



# Annual General Meeting

27 April 2023



# A Year of Unprecedented Progress



- **Successful field deployments of new H-Power Tower hydrogen powered generator**

- product platform delivered in less than 12 months
- deployments already resulted in follow on orders
- focus on construction industry
- growing pipeline of contracted customers and proposals

- **Successful on time delivery and validation (post year end) by ABB of new Liquid Cooled 100kW stack technology**

- technology platform delivered in less than 12 months
- building block to 200kW H-Power system set for first operation in 2023
- platform to open new markets including maritime and critical power back up (data centres)
- validation by ABB culminated in follow on investment (post year end)

# A Year of Unprecedented Progress (cont.)



- **Successful delivery of Season 2 of Extreme E**
  - Provided zero emission EV charging to all 2021 and 2022 races
- **Successful launch of new Ammonia Cracking platform**
  - cracker technology to support localised hydrogen generation
  - maritime and stationary applications
  - very strong market positioning in modular, scalable high technology crackers
- **Successful initial field trial of new Methanol Fuel Tower with ACCIONA**
  - methanol reformer platform delivering clean hydrogen to H-Power Tower

# Financial Update

Peter Dixon-Clarke

# Financial Highlights: Y/E 31 October 2022

**£0.6m**

Revenue

**£1.6m**

Deferred revenue

**£40.2m**

Cash at year end

**£16.4m**

Loss for the year

**£3.0m**

R&D tax credit receivable

# Financial Highlights: ABB Original vs Revised Contracts



	Original	Revised
<b>Contract value: £'m</b>		
Contracted System Purchase	£4.0m	£4.0m
Optional Systems Purchase	-	Increased
<b>Units: 200kW fuel cells</b>		
Contracted sale	1	1
Optional sales	-	9
Pre-agreed discount applicable	-	10
<b>Profit &amp; loss: £'m</b>		
Maximum revenue	3.4m	Increased
<b>Balance sheet: £'m</b>		
Warrants granted	£0.6m	£0.6m
Equity issued	-	£2.0m
Cash received	£2.0m	£4.0m

# Use of funds – Highlights (£'m)

**2022**



**2021**



**Qualifying Research & Development**  
**Non-qualifying**

**(9.0)**  
**(7.3)**

**(3.1)**  
**(5.1)**

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**(16.3)**

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**(8.2)**

*Ratio: Qualifying vs non-qualifying*

**1.2**

**0.6**

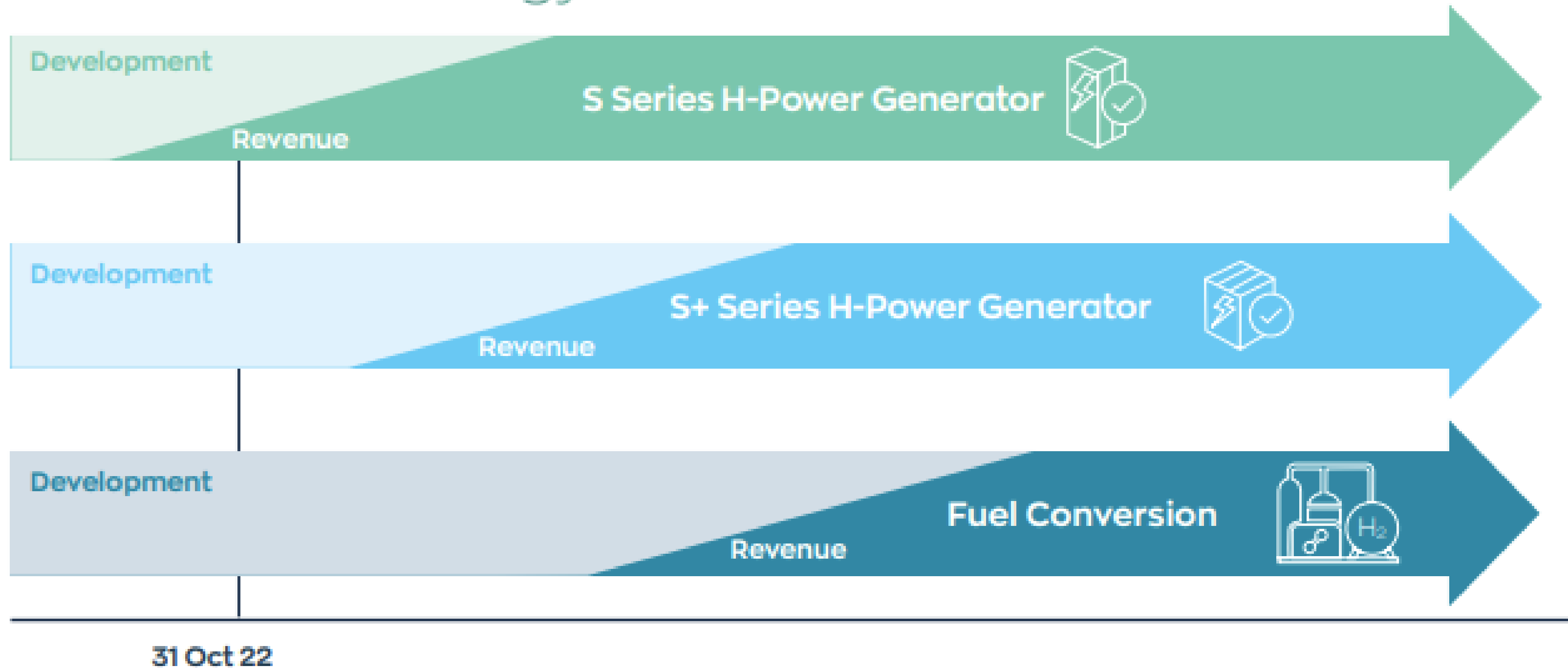
*R&D tax credit generated*

**3.0**

**1.1**

# Business Model

## Product-led strategy





# Fuel Cell Power Generators

Zero emission power  
for a new world

# Hydrogen Power Generator Addressable Markets



Construction sites



Temporary power



Rapid vehicle charging

**Today's market applications**



Rail



Data centres



Shipping and ports

**Future market applications**

# Construction Market Focus

- In 2020, UK construction industry used 2.5 million tonnes of diesel
- Industry now recognising need for transition to cleaner alternative
- Clean temp. power recognised as a premium priced product vs diesel
- Low barrier to entry
- Constructors and developers reporting ESG emissions
- Emissions standards for diesel generators rising

