

# HydrogenOne Capital Growth plc Q4 2023 Investor Update



Investing in clean hydrogen for a climate-positive impact

7<sup>th</sup> February 2024

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This document has not been approved (for the purposes of section 21 of the Financial Services and Markets Act 2000, as amended. The Company's Investment Adviser, HydrogenOne Capital LLP (FRN: 954060), is an appointed representative of Thornbridge Investment Management LLP (FRN: 713859) which is authorised and regulated by the Financial Conduct Authority.

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- Q4 2023 results
- Portfolio update
- Appendix: Invested companies update

# Q4 2023 highlights



£132.7 m

103.0p NAV per share

+125%
Portfolio
revenue growth

£1.0m New investment

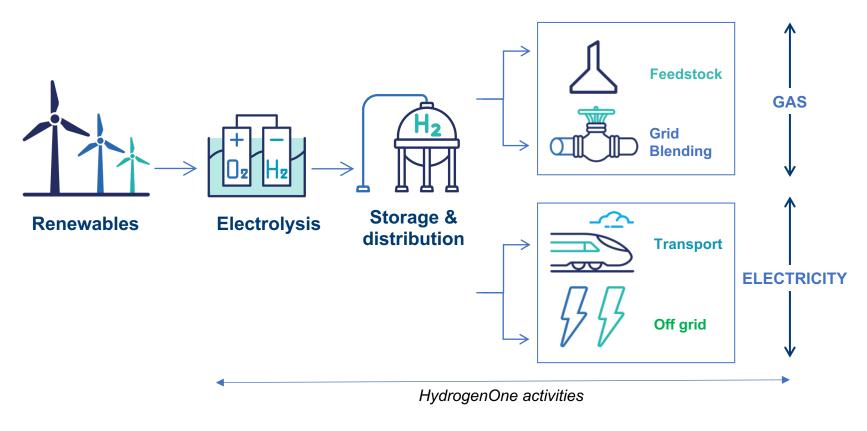


83,497 tCO<sub>2</sub>e GHGs avoided

- NAV per share 103.0 pence; an increase of 1.6% since 30 September 2023 (101.4 pence), and an increase of 5.8% since 31 December 2022, which included a 6.7 pence per share reduction from higher discount rates;
- Private companies, which account for 98% of our portfolio, delivered £74m in LTM revenue up to Dec 2023, an increase of 125% from LTM up to Dec 22;
- Follow-on investments in two companies, totalling £1.0m;
- New strategic investment in Elcogen and HiiROC underpinning Company valuations
- \$29 billion of new investment into clean hydrogen in 2023 (+440% vs 2022). 1.2GW of green hydrogen was online world-wide at the end of 2023 (+50% vs 2022), underscoring the positive industry outlook

### How our portfolio contributes to clean hydrogen





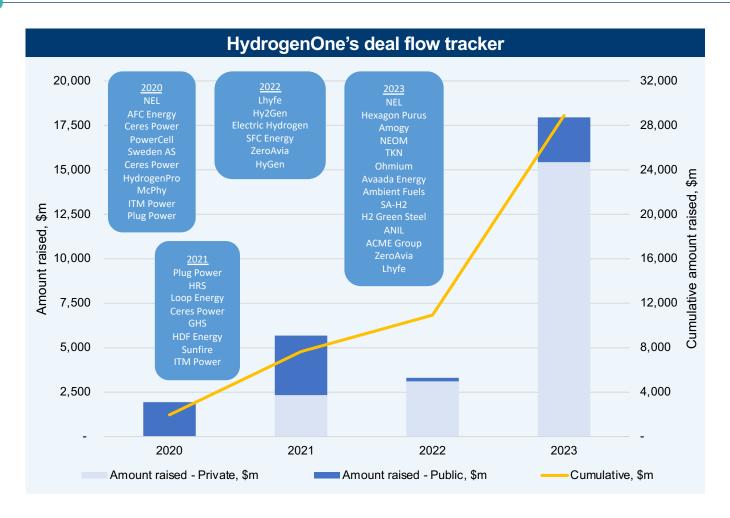




- Conversion of renewables to hydrogen
- Multiple hydrogen applications to replace fossil fuels
- 20 billion tonnes/yr GHG reduction potential

