AFC Energy plc
Annual General Meeting Presentation

30 April 2019

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FY18 Highlights

- Development of new high-power density alkaline fuel cell technology
- Concluded funded engineering study for deployment of fuel cell system in Australia at Southern Oil's Gladstone refinery
- Continuing joint development with De Nora with further improvements in electrode longevity and performance whilst reducing cost
- Completed global tender process and chose Advanced Plastics to be our flow plate mass manufacturing partner
- Successfully developed EV charging solution and installed a demonstration unit at our Dunsfold facilities
- Completed detailed "Go to market" studies confirming addressable markets, distribution strategy, product benchmarking and resources required
- Invited to join the Hydrogen Council
- Commenced engagement with international industrial partners to discuss joint product development and market initiatives
- Operating loss of £ 5.0 million (2017: £ 5.5 million)
- Cash reserves at 31 October 2018 of £ 2.6 million (2017: £ 6.7 million)
- Arranged a £ 4 million convertible loan facility to fund working capital and develop the Company's commercial strategy
- Improved liquidity by raising a further £813,000 in an equity placement

AFC Energy and the International Hydrogen Economy

AFC Energy invited to join Hydrogen Council in September 2018 – forecast opportunity in H2 space:

MEET **18%** OF THE WORLD'S ENERGY DEMANDS

SUPPORT AVOIDANCE OF **6 Gt. OF CO2** EMISSIONS

GLOBAL REVENUES OF **USD 2.5 TRILLION** ANNUALLY

30 MILLION JOBS CREATED ACROSS THE VALUE CHAIN

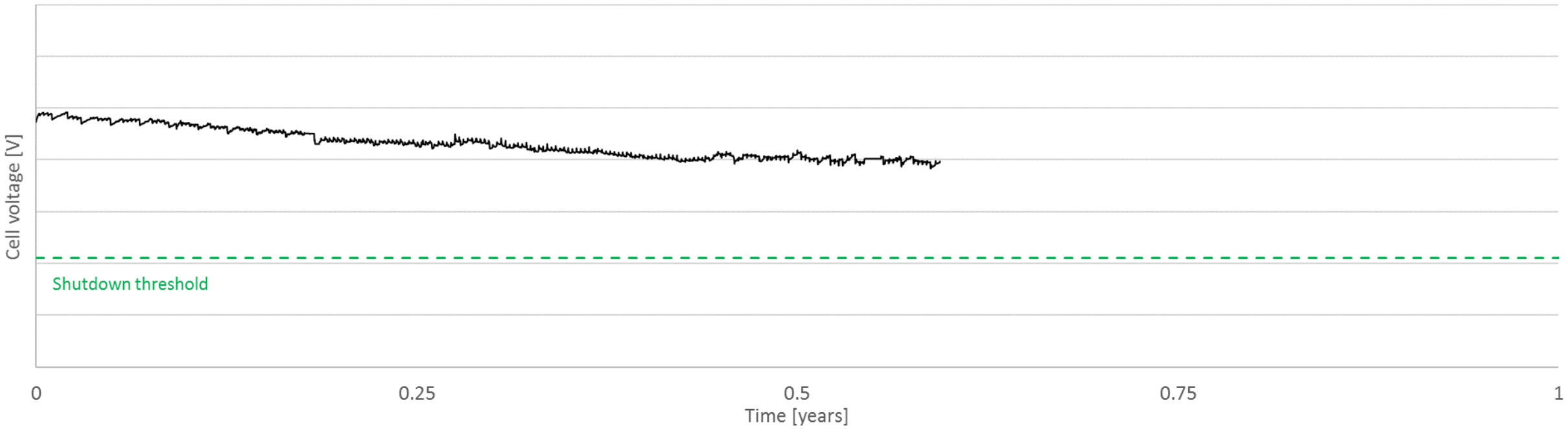
De Nora – Electrode Development and Manufacture

- Agreed initial commercial anode and cathode pairing with De Nora for deployment
- Confirmed 20MW of production capacity per annum to be available for AFC Energy at De Nora's German manufacturing plant
- Technology roadmaps in place to extend electrodes life beyond 4 years
- New "State of the Art" catalyst now under demonstration with potential for up to 5 time improvement in catalyst durability
- 2 x AFC Energy test stands to be leased to De Nora to further accelerate electrode development
- De Nora remains a key technical partner for AFC Energy with significant non-dilutive, in-kind investment by De Nora over the past 3 years