**Construction Leadership Council : Target 500 UK companies to phase out diesel power generation by 2025**



## Consultation Draft: Zero diesel sites route map

CLC Zero diesel sites working group



October 2022

## Transition to electricity

Title	Opportunity	Challenge	Action	Target
<b>Removing diesel generators</b>	One very visible opportunity to drive out diesel is its use of site generators. Removing diesel generators from site could provide an early boost to plans to cut carbon.	Difficulties in securing suitable alternatives to diesel generators, including access to grid electricity or technology to support alternative fuel sources.	<b>Action 17</b> - Industry to develop a commitment for companies to phase out diesel generators on site.  <b>Action 18</b> - Develop guidance and support to help businesses through the progression.	Target 500 companies signed up by the end of 2023 to phase out diesel power generation by 2025.



# Construction Market – Business Model



## Current Model

- AFC Energy currently renting H Power generators to construction company - grow market awareness and gain market access
- By-passing plant hire business (who traditionally purchase generators for on hire).
- Revenue currently from short term rentals to constructors

## Future Model

- AFC Energy is proving its technology with growing market awareness of technology
- New enquiries from plant hire businesses derived from their customer enquiries
- Rentals likely to continue this year to constructors
- 2023 targeting initial sales to plant hire businesses
- **Accelerate revenue growth**

# H-Power Tower Case Studies



“One of the first experiences, worldwide, of real use of this type of "zero emission" technologies based on hydrogen in the construction sector.”

Miguel Paris Torres – Head of R&D Centre, ACCIONA



“We’re proud to be teaming up with AFC Energy plc to showcase how hydrogen fuel cell technology will decarbonise off-grid temporary power for construction.”

Kiro Tamer, Head of Environmental Sustainability, Keltbray



“Supporting HS2 with its low carbon aspirations the electricity generated by the AFC Energy unit is a reminder to our workforce of the need to put decarbonisation at the forefront of our industry’s thinking.”

Ben Wheeldon, Programme Director for Mace Dragados joint venture for HS2

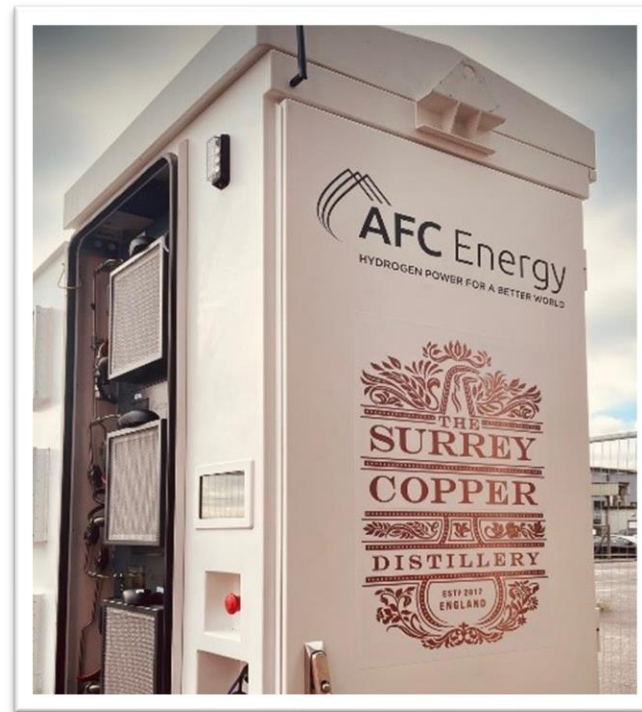
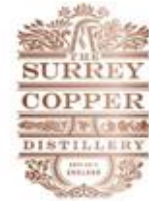


“This deployment further demonstrates our commitment to sustainability and finding innovative solutions that will reduce our carbon footprint.”

Chris Lilley, health, safety, wellbeing and sustainability director at Kier Group



# H-Power Tower Case Studies



“Our collaboration with AFC Energy demonstrates a more sustainable manufacturing process. ...we have been able to develop a gin which not only tastes excellent, but also has a lower carbon footprint.”

