Government Grant Support
- Scalable Commercial Offtakes
- Offgrid - Zero Grid Connection Issues
- Community and Social License Value
- Carbon Credit Building

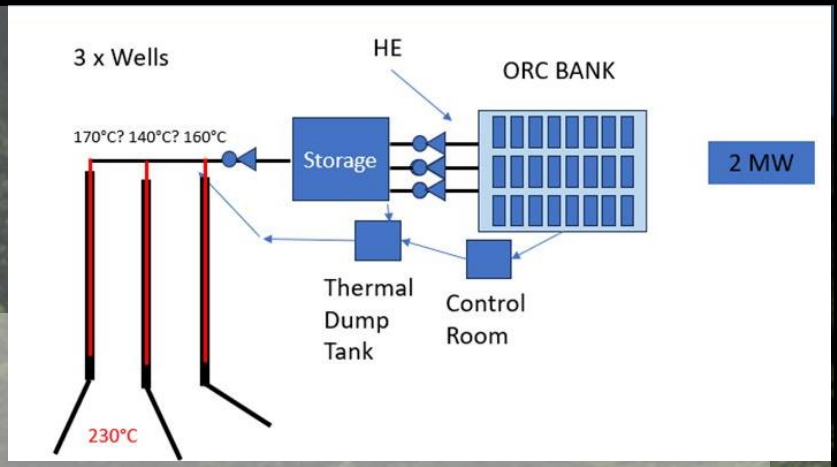
Typical Development Design



- University Campus
- Hospitals
- Business & Retail Parks
- Local Authority Properties
  - Offices
  - Townhalls Libraries
  - Schools
  - Sports Facilities
  - Swimming Pools
- Agriculture
- MOD
- Commercial and Industrial
- New Build Developments



Power Generation Project…



- Government Backed Joint Development Agreement
- 80% CeraPhi Owned SPV
- 400 Acre Geothermal Development Licence
- Power Purchase Agreement for 25 Years
- Phase 1 - Three Wells Producing >2 Mwe using ORC's
- Phase 2 – Additional Power Green Hydrogen Development for Cruise Ship Industry

Offshore Well Reuse – Magnus Case Study

2023 CeraPhi was awarded a development study from the Net Zero Technology Centre to evaluate the feasibility of repurposing offshore wells for Geothermal use with EnQuest Magnus platform being used as the base case.

Main objective was to assess the potential of geothermal energy in 3 scenarios:

- ✓ Co-production whilst still producing hydrocarbons
- ✓ Repurposing wells for closed loop geothermal post decommissioning
- ✓ Repurposing wells for open loop geothermal post decommissioning

Offshore Well Reuse – Magnus Case Study

7 Work Packages in Total.

5 Work Packages energy available: the produced water and the wells.

1 Work Package reviewed use of proven ORC technology (Organic Rankine Cycle) for electrical power output.

Final Work Package drew on these options for Magnus during the current and future operational stages, what opportunities could be considered for the UKCS.

Offshore Well Reuse – Magnus Case Study

28 well slots on Magnus

25 in production, only those wells were considered for repurposing in the study.

