



ceres

# Final results

For the year ending 31 December 2022

**Ceres Power Holdings plc**

**24 March 2023**



Leading solid oxide technology  
for **power and green hydrogen**

**Unique IP**, >100 patent families

High-margin, **licensing business  
model**

We **collaborate with world-  
leading companies** to deliver  
clean energy technology...

...at **scale and pace**



# Another year of progress

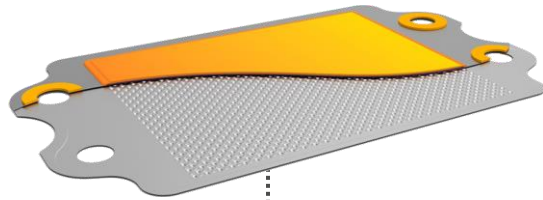
With strategic investment to deliver on our strategy

- Doosan factory construction underway in Korea
- Bosch's €500m investment plan in place
- Weichai's SOFC power system using Ceres' technology has achieved EU CE certification with TÜV SÜD
- First 100kW solid oxide electrolyser ("SOEC") module is on test demonstrating class-leading efficiency
- Demonstrator programmes for green hydrogen underway with Shell, and a new collaboration signed with Bosch and Linde Engineering
- Fuel cell and electrolysis test facility at Horiba Mira's UK site, is now open and supporting Ceres' core technology and system development