Dr Chris Smart - Managing Director and Founder of The Surrey Copper Distillery

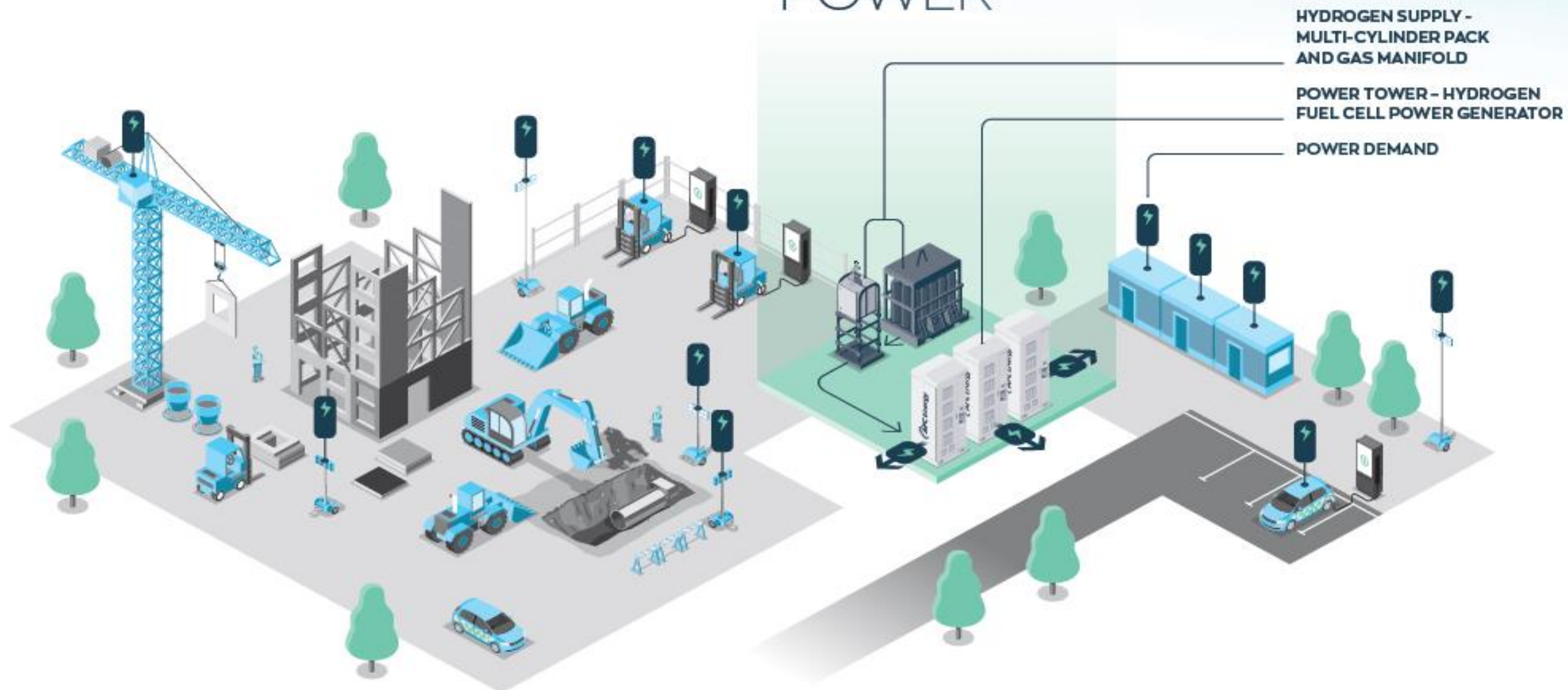


“We are pleased to be working with AFC Energy to support our plan to reduce emissions by 40% by 2030”

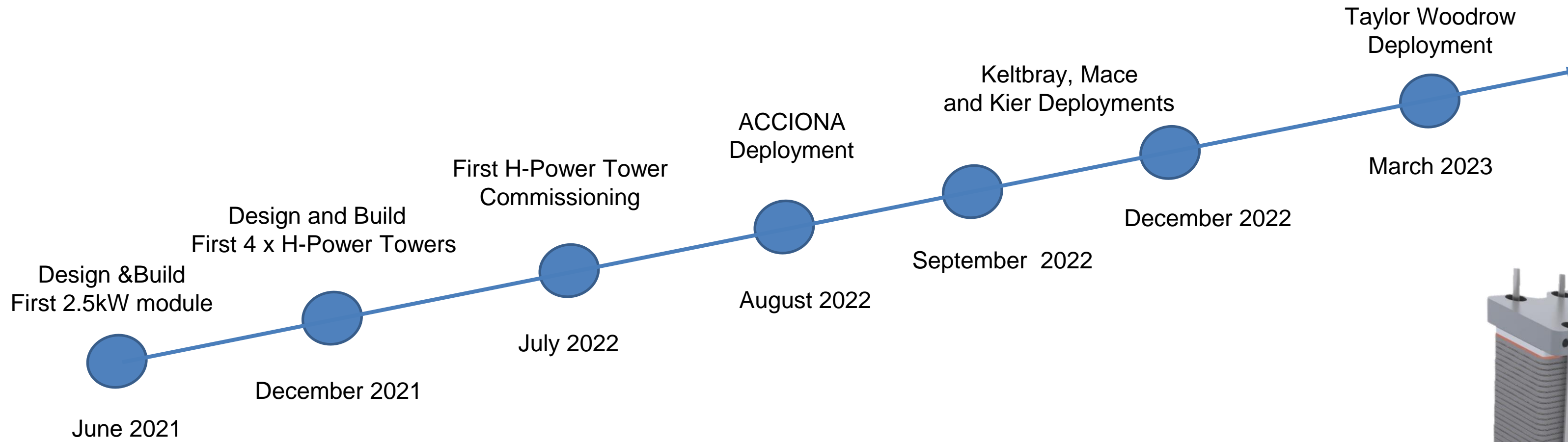
Andrew Thomsett - Plant & Fleet Director, VINCI Construction Management