De Nora - Electrode Development and Manufacture

- Run time of De Nora / AFC Energy electrode on test stand now in excess of 8 months continuous operation (ongoing)

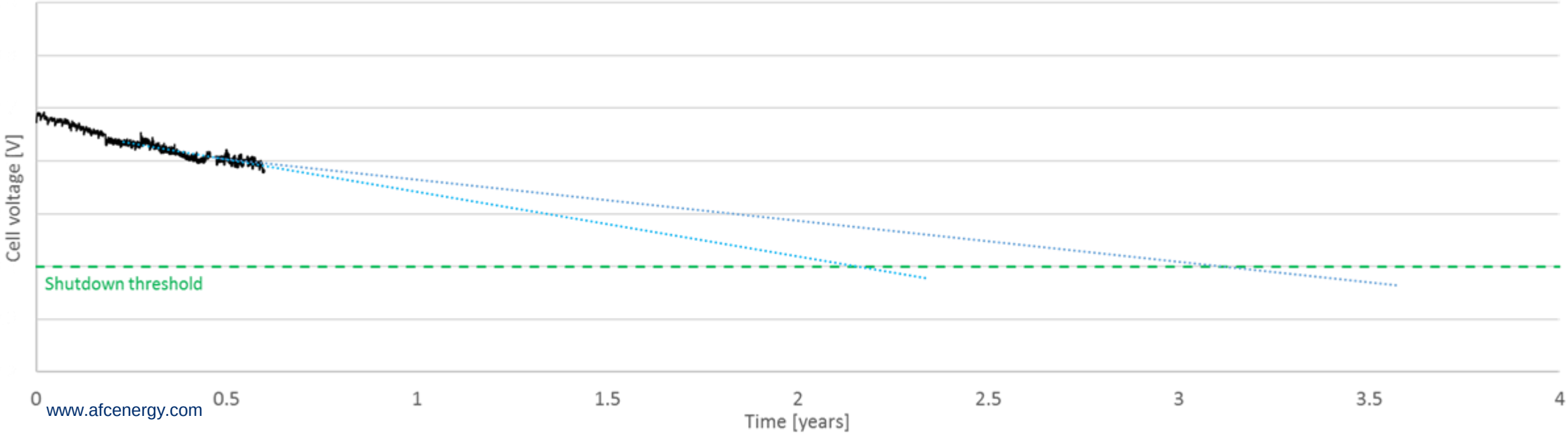
- Key Observations:
  - Degradation rate slowing as operation continues.
  - Operating on BOC grade 99.9% H_2 (i.e. 3 “9”s vs 5 “9”s H_2)
  - Operating at full load and cycled daily



De Nora – Electrode Development and Manufacturing

Electrode Lifetime Extrapolation Based on Accelerated Degradation Testing:

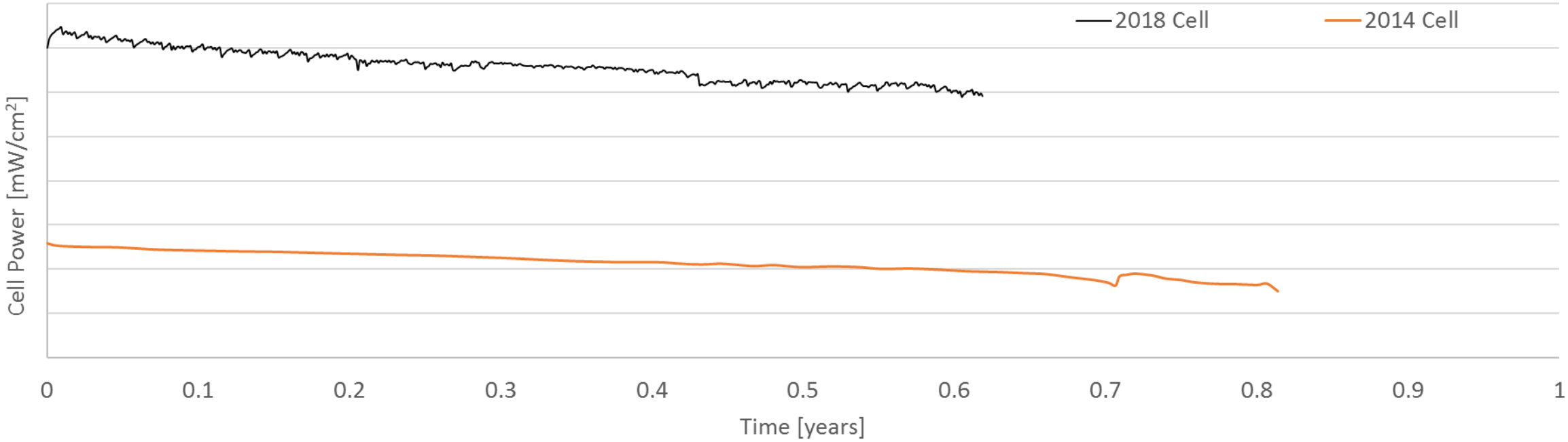
- Lifetime forecast based on Linear Regression fit.
- Degradation slowing during test as seen on previous slide.
- Based on the last 1000 hours of data, electrode lifetime is forecast to be approximately 3.1 years.
- The last 2,000 to 3,000 hour lifetime forecast is 2.2 years.
- Potential to reduce “Shutdown Threshold” to a lower level, thereby further extending life of electrodes, but at the cost of fuel efficiency – commercial decision