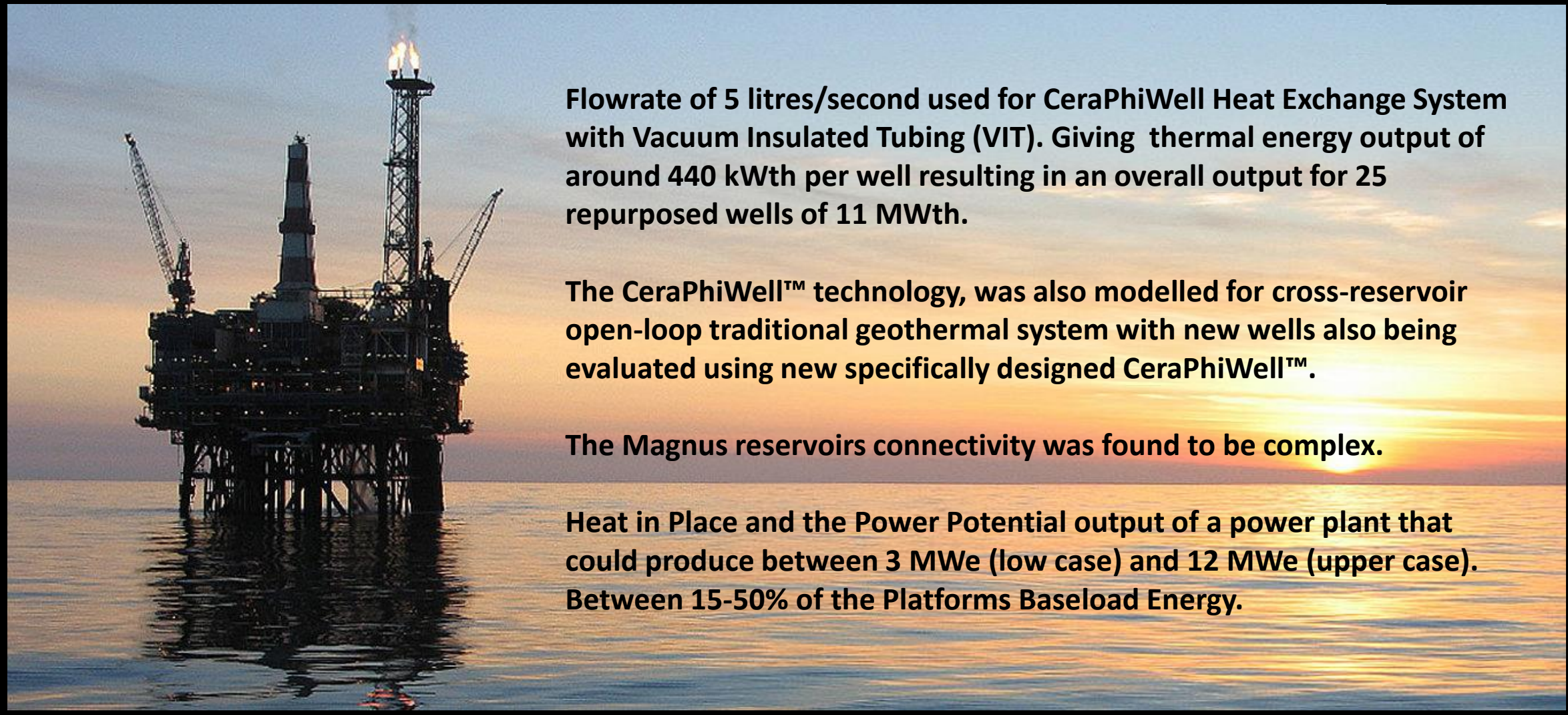
All 25 wells were assessed as having sufficient integrity for repurposing,

True Vertical Depths (TVD) ranging between 2,943 m and 3,452 m with production liners either 5 ½” or 7”

CeraPhiWell™ design was model for repurposing for geothermal heat production.

The Magnus reservoir geology was reviewed and geothermal gradients for each well was assessed, with the lowest being at 34 oC/km, the highest at 48 oC/km with the overall gradient approximately at 40 oC/km.

Offshore Well Reuse – Magnus Case Study



Flowrate of 5 litres/second used for CeraPhiWell Heat Exchange System with Vacuum Insulated Tubing (VIT). Giving thermal energy output of around 440 kWth per well resulting in an overall output for 25 repurposed wells of 11 MWth.

The CeraPhiWell™ technology, was also modelled for cross-reservoir open-loop traditional geothermal system with new wells also being evaluated using new specifically designed CeraPhiWell™.

The Magnus reservoirs connectivity was found to be complex.

Heat in Place and the Power Potential output of a power plant that could produce between 3 MWe (low case) and 12 MWe (upper case). Between 15-50% of the Platforms Baseload Energy.