# The future of construction

## ZERO EMISSION HYDROGEN POWER



# Success in Delivering Air Cooled Platform



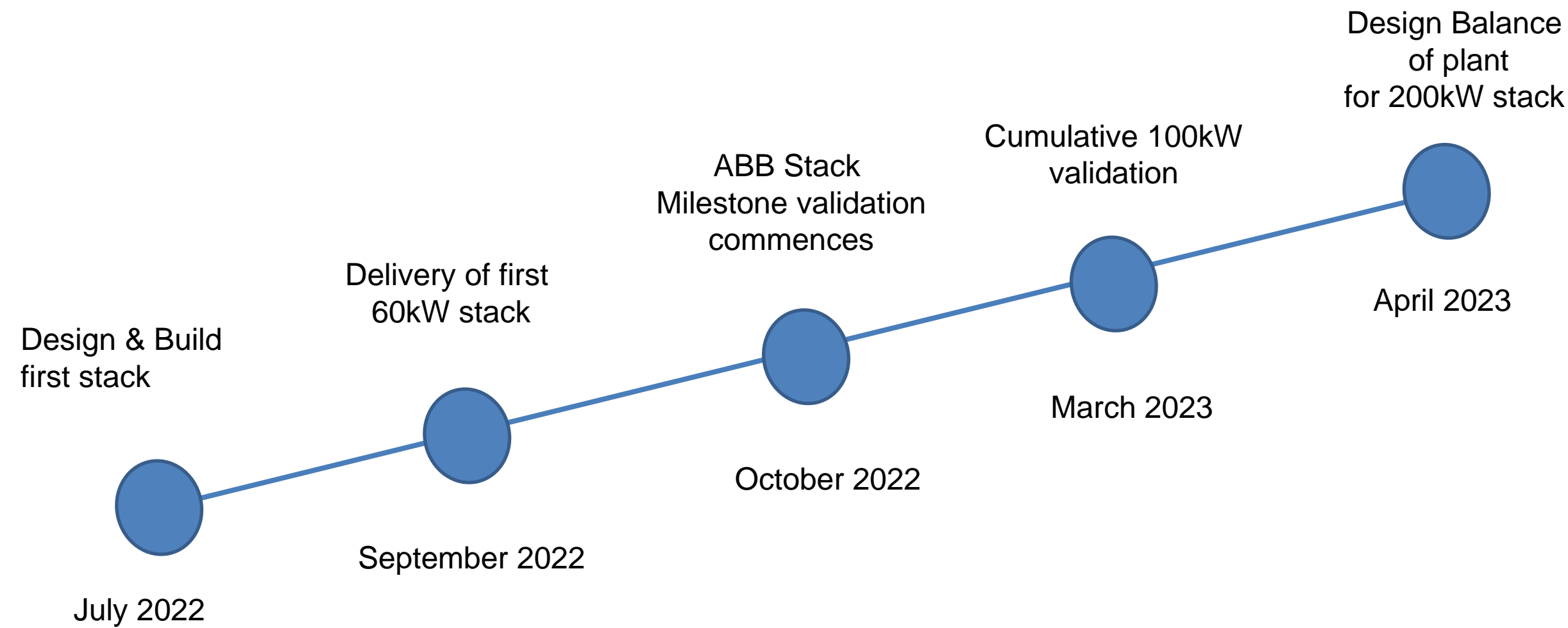
## 2023 Milestones for Remainder of Year

- ❑ Material cost reduction
- ❑ System refinement per customer feedback
- ❑ Integrate Battery Energy Storage System
- ❑ Deliver new H-Power 30kW system
- ❑ Pursue engagement with Plant Hire Business & New Customers





# Success in Delivering Liquid Cooled Platform



## 2023 Milestones for Remainder of Year

- Delivery of first 200kW Liquid Cooled system
- Preparation for CE marking
- Opens market for
  - EV charging
- Maritime
  - Critical power back up (data centres)
  - Large scale power generation



# H-Power Tower (10kW)

- 10kW S Series fuel cell power generator
- Small scale power demands including construction compounds
- AC output
- Field deployed
- Coupled with fuel conversion tech as required
- Available today



# H-Power Generator (Modular 30kW)

- New modular S Series fuel cell power generator
- Mid scale construction demand
- Integrate with 45kWh energy storage – 50kVA
- Engineered to resemble a conventional genset
- Coupled with fuel conversion tech as required
- Available later this year



# H-Power Generator (200kW)

- New 200kW modular S+ Series fuel cell power generator
- Engineered for EV charging, maritime, back up and temporary power
- HVDC output
- Integrate with energy storage solution
- Coupled with fuel conversion technology as required
- Available later this year



# ABB – Decarbonised E-mobility and Backup Power

- Shareholder since April 2021
- Supporting new 200kW S+ Liquid Cooled Fuel Cell Platform
- First 100kW stack validation – October 2022
- Follow on investment – March 2023
- Delivery of high power 200kW “S+” Series H-Power Generator this year (2023)

“The investment in AFC Energy brings an opportunity to further the advancement of ground-breaking technologies that can ultimately enable a wider reach to remote off-grid locations. AFC Energy’s goals to deliver clean energy solutions perfectly align with ABB’s commitment to innovation and enabling low carbon societies, making them an ideal solution partner.”