# Platform technology to address decarbonisation

Ceres technology enables high efficiency energy conversion at low cost



Stack



**ceres**  
power



**MIURA**



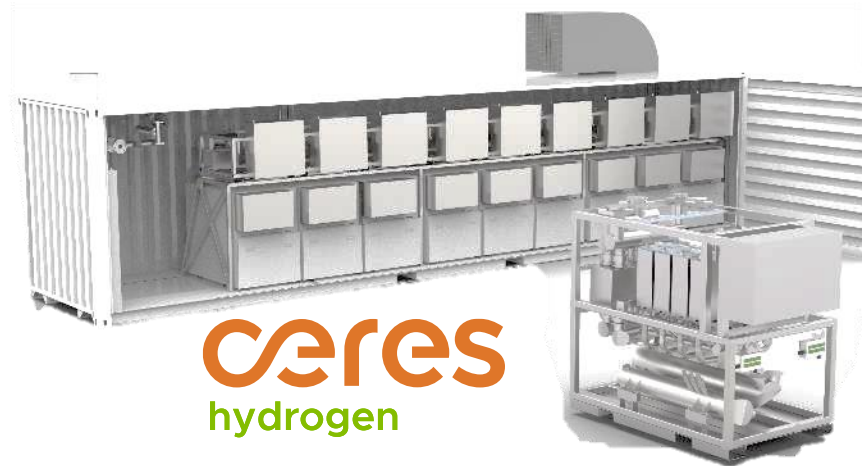
**BOSCH**



**DOOSAN**



**WEICHAI**



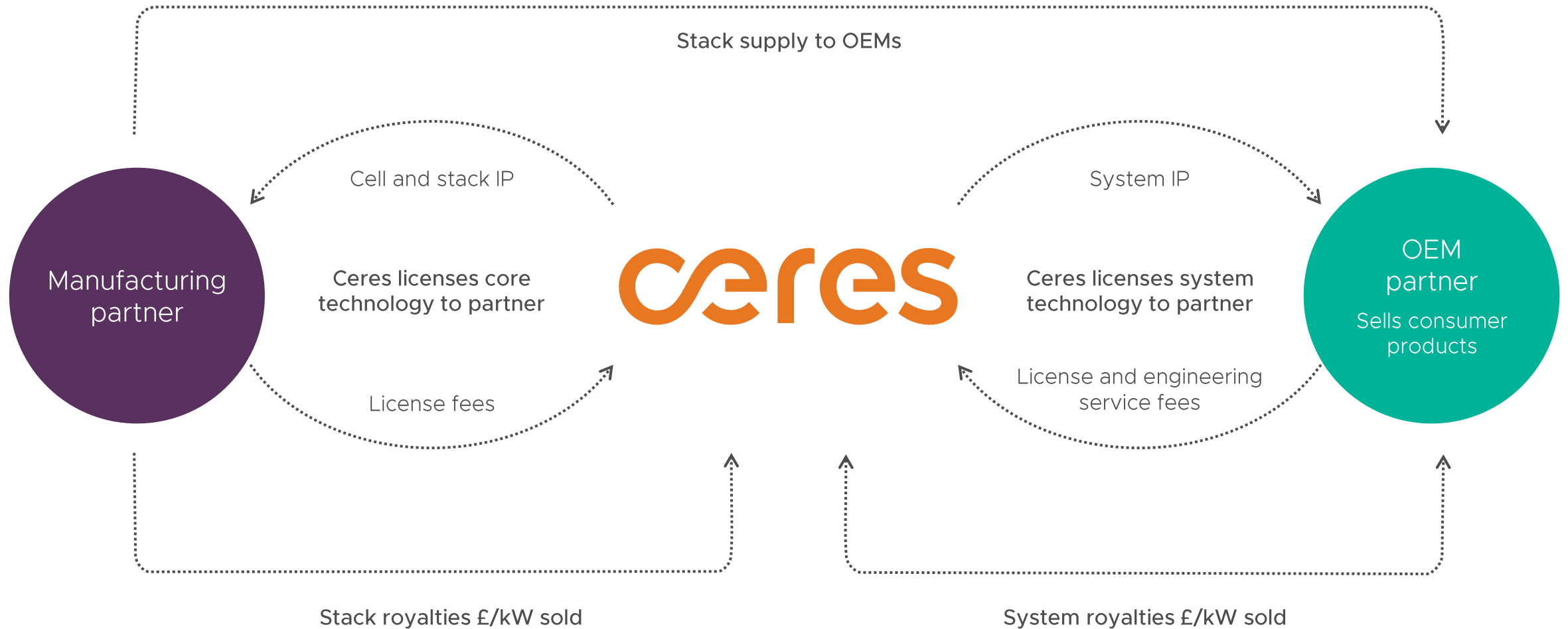
**ceres**  
hydrogen



**BOSCH**



# Asset-light, licensing business model for SOFC and SOEC



# Financial update

Eric Lakin



# Financial overview

For the year ended 31 December 2022

Revenue

**£22.1m**

-28% vs 2021

Gross margin

**59%**

2021: 62%<sup>1</sup>

Cash and short-term  
investments

**£182.3m**

Dec 2021: £249.6m

Employees

**570**

Dec 2021: 489

Gross profit

**£13.1m**

2021: £19.0m

Adjusted EBITDA

**(£43.2m)**

2021: (£16.7m)

Order backlog<sup>2</sup>

**£67.8m**

Dec 2021: £78.7m

Planned partner  
capacity

**250MW**

by 2024

1. 2021 gross margin restated (previously 66%) to reflect the classification of the RDEC tax credit within other operating income rather than offsetting cost of sales
2. Incorporates order book and pipeline (i.e. shorter-term revenue backlog; does not include long-term recurring royalty revenue)