De Nora – Electrode Development and Manufacture

How Far Have We Come in the Past 4 Years:

- 2018 fuel cells 2.9 times as powerful as 2014 cells.
- Approximately 3 times the projected lifetime.
- 2018 fuel cells capable of load cycling.
- 2018 cells approximately ½ the price of 2014 cells.



The New High Power Density Alkaline Fuel Cell

- Over the past 18 months, AFC Energy has developed a high power density alkaline fuel cell system to compete favourably with the Proton Exchange Membrane (“PEM”)

- New fuel cell system retains 10kW module size but without the liquid electrolyte and with:
  - Quicker response times
  - Higher power density/ lower system weight
  - Reduced footprint
  - High efficiency
  - Ability to accept lower grade hydrogen

- AFC Energy has operated prototype stacks and is now (2019) scaling up prototype to 5-10kW units.

- Membrane used within the fuel cell system has alternative commercial applications (outside of fuel cells) and AFC Energy are reviewing licencing arrangements with third parties to generate early revenue from “non core” applications

- High Density Fuel Cell System will sit alongside the existing liquid electrolyte system with complementary applications and uses
  - Liquid electrolyte for example acts as a scrubber to lower grade H2 gas
  - High Density system likely to focus on systems <40kW

The New High Power Density Alkaline Fuel Cell

- Footprint comparison of 10kW AFC Energy Liquid Electrolyte Fuel Cell Stack and New High Power Density Fuel Cell Stack

Advanced Plastics – Mass Flow Plate Manufacture and Welding

- Global tender conducted with international plastic moulders for mass manufacture of flow plates
- Advance Plastics appointed preferred bidder based on:
  - Price
  - Technical capability
- Prototype trials in flow plate welding successfully delivered
- Multiple rounds of detailed design review to conclude final commercial plate offering
- Now finalising supply agreement

Advanced Plastics Ltd

Advanced Technical Solutions in plastics

Market Sizing and Go To Market Strategy

- In early 2018, AFC Energy engaged international consultancy, FTI Consulting, to conduct a market study into the size and opportunity for AFC Energy's fuel cell platform
- Key findings confirmed challenges with chlor alkali target market due sector benefitting from very low power prices – with some notable exceptions
- Confirmed opportunity for diesel offset in sectors ranging from:
  - Ports
  - Construction
  - Mining / oil and gas
  - Remote communities and islands
  - Military
- Confirmation of scale being a key determinant of margin – larger systems tend to benefit from higher margins
- Extensive modelling of hydrogen battery opportunity when linked with solar or wind
- AFC Energy's target markets reviewed and confirmed accordingly

EV CHARGING

- By 2040, National Grid expect there to be 36 million EVs on the road in the UK
- To meet this level of power demand, 8 new Hinkley Point nuclear plants will be needed, or 100 London Array offshore windfarms
- Globally, UBS expect $360 billion of new investment will be needed over next 8 years in EV charging infrastructure to meet demand
- New, off grid, decentralised power solutions are required
- In January 2019, AFC Energy was the first company to demonstrate its new EV fuel cell charging platform – CH_2ARGE^{TM}
- Capable of Level 2 or 3 fast charging and mass charging (car parks)
- Hydrogen source to be assessed on a case by case basis
- Large number of commercial enquiries received from Japan, USA, Italy, Australia, Middle East & UK