Frank Muehlon, President of ABB E-mobility



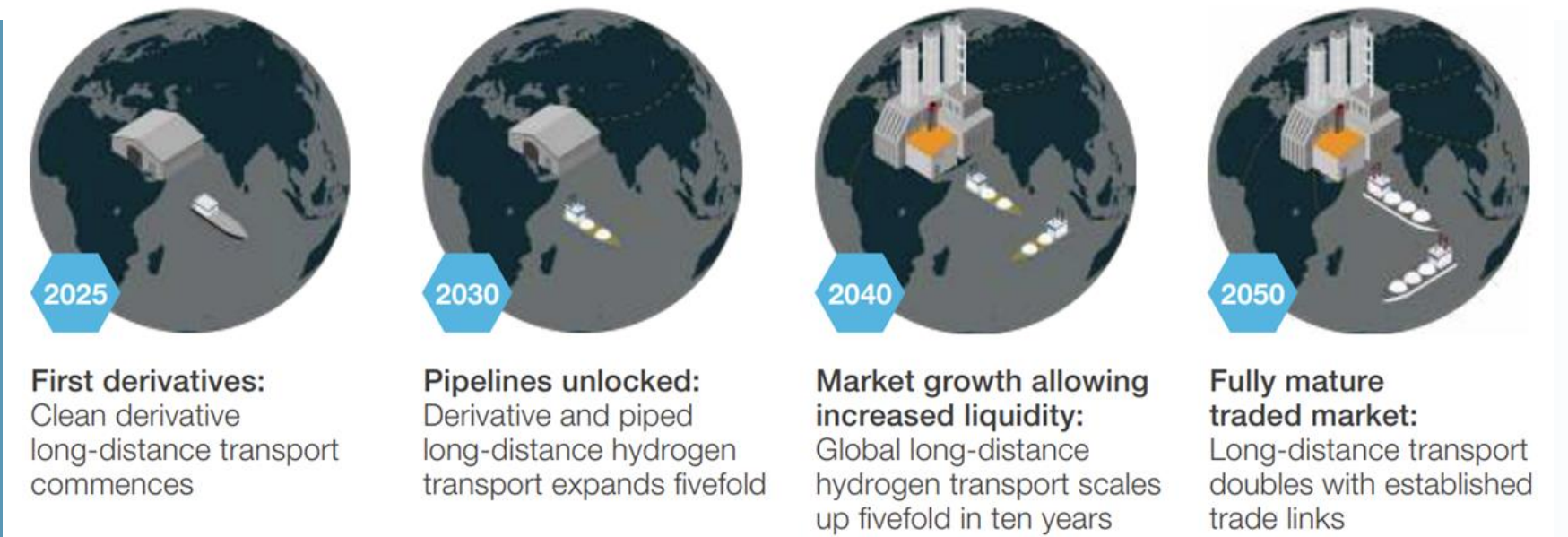
# Flexible fuel strategy

Zero emission power  
for a new world

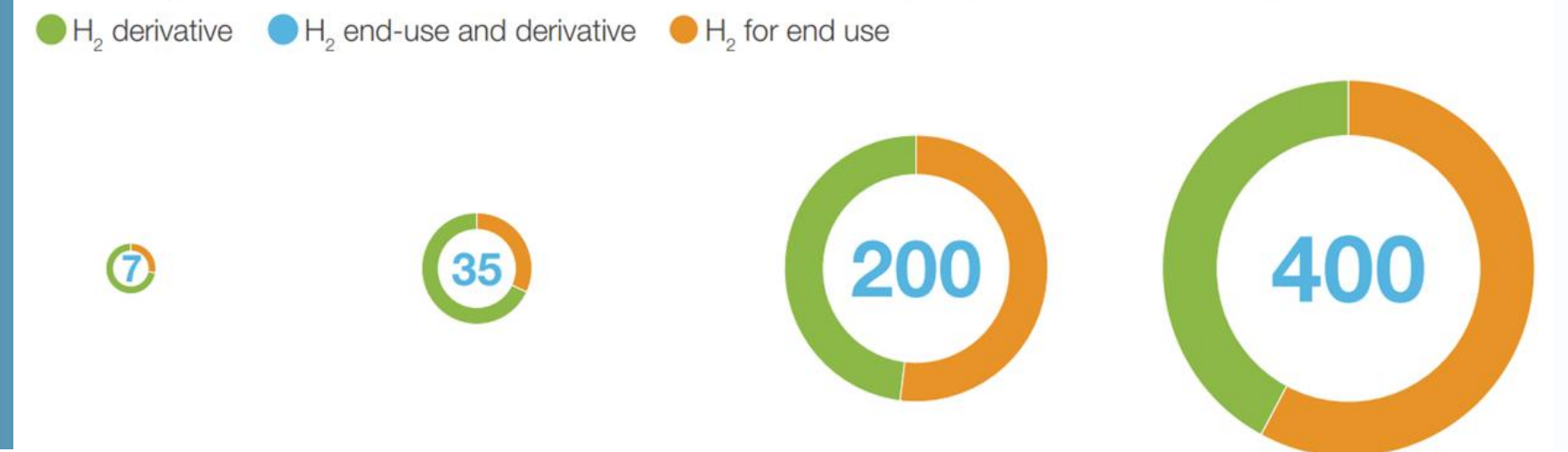
# Fuel Conversion Technology – Why?

- Forecasts for international trade in hydrogen (right) is forecast to focus on derivative fuels such as ammonia
- Ukraine conflict is having a large impact on early ammonia import into Europe (from Middle East, Australia and Nth America)
- Volume of hydrogen trade in derivative fuels is forecast to materially grow