Offshore Repurposing – Source: CeraPhi®

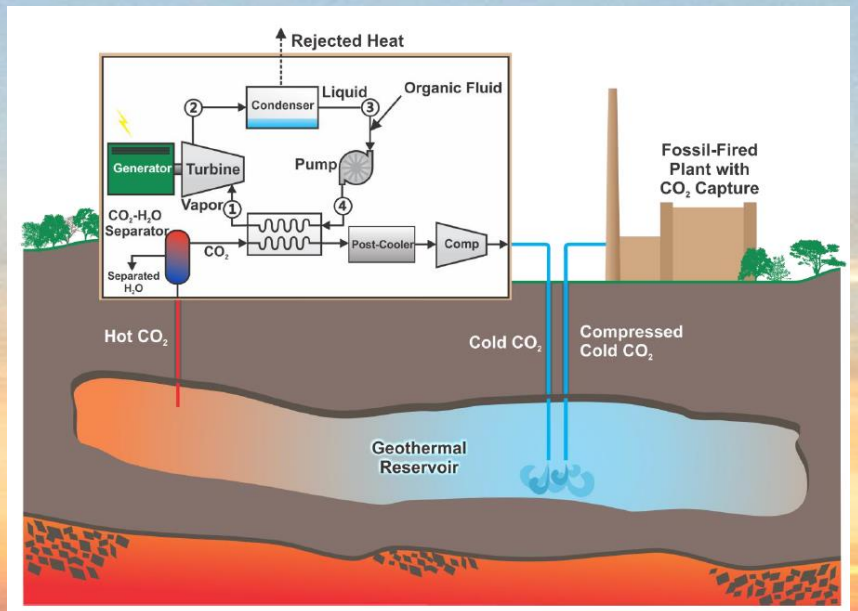
Offshore Well Reuse – Magnus Case Study

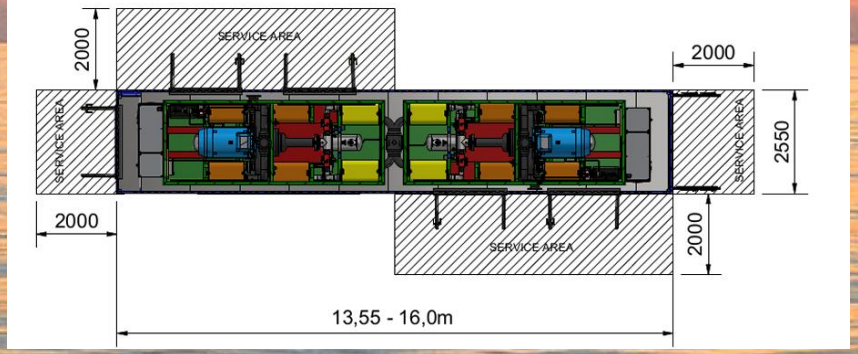
ORC package as a containerised solution.

The stacking of the containers allow for a smaller footprint on the platform

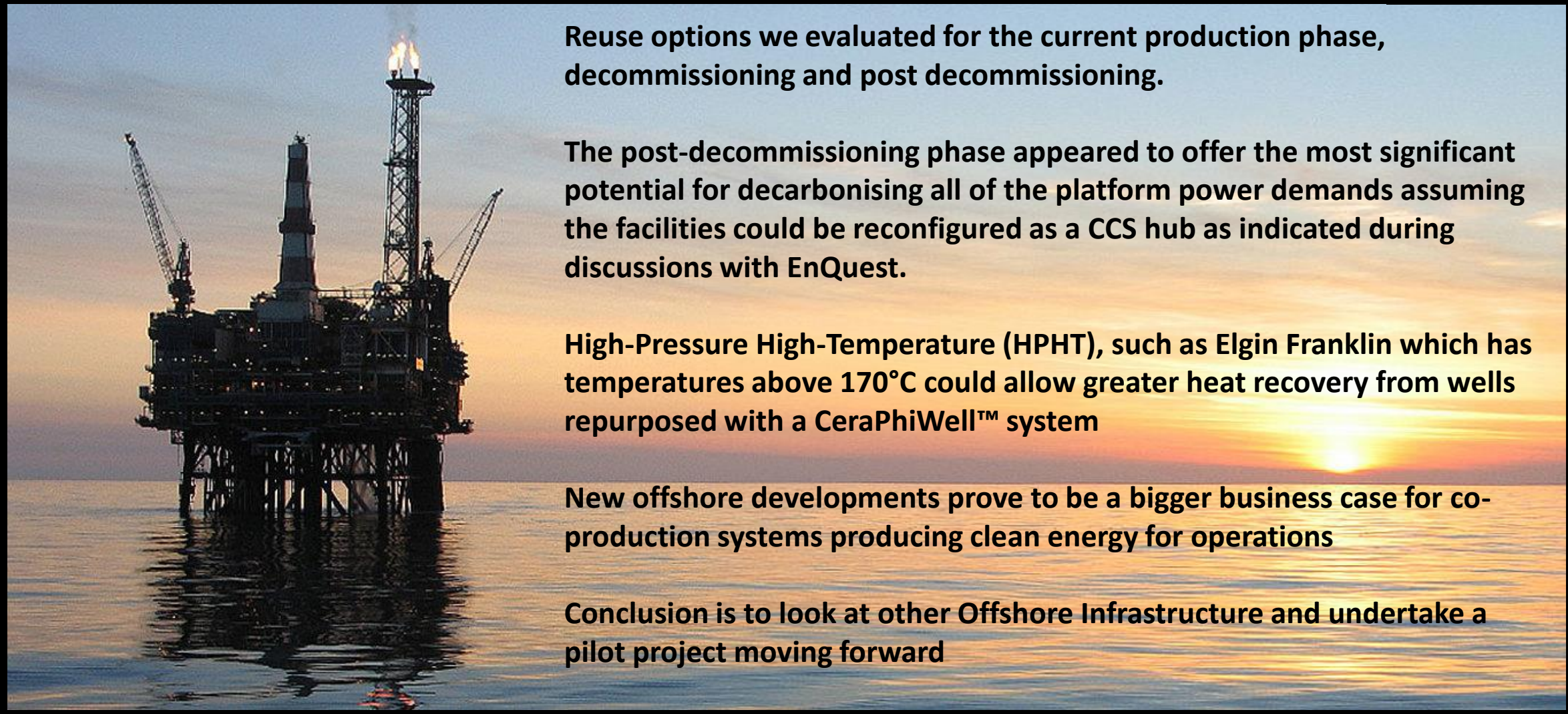
Potential energy reduction was assumed at between 10% of the Magnus demand and would be subject to design and retrofit space being available.