EV CHARGING

Rolec Services Collaboration Agreement

- Today, AFC Energy announced the signing of a Collaboration Agreement with Rolec Services – Europe's largest manufacturer of EV charging solutions
- Agreement to focus on the design and engineering of a fully integrated commercial EV charging solution with in site, off grid power generation from AFC Energy fuel cell system
- System to be deployed commercially throughout Rolec and AFC Energy's network of distributors spanning over 40 countries
- First system to be operational in 2019

OFF GRID DIESEL GENERATION DISPLACEMENT

- $20 billon industry (annual)
- 1/3rd of all greenhouse emissions are from stationary power such as diesel gensets
- Governments have recognised the need to materially reduce diesel generation
  - ❖ UK Clean Air Strategy 2019 (January 2019)
- Large corporates (Cummins, Aggreko, Caterpillar) now actively reviewing low emission alternatives to diesel
- AFC Energy reviewing opportunities across key sub sectors:
  - Mining / Oil & Gas
  - Construction
  - Ports
  - Off-Grid and island communities
  - Data centres
- Potential for premium power pricing in these markets
- Working up industrial scale ammonia / fuel cell off grid diesel generation unit in 2019

HYDROGEN BATTERY

- Growth in renewables has led to significant demand for energy storage
- Even with existing battery storage in the market today, California curtails enough renewable energy to power an estimated 1 million homes per annum.
- In China, estimates of 1 in 10 every kWh of power generated from renewables is curtailed – in some parts of the country, this is as high as 33%
- Existing battery technologies fill a gap at the moment but are expensive & have performance issues
- AFC Energy is targeting large scale, inter seasonal storage with capability for peak shaving through the integration of electrolysis
- Working with De Nora for fully integrated electrolysis and fuel cell containerised product