Traded volumes, million tons



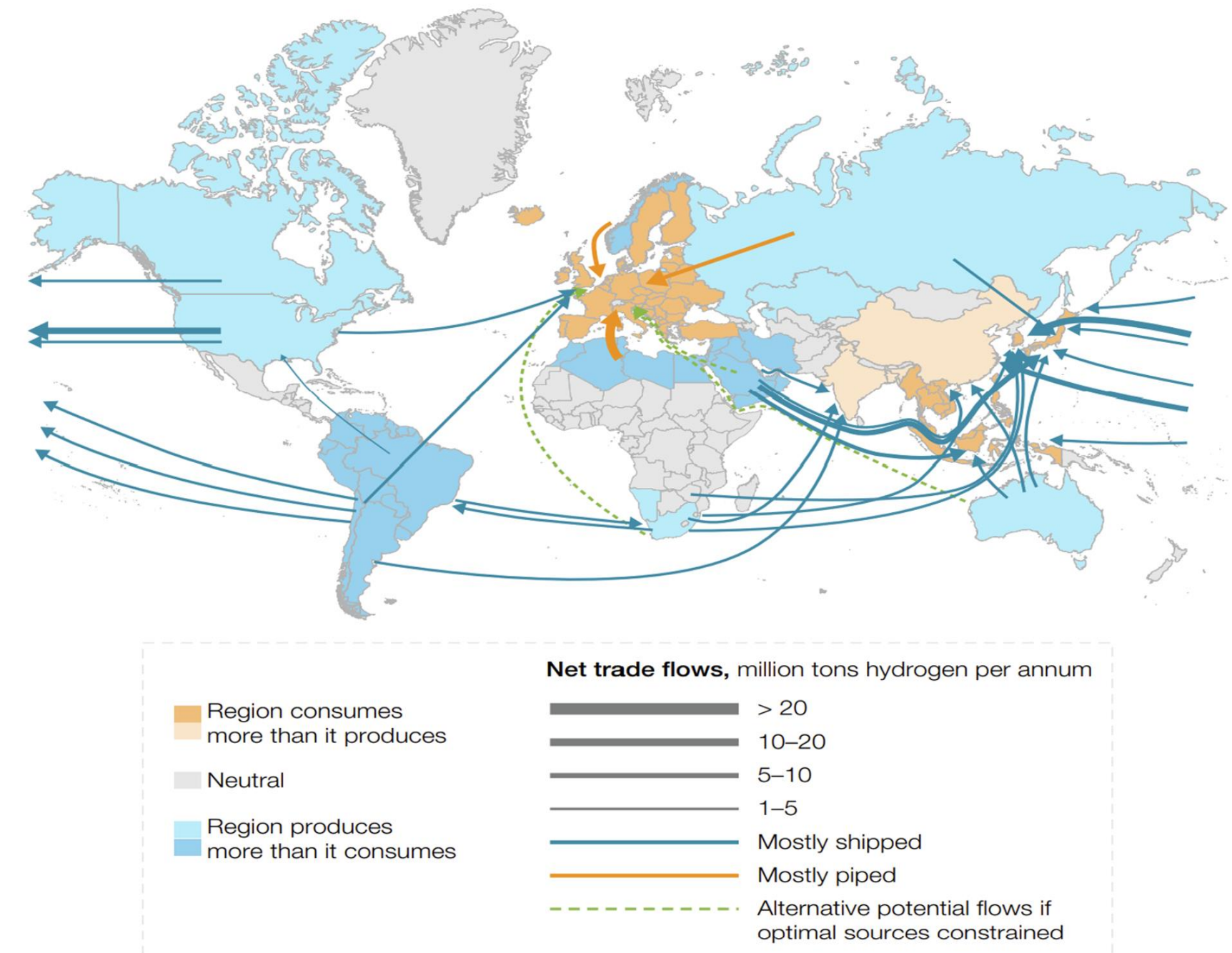
Clean long-distance transport<sup>1</sup> for renewable and low-carbon hydrogen, million tons hydrogen per annum



# Fuel Conversion Technology – Why?

- Graphic highlights forecast global hydrogen trade
- Europe and Asia highlight growth markets for H<sub>2</sub> / ammonia import
- However, target markets seek hydrogen – not ammonia
- Ammonia cracker technology highlights material market opportunity
- Stationary crackers are an opportunity to capitalise on gap in value

Major flows of hydrogen and derivatives, million tons hydrogen equivalent in 2050





# Fuel Conversion Technology – Why?



REUTERS® World Business Legal Markets More

2 minute read · August 23, 2022 1:16 PM GMT+1 · Last Updated 5 months ago

## Germany's Uniper, E.ON to import green ammonia from Canada

Reuters



Port of Rotterdam Shipping Doing business Explore the port About us News

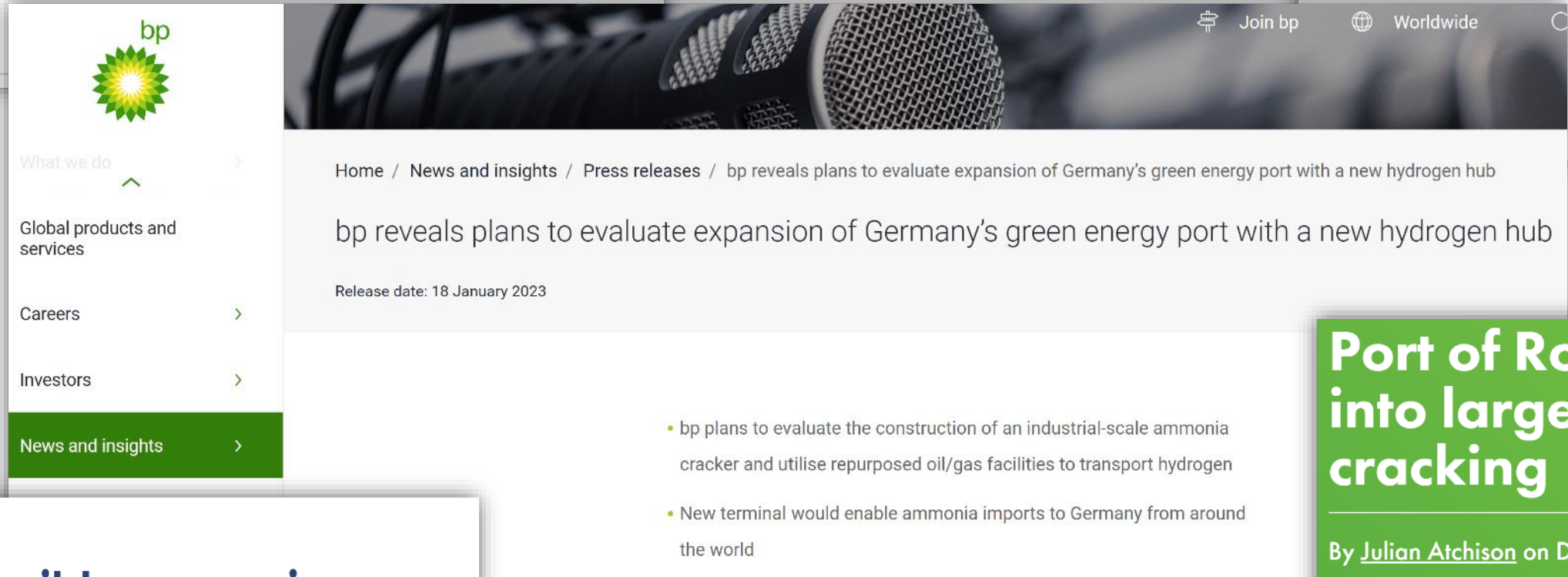
Home > News Overview > OCI expands import terminal for (green) ammonia