# Strong increase in investment in clean hydrogen in 2023





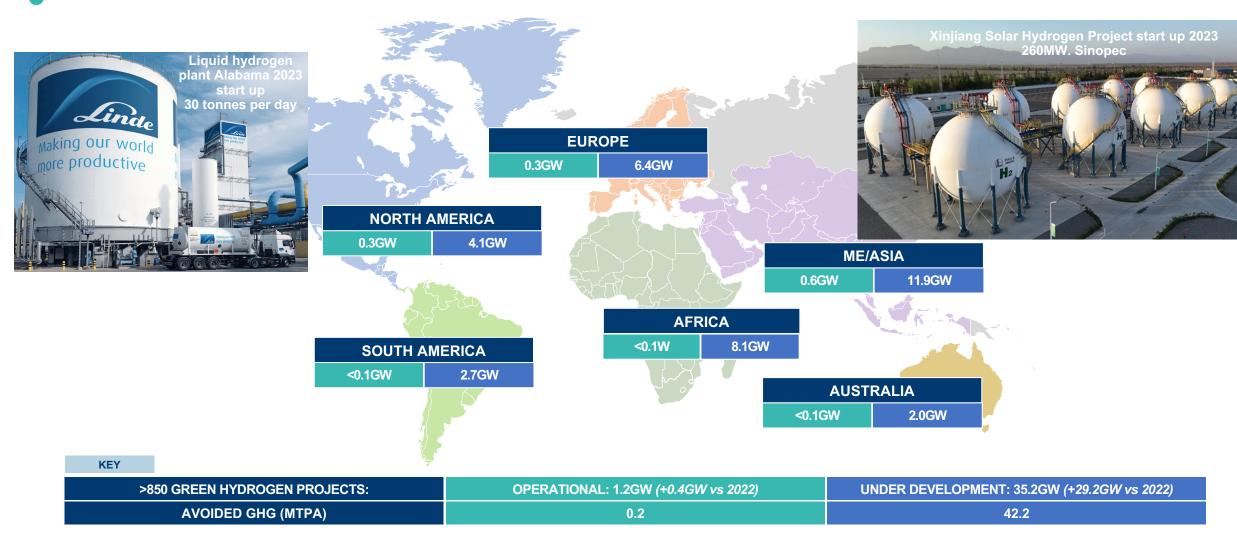
### 2023 key transactions

- Thyssenkrupp Nucera IPO
  - €550m raise / c. €2.5bn valuation
- NEOM green hydrogen
  - \$8.4b financial close
  - 4GW plant; 600 tonnes / day
- H2 Green Steel
  - €1.5b raise, €4.2b debt raise
  - 1GW plant
- Others include ZeroAvia, Lhyfe, NEL ASA, Hexagon Purus, ANIL, ACME Group, Avaada Energy, SA-H2, Ambient Fuels, Ohmium, Amogy

A total of \$28.9 billion (c. £23 billion) of new investment has been committed into clean hydrogen in 2023 (+440% vs FY 2022)

# 50% growth in green hydrogen production in 2023

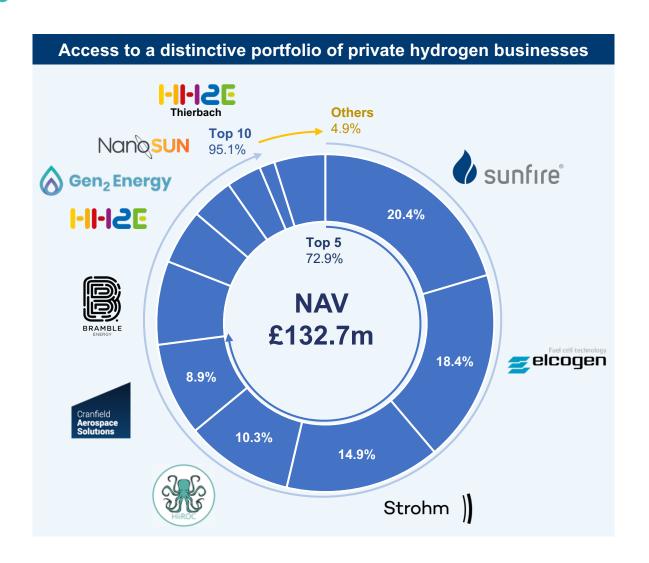




HydrogenOne has investment rights on >7GW of green hydrogen projects in Germany and Norway