On the low side 2.7 MWe, generating 23,652 MWh per annum and saving 15,540 tons CO2eq per annum.





Offshore Well Reuse – Magnus Case Study



Reuse options we evaluated for the current production phase, decommissioning and post decommissioning.

The post-decommissioning phase appeared to offer the most significant potential for decarbonising all of the platform power demands assuming the facilities could be reconfigured as a CCS hub as indicated during discussions with EnQuest.

High-Pressure High-Temperature (HPHT), such as Elgin Franklin which has temperatures above 170°C could allow greater heat recovery from wells repurposed with a CeraPhiWell™ system

New offshore developments prove to be a bigger business case for co-production systems producing clean energy for operations

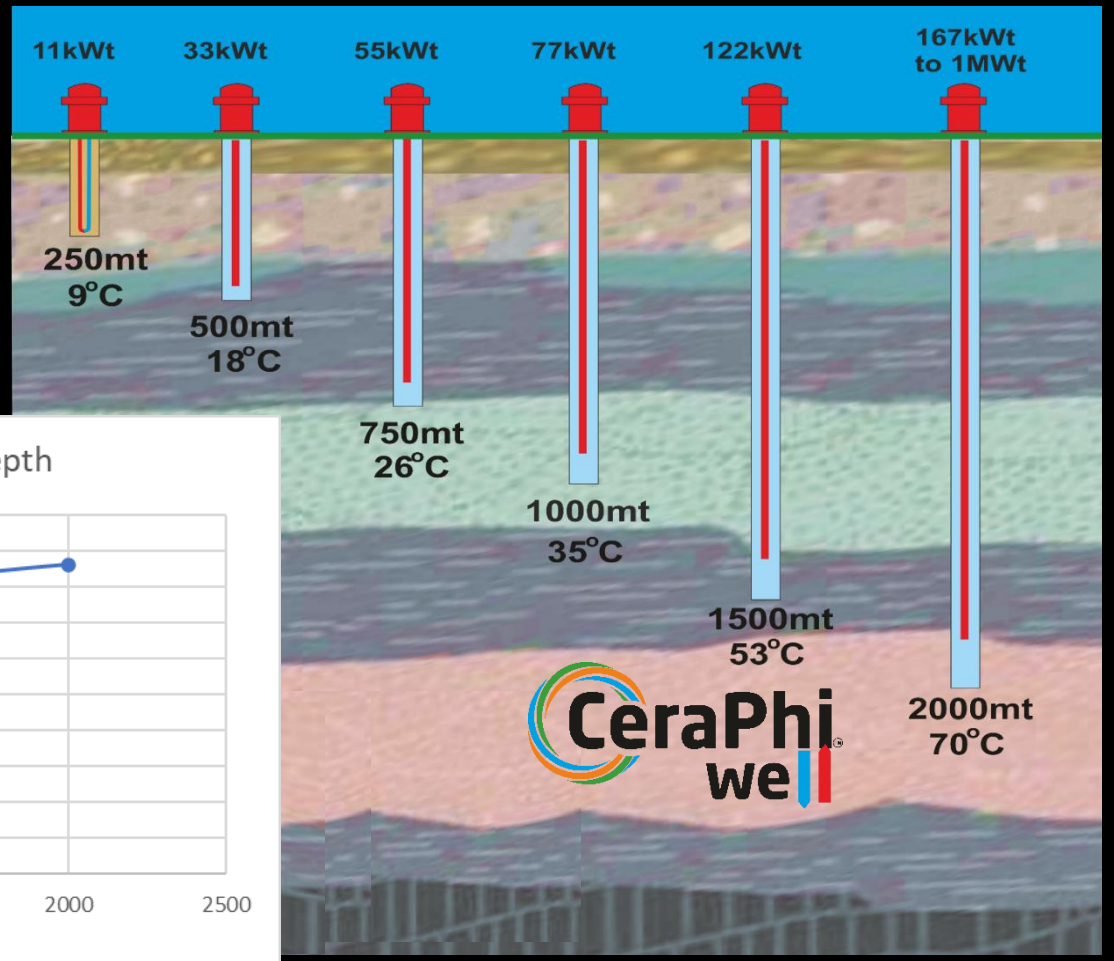
Conclusion is to look at other Offshore Infrastructure and undertake a pilot project moving forward