Energy transition

## OCI expands import terminal for (green) ammonia

15 June 2022

OCI N.V. (Euronext: OCI) announced that it has made a final investment decision (FID) for the first phase of its ammonia import terminal expansion project in the port of Rotterdam in the Netherlands.



bp

Home / News and insights / Press releases / bp reveals plans to evaluate expansion of Germany's green energy port with a new hydrogen hub

## bp reveals plans to evaluate expansion of Germany's green energy port with a new hydrogen hub

Release date: 18 January 2023

- bp plans to evaluate the construction of an industrial-scale ammonia cracker and utilise repurposed oil/gas facilities to transport hydrogen
- New terminal would enable ammonia imports to Germany from around the world



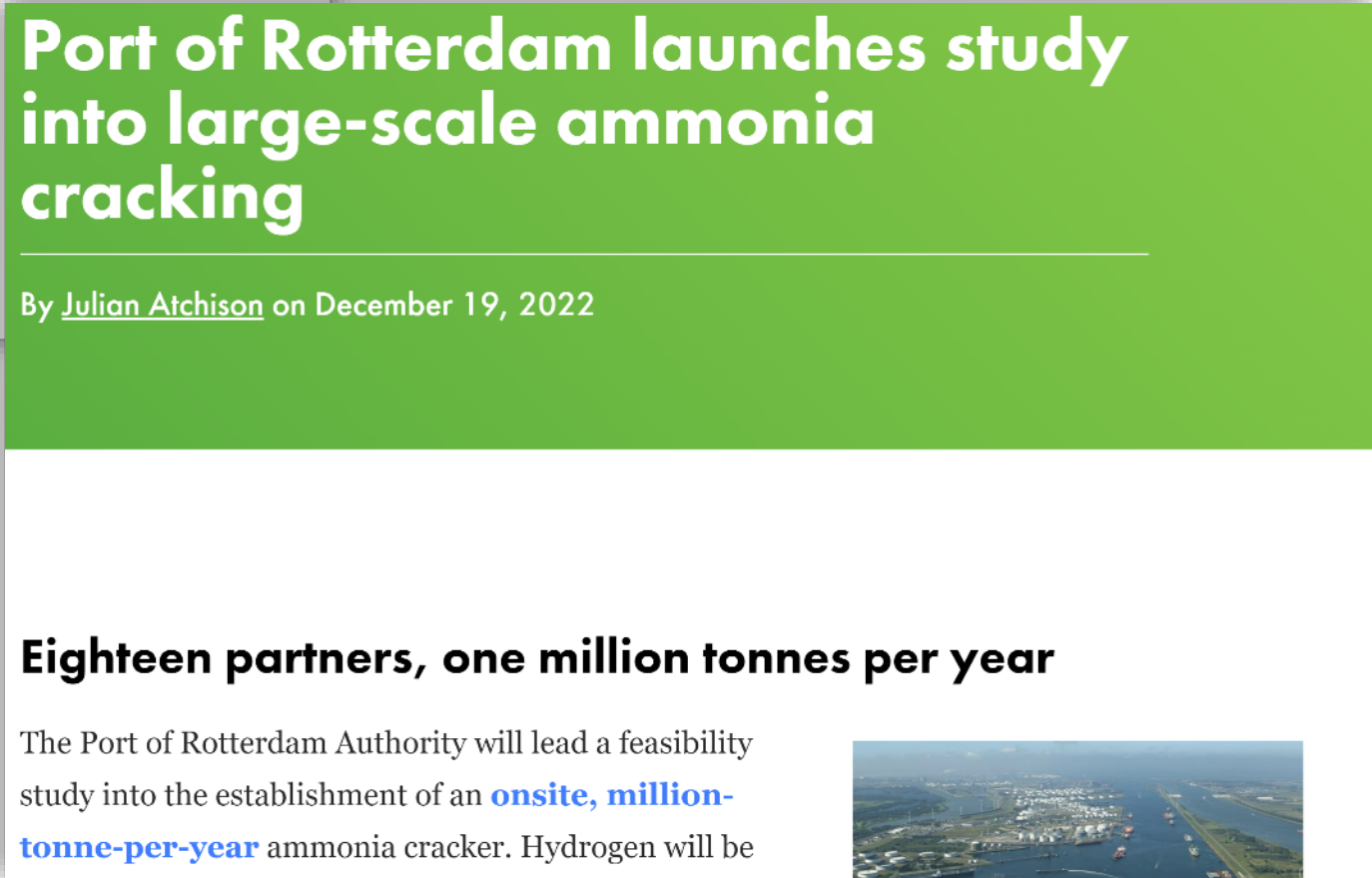
RWE AG

## Import of green energy: RWE builds ammonia terminal in Brunsbüttel

Project to facilitate the subsequent conversion of the entire site to green molecules

Essen, 18 March 2022

Only a few days ago, a Memorandum of Understanding was signed to quickly build the first German LNG terminal in Brunsbüttel near Hamburg. Now RWE is following suit. The company wants to realise another project in the immediate vicinity: a terminal for the import of green energy. RWE is relying on green ammonia\* as the most competitive hydrogen derivative with the highest level of technological maturity.




## Port of Rotterdam launches study into large-scale ammonia cracking

By [Julian Atchison](#) on December 19, 2022

### Eighteen partners, one million tonnes per year

The Port of Rotterdam Authority will lead a feasibility study into the establishment of an **onsite, million-tonne-per-year** ammonia cracker. Hydrogen will be



# Fuel Conversion Technology – Why?

- Ammonia also gaining international traction as maritime fuel of the future
- Far superior volumetric energy density vs hydrogen – ideal for vessels
- Potential for a cracker on each vessel fuelled by ammonia:
  - Hydrogen generation for fuel cell
  - Hydrogen generation to support combustion
- Modular, scalable ammonia cracker technology for maritime not available today
- Potential for retrofit and new build

## IEA sees ammonia winning shipping's future fuel race



Sam Chambers • October 28, 2022 🔥 1,211 📖 1 minute read



Ammonia will be shipping's dominant fuel by 2050, the International Energy Agency (IEA) has predicted.