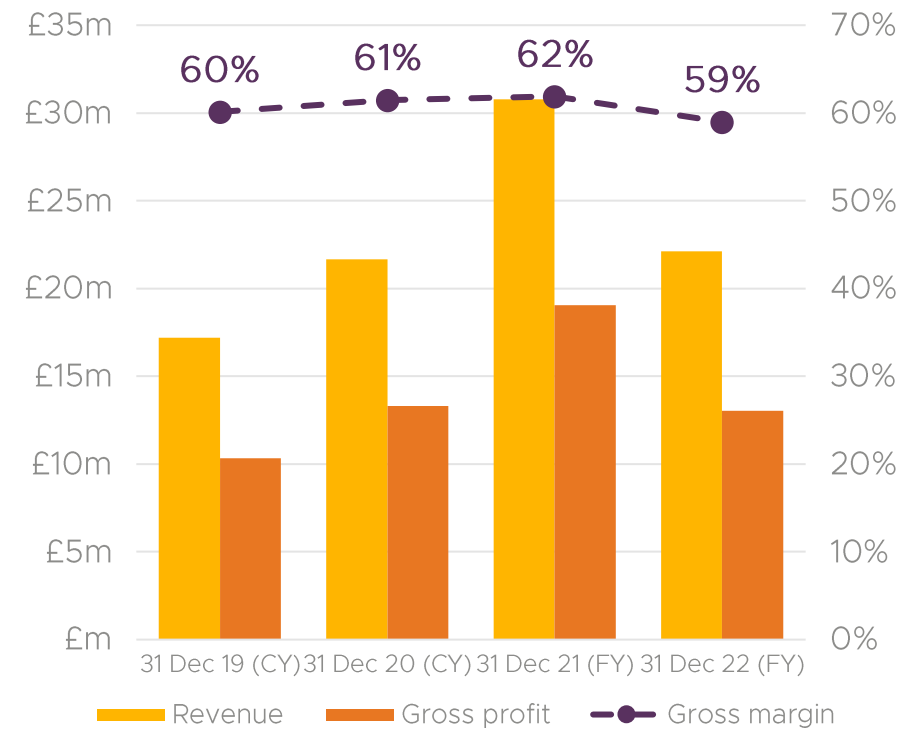
# Revenue and gross profit

Sector leading gross margins maintained

- Top line growth strongly influenced by the timing of licence fee revenue recognition
- As R&D expenditure credit becomes more significant, we have elected to exclude from Cost of Sales and have re-presented the comparatives to reflect this