# HydrogenOne has a unique and concentrated portfolio, invested across the hydrogen value chain





#### Where we invest

- Revenue-generating equipment businesses
- Hydrogen production projects
- Co-investing with industrial strategics and institutions
- Diversified portfolio and geography
- Clear strategies to exit via IPO or trade sale

# Investing alongside blue-chip industrials and funds



#### **Invested companies**

Hydrogen production















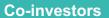




































































# **Q4 2023 financial highlights**



	31 Dec 2023	30 Sep 2023	% change	31 Dec 2022	% change
NAV per share	102.99p	101.42p	1.6%	97.31p	5.8%
NAV	£132.7m	£130.6m	1.6%	£125.4m	5.8%
Market Cap	£64.0m	£71.2m	(10.2)%	£102.2m	(37.4)%
Share price premium / (discount) to NAV <sup>2</sup>	(51.8)%	(45.5)%	(13.9)%	(18.5)%	(180)%
Portfolio valuation	£128.5m	£125.2m	2.7%	£106.8m	20.4%
Portfolio fair value gain / (loss) on cost	£16.9m	£14.5m	16.6%	£5.6m	200%
Cash and cash equivalents	£4.8m	£6.5m	(26.8)%	£19.7m	(76.5)%
Other net assets	£(0.6m)	£(1.1m)	41.5%	£(1.1m)	45.2%

As at 31 December 2023 (unaudited)

- NAV per share 102.99p
  - +5.8% Q4 22 Q4 23
  - +1.6% Q3 23 Q4 23
- £1.0m follow-on investment in two portfolio companies
  - Strohm £0.5m; Gen2 £0.4m
- Cash and cash equivalents of £4.7m, and £2.3m of listed hydrogen companies at the end of the quarter

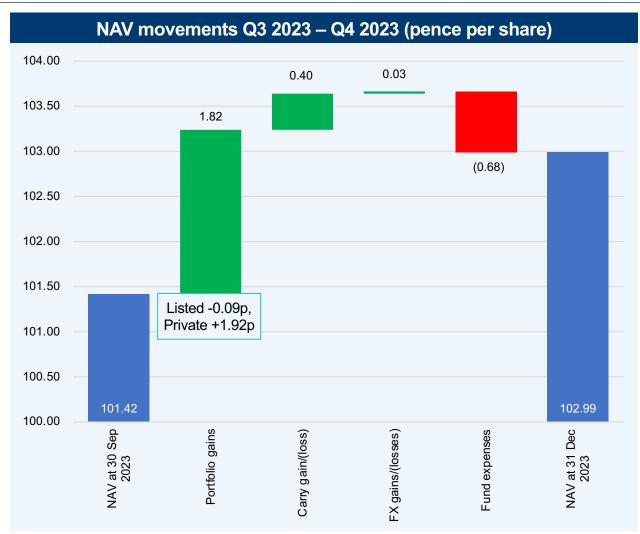
<sup>1</sup> Total returns for three months to 31 December 2023

<sup>2</sup> These are alternative performance measures

<sup>3</sup> Total returns for twelve months to 31 December 2023

# Growing our NAV and NAV/share in Q4 2023









Steady progression in NAV/share

# Portfolio valuation changes 2022-23

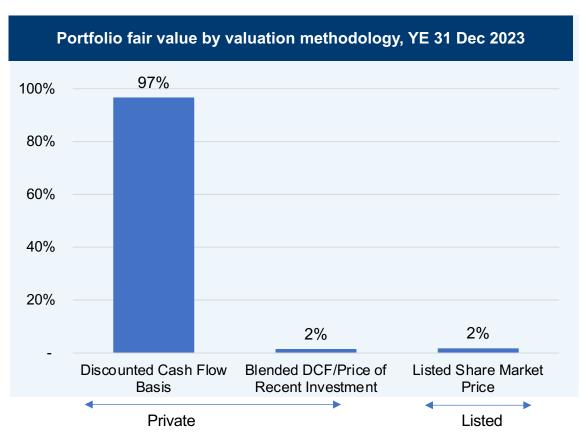




# The Company's approach to valuation remains consistent while market has seen strong rise and correction







- Listed hydrogen company valuations have decreased in 2022-23, whereas HGEN NAV has been steady, reflecting our consistent valuation methodology
- Forward revenue multiple of c. 9.8X (2025E) in private portfolio is in line with listed hydrogen companies