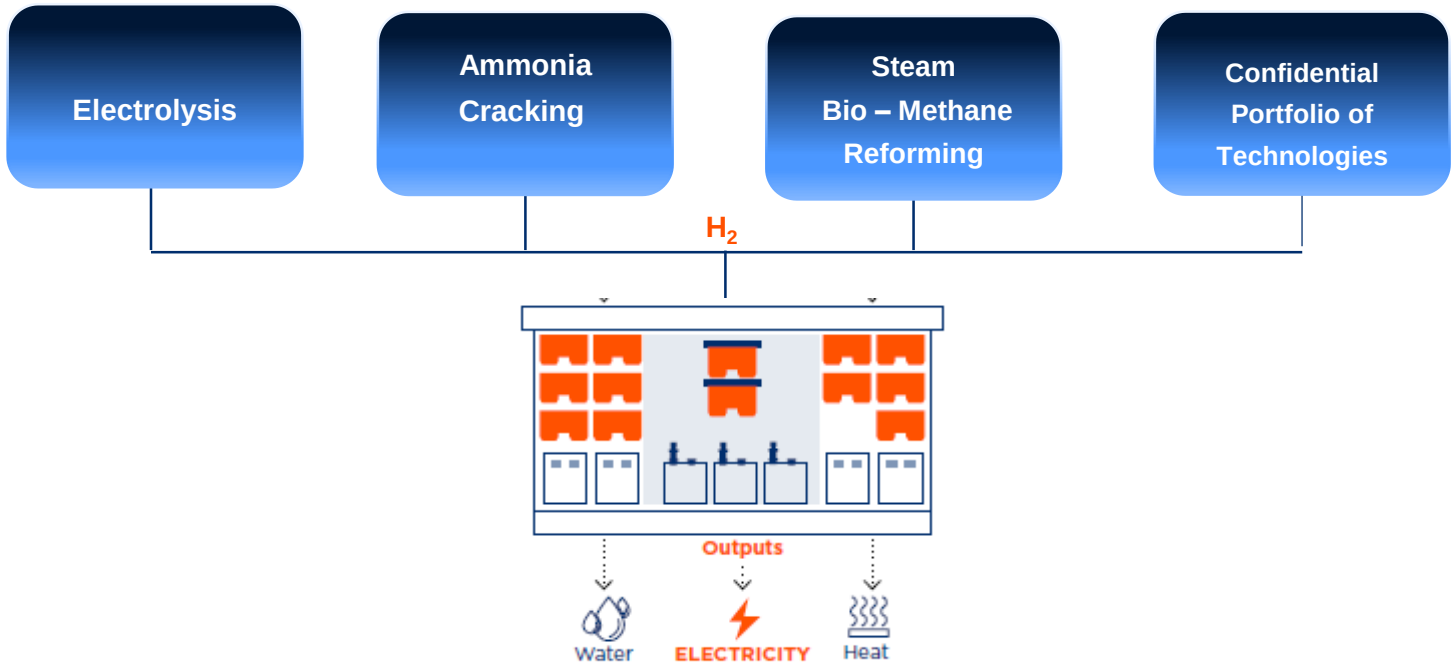
INDUSTRIAL BASELOAD POWER GENERATION

- AFC Energy's traditional target market for fuel cell deployment
- 100,000 MW of hydrogen equivalent is vented per annum (Source: U.S Hydrogen Fuel Cell Association)
- Whilst power prices often subsidised or very low, sector is a sizeable user of power with pressure to reduce CO_2 footprint
- Corporate targets for large refiners and chemicals companies being set with immediate reductions in CO_2 emissions driving power purchasing decisions
- Existing projects in:
  - Stade, Germany
  - Gladstone, Australia
- Other projects under review

Integration Partners & Product Solutions

Upstream Hydrogen Production

- Strategy to integrate upstream hydrogen product within fuel cell product solution
- Short term focus on proven and readily available solutions
  - Ammonia cracking – proven via Alkammonia Project
  - Electrolysis – Hydrogen battery solution
  - Gas Reformation – Biogas reformation
- New and innovative low cost Hydrogen solutions being trialled and integrated for commercial deployment now



Funding

Highlight

AFC Energy has sufficient funding secured to see it through into 2020

Funding Sources

- £1.4m Cash at Bank (31 March 2019)
- £0.8m Fundraise (April 2019) – cornerstoned by Schroders with quantum limited by available Shareholder approved headroom
- £0.6m R & D Tax Credits
- £4m Convertible Line of Credit Facility

£6.8m

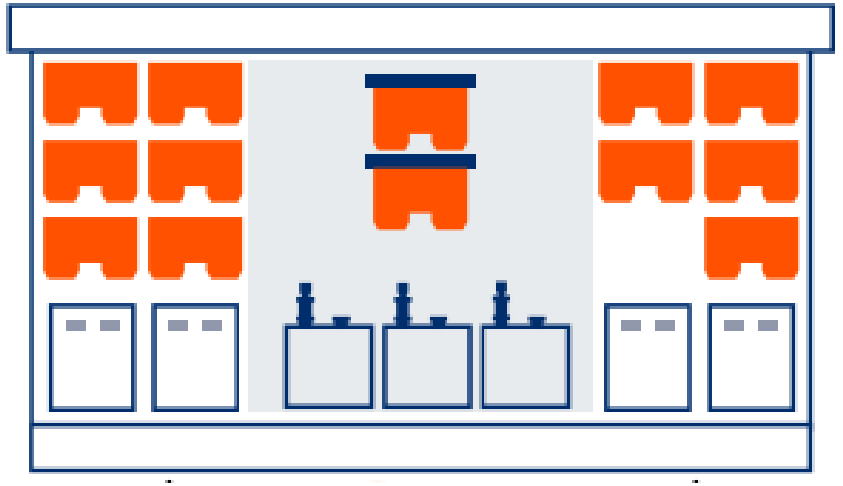
Thalion Global Group Convertible Bond Facility (Line of Credit)

- £4m line of credit facility - only draw down as required
- 3 year term
- Non-dilutive to shareholders until draw down and bond conversion
- £500,000 permitted draw down in any 60 day period (further amounts by mutual consent)
- No funds drawn down to date and no shares issued (apart from arrangement fee).

Lookahead

The coming months will see a number of exciting advances and announcements that will solidify and validate the technical progression achieved over the past three years. Our objectives include:

- Conclude product development cost sharing and licencing agreements.
- Manufacture demonstration units using liquid electrolyte and solid membrane technology
- Complete the requisite steps and agreements to enable mass manufacture of the fuel cell system, including the key electrode manufacturing agreement
- Development of electrodes with durability of 4 years to confirm the target price of power generation (excl. fuel)
- Value engineering of stack and cartridge components with mass production supply chain partners
- Commence deployment of commercial reference sites integrating with third party hydrogen generation technologies



AFC Energy

Thank you for your kind attention – we are now open for questions.

www.afcenergy.com