## Revenue and gross profit

£m



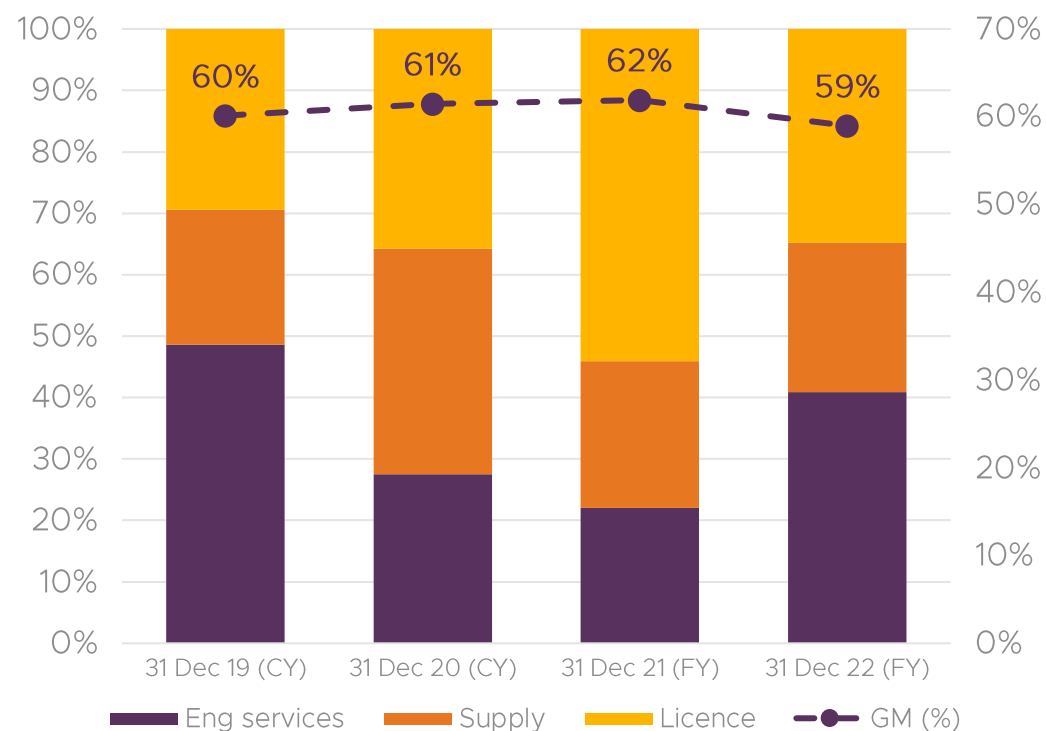


# Revenue mix evolution

Driven by timing of contracts

## Revenue mix and gross margin

%



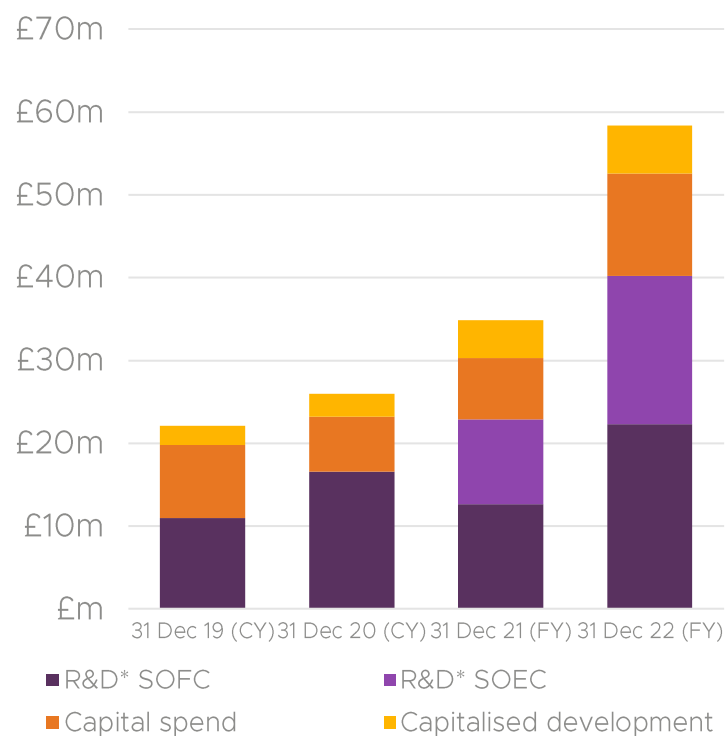
- Licence fee revenue – very high margin, often recognised up-front
- Supply – represents prototype technology (cells and stacks) to partners for development
- Engineering services – joint development and collaboration with partners across multiple applications
- Royalties – longer term, high margin revenue stream from partners based on commercial sales