In the World Energy Outlook 2022, published by the IEA yesterday, the Paris-based agency sees ammonia meeting around 45% of demand for shipping fuel by 2050. Bioenergy and hydrogen each meet a further 20% of demand the IEA is projecting, with the use of hydrogen in particular focused on short- to mid-range operations. Electricity will play a minor role focused on meeting demand from small ships and cruise ferries used for short-distance operations, the IEA suggested.

# Fuel Conversion Technology – Why?

- Fuel conversion technology, including ammonia crackers, is set to become a multi billion dollar international market
- AFC Energy's stand alone product offering with use cases beyond just fuel cells
- AFC Energy's proprietary technology in this area positions us uniquely
  - only hydrogen solution provider able to offer both its own fuel cell and fuel conversion technology
  - market seeing great value in this proposition
- Significant value creation now exists as a standalone hydrogen generator
- Next generation ammonia cracker exhibits many market leading characteristics
- Strong pipeline of enquiries since technology launch in March 2023

# Fuel Conversion Market Opportunities



# Hydrogen Carrier Fuel Conversion Technologies

## Methanol Reformer Technology



Converts Methanol into  
Hydrogen Fuel

## Ammonia Cracker Technology



Converts Ammonia into  
Hydrogen Fuel

# Ammonia Cracker Core Technology Development



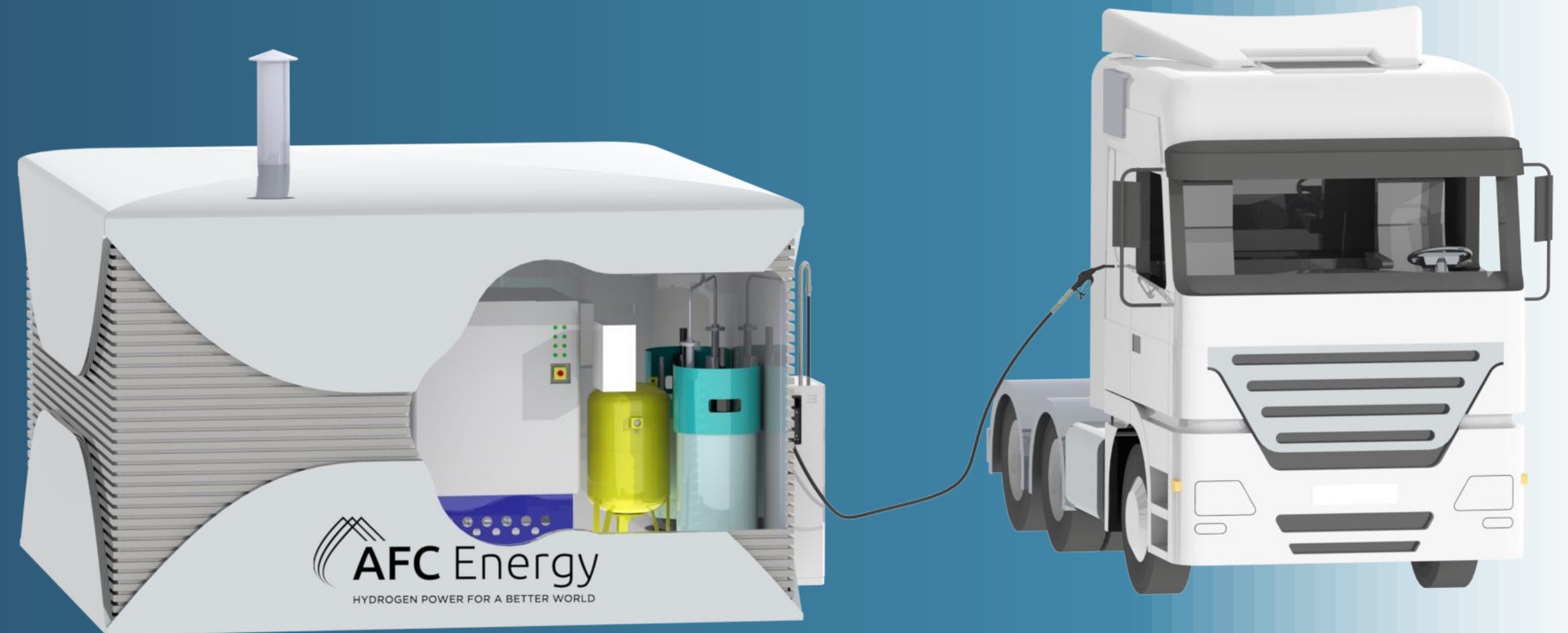
Ammonia Cracker  
Reactor

Modular Cracker

Packaged Hydrogen  
Generator System

# Concept Design for Hydrogen Refueller

- Hydrogen refueller fuelled by clean ammonia
- Use cases extend to:
  - vehicle refuelling
  - construction site fuelling hub
  - shipping
- High purity hydrogen generation technology
- Option for high pressure output



# Outlook

Adam Bond



# The Outlook



- **Growth in H-Power Tower rental revenues - including revenue from sale of hydrogen fuel**
- **Contracted revenue pipeline growth - plant hire commitments**
- **Delivery of 30kW Air Cooled Generator for delivery to ACCIONA**
  - incorporating battery to achieve 50kVA output
- **Delivery of ABB's first 200kW S+ Series Liquid Cooled System for CE marking**
- **Positioning for growth in maritime and critical power back up power**
- **Continued focus on manufacturing capacity**
- **Delivery of first prototype ammonia cracker system**
- **Development of new partnerships across ammonia cracker market**



**QUESTIONS?**