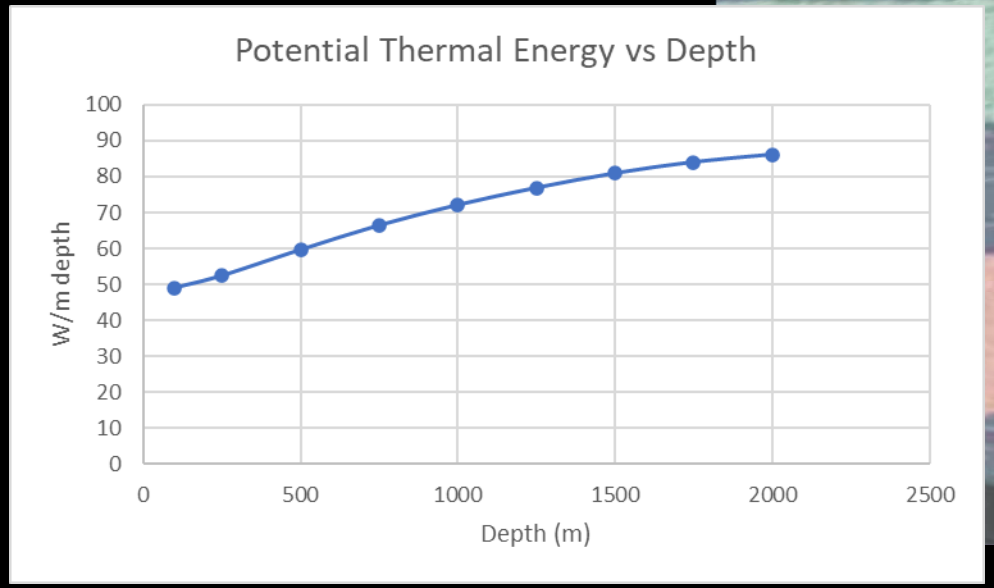
Offshore Repurposing – Source: CeraPhi®

Taking Innovation to the Next Generation

Depth Vs Performance

- ✓ Significantly increased performance
- ✓ Reduced Development Space
- ✓ Longer Life
- ✓ Lower COP
- ✓ Better ROI





* 5 " Borehole at 2,000 with 60 °C BHT

New Process Required New Methods

- ✓ Polypropylene Plastic Pipe
- ✓ Pushing Working Temperatures 90 – 150 ° C
- ✓ Pushing Crush Pressures – 100 – 200 Bar
- ✓ Pipe in Pipe Assembly Design
- ✓ Requiring New Installation Mythology

Plastic Coaxial Pipe in Pipe Manufacturing

Thermal Conduction and Loss Modelling

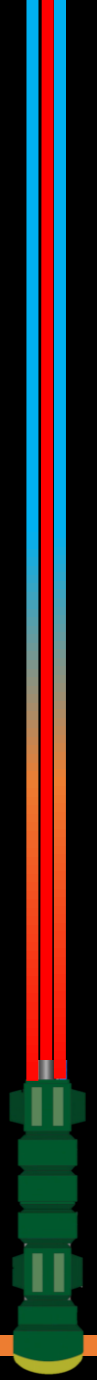
Investing in Next Generation Drilling Solution

- ✓ Nominal Feed Force 20,000 daN
- ✓ Nominal Retract Force 50,000 daN
- ✓ 5000PSI (344 Bar)
- ✓ 9 ⅝” – 13” Coaxial Wells 500 - 1000 mtrs
- ✓ 7” – Coaxial Wells - 2000 mtrs
- ✓ Casing While Drilling Solution

Collaboration Opportunities

- ✓ Cost Effective Innovative Drilling Tools and Equipment
- ✓ High Temperature Plastic Components
  - ✓ Pipes, Valves, Pumps, Flanges Connectors ….
- ✓ Installation Innovation
- ✓ Collaboration Co-Development Opportunities
  - ✓ Repurposing
  - ✓ New Development
  - ✓ Investment
  - ✓ Feasibility Studies

Video – Source: CeraPhi®



Karl Farrow

CEO – CeraPhi Energy

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