# Planned investment on track

Capital raise supports investment in growth

## Investment in the future

£m

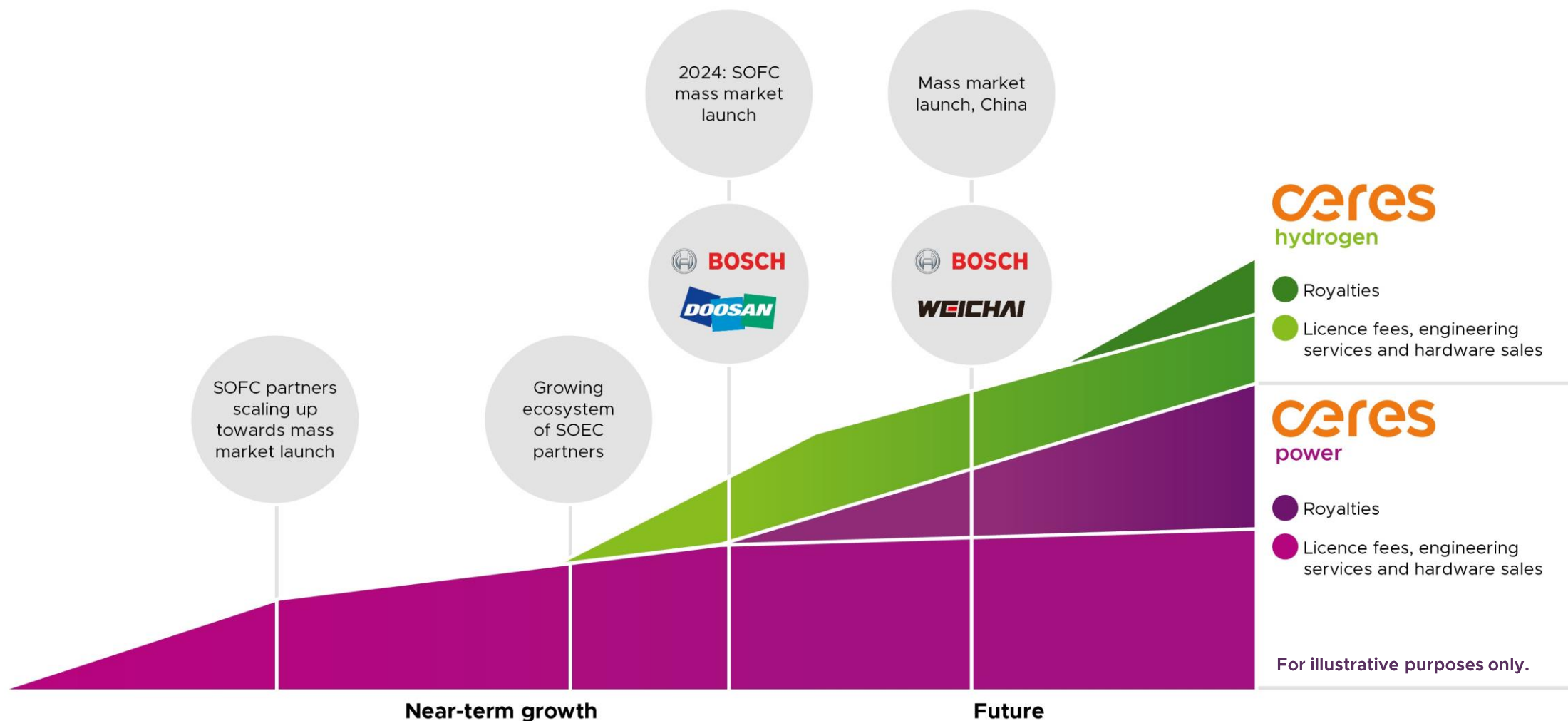


- Total “Investment in the future” increased to £58.4m (2021 £34.9m) driven largely by growth in SOEC R&D, and investment in SOFC capability
- Capital investment in 2023 to further enhance pilot manufacturing and testing capacity and capability
- Moderate increase of investment in 2023 in line with strategy to drive future growth

\* R&D spend before depreciation, amortisation and share based payments.

# Growing visibility of future royalty revenue

Inflection driven by mass market scale of partner manufacturing



# Business strategy

Phil Caldwell



# Strategy for future growth

<b>To enable our licence partners to succeed</b>	<ul style="list-style-type: none"><li>• Bosch and Doosan moving towards 2024 start of series production</li><li>• Third planned manufacturing facility upon China JV completion</li></ul>
<b>To build commercial scale</b>	<ul style="list-style-type: none"><li>• Building the ecosystem of global electrolyser partners with Shell and Linde Eng.</li><li>• Increased commercial presence in several global locations, reflecting the momentum in policy support for hydrogen and fuel cell technologies</li></ul>
<b>Maintain technology leadership</b>	<ul style="list-style-type: none"><li>• Developing the next generation of stack technology to meet growing interest in fuel cells and to support our partners as they scale</li><li>• Test facility with Horiba Mira now supporting technology development</li></ul>

# Ceres partners building manufacturing scale globally

- Built
- Planned
- In planning



Sector focus:

**SOFC**

## Mass production of Ceres' SOFCs in 2024

Doosan Fuel Cell has committed KRW 143.7bn (~£100m) to build a solid oxide fuel cell plant in Saemangeum, South Korea. Initial capacity of 50MW scaling to 170MW to service marine, power and utility scale applications.



# Weichai system achieves EU CE Certification

- 120kW SOFC power system has achieved EU CE certification through international testing organisation, TÜV SÜD
- Systems running at Weichai's Fuel Cell Industrial Park and at Weifang Energy Group
- Weichai estimates 1GW of distributed power has the potential to reduce carbon emissions by ~2mtpa, compared with grid electricity

## China joint ventures:

The structure of the China joint ventures has been agreed. We now await the final agreement between Bosch and Weichai.





# Bosch's decentralised SOFC “power plants”

- Series production commences in 2024, by which time Bosch will have invested ~€500 million
- Approved by the European Commission as one of the first Important Projects of Common European Interest (IPCEI)

## Recent deployments

Publicly funded project using 100kW of SOFC for electricity and heat at Erkelenz hospital in Germany.

Initiating a pilot project with HUB Security to integrate SOFC technology into holistic data centre solutions.



# Collaboration with Bosch and Linde Engineering

- Assessment of Ceres' solid oxide electrolysis (SOEC) technology for large scale industrial applications
- Validate performance of a high-efficiency pathway to low-cost green hydrogen
- Two-year demonstration of a 1MW SOEC system, starting in 2024 at Bosch's site in Stuttgart, Germany

## Three-way collaboration

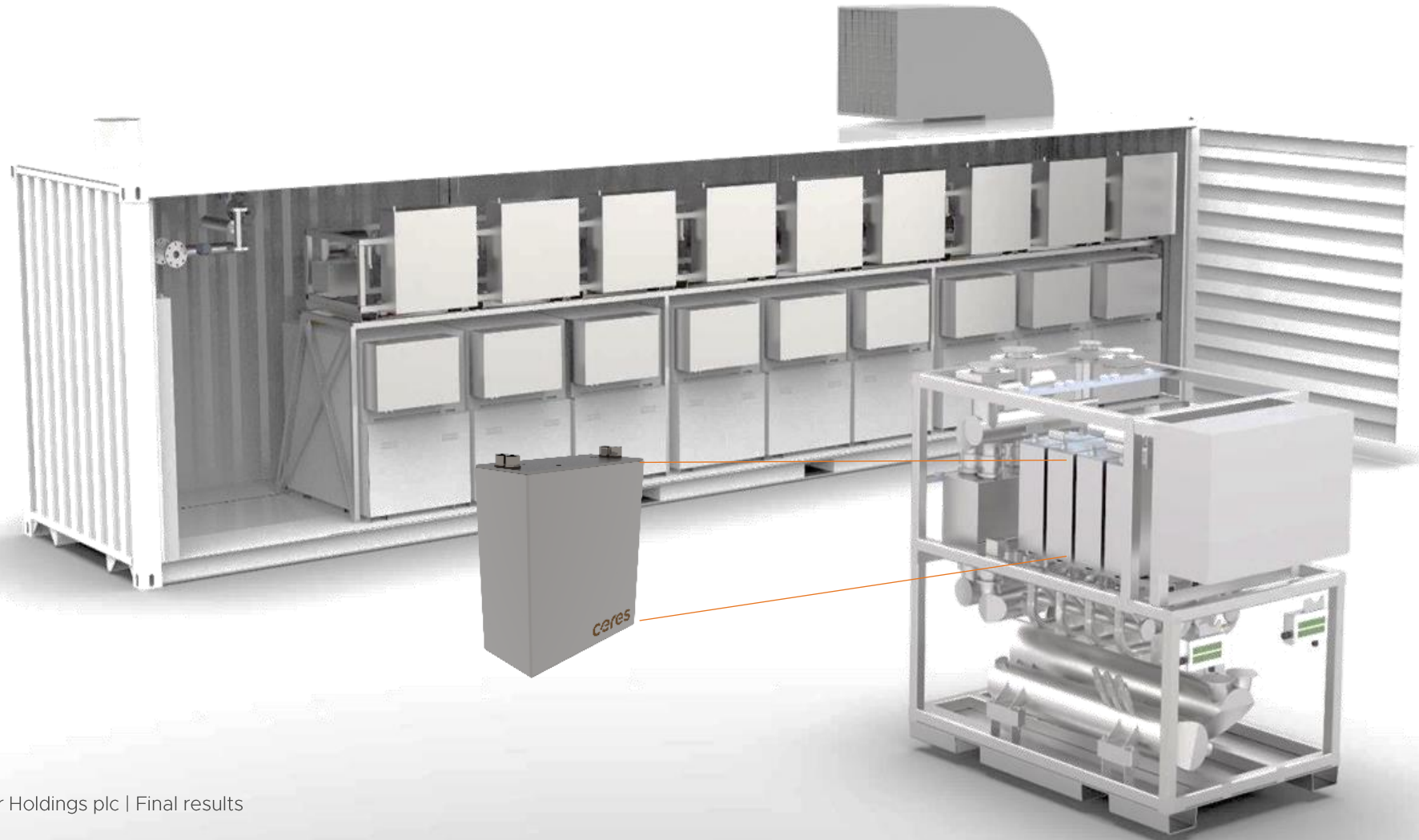
**Bosch** has significant expertise in product industrialisation and mass manufacturing.

**Linde Engineering** has world-leading capabilities in hydrogen process technology and a global customer footprint in industrial facilities.

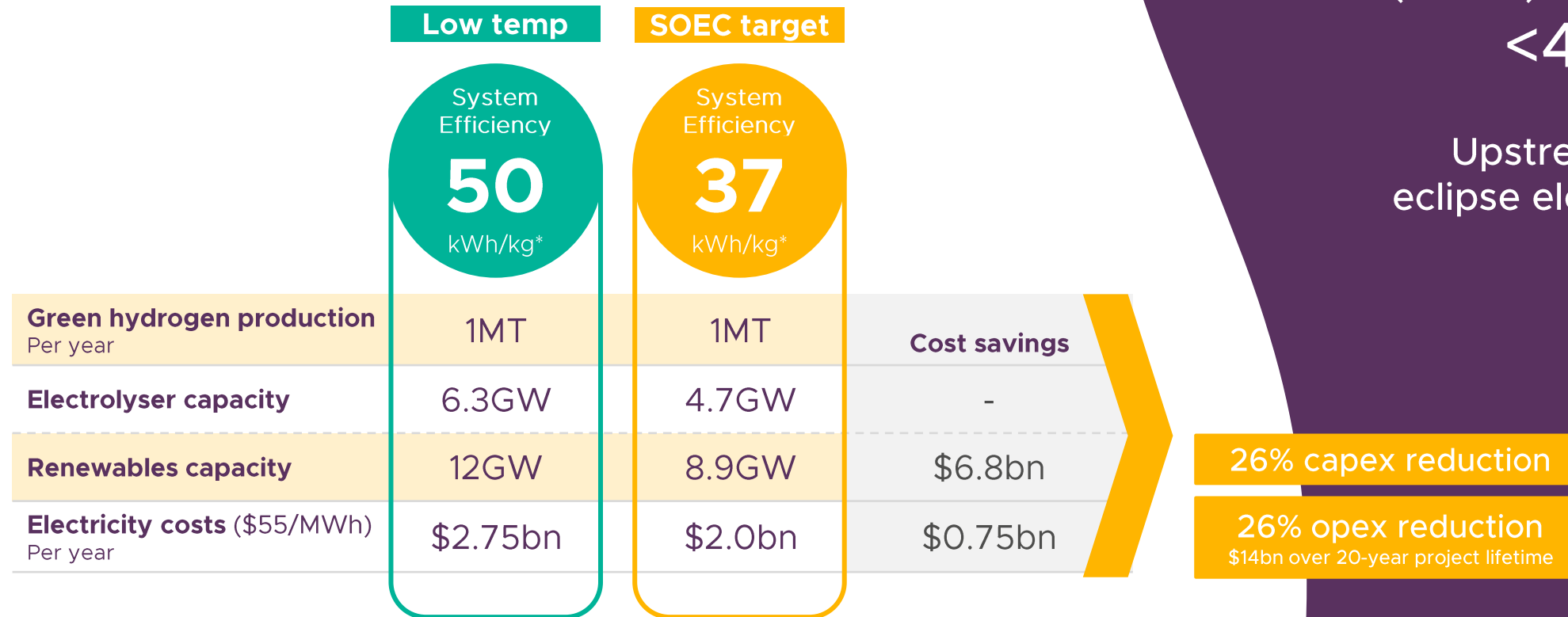


# Megawatt-class SOEC system demonstrator

Initial testing giving confidence that technology can deliver green hydrogen at <40kWh/kg, around 25% more efficiently than incumbent lower temperature technologies



# Indicative 2030 project costs for 1MT of green hydrogen



## Ceres' SOEC

First electrolyser cell module ("ECM") on test delivering

**<40kWh/kg**

Upstream cost savings eclipse electrolyser capex

Assumptions used in calculations: Electrolyser System Installed CapEx: \$600/kW; Wind:Solar ratio: 67:33; Renewable Capacity factor: 53%; Electrolyser Capacity Factor: 90%; \*References for renewable energy cost and efficiencies: Renewable power generation costs in 2021 (irena.org); Green hydrogen cost reduction: Scaling up electrolyzers to meet the 1.5C climate goal (irena.org)



# Shell collaboration for green hydrogen

- SOEC technology evaluation programme progressing well for deployment later this year
- First-of-a-kind 1MW demonstrator in build (far right) to accommodate up to nine electrolyser cell modules (“ECMs”)
- Pilot starts in 2023 and will run for three years – hydrogen will be used in industrial processes at Shell’s R&D centre in Bangalore, India
- 25% more efficient than incumbent lower temperature technologies



# Outlook and focus for the year ahead

- Growth of investment will continue in SOFC and SOEC consistent with 2021 capital raise
- Supporting existing partners as they scale manufacturing in Germany and South Korea
- Building new commercial partnerships including in electrolysis for green hydrogen
- Continued expansion of SOFC into higher power and maritime
- The structure of the China joint ventures has been agreed. We now await the final agreement between Bosch and Weichai
- We continue to work towards a move up to the Premium Listing on the Main Market of the London Stock Exchange

# Questions

## **Investor Relations**

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