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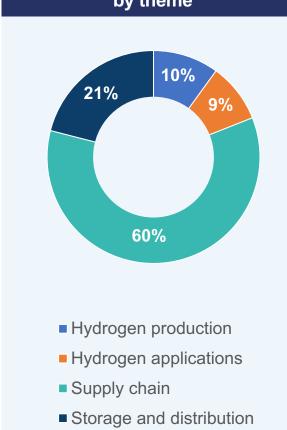


- Full year results for the year ending 31st December 2022
- Portfolio update
- Appendix: Invested companies update

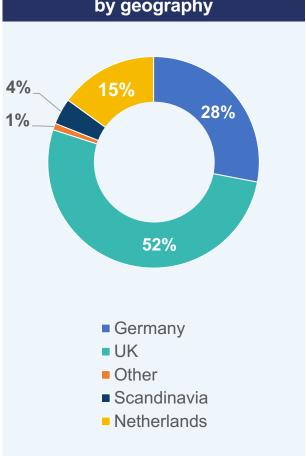
# Distinctive and unique hydrogen portfolio



# Portfolio segmentation by theme



# Portfolio segmentation by geography



#### Fund holdings (as of 31 Dec 23)

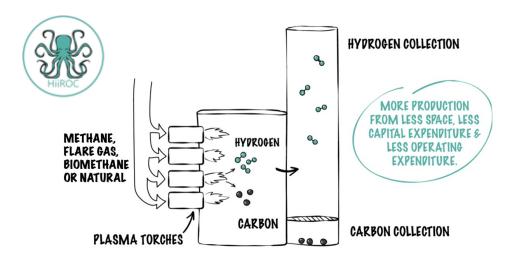
Private portfolio	NAV £m	NAV %
Sunfire GmbH	27	20%
Elcogen Plc	24	18%
Strohm Holding B.V.	20	15%
HiiROC Ltd	14	10%
Cranfield Aerospace Solutions	12	9%
Bramble Energy Limited	11	8%
HH2E AG	7	5%
NanoSUN Limited	5	4%
Gen2 Energy	4	3%
HH2E Thierbach Project	2	1%
Private portfolio	127	95%
Listed portfolio	2	2%

Total investments	129	97%
Cash and cash equivalents	5	4%
Other assets/(liabilities)	(1)	(1)%
Net Asset Value	133	100%

# HiiROC: Cemex enhanced strategic relationship + UK LCHS inclusion (10% HGEN NAV)



### Thermal Plasma Electrolysis ("TPE") production process



### HiiROC TPE demonstrator at Centrica Brigg site, UK



### Recent developments

- Technology leader in patented TPE, which cleans up flare gas, methane, biogas in hydrogen and solid carbon
- TPE officially included within the scope of the UK Government's Low Carbon Hydrogen Standard (LCHS), alongside electrolysis and SMR. Facilitates the roll out of TPE and access to financial support schemes
- Cemex Ventures increased its stake in HiiROC. Intent to deploy TPE at Rugby, UK cement plant, and in wider EMEAA
  operations in the future

# Elcogen: HD Hyundai strategic investment (18% HGEN NAV)



#### Solid oxide cell and stack innovation



- Fuel cell and electrolysis: 160 customers in 30 countries
- "Elcogen Inside" business model



- HD Hyundai Group has invested €45m in Elcogen; validates HGEN valuation and strategy to invest with major industrials
- Focus on marine propulsion systems and stationary power
- Site works commenced on new manufacturing facility in Tallinn, Estonia. 100MW Phase 1, increasing to 360MW
- Assessing new cell and stack manufacturing JV in South Korea

# NanoSUN: relaunched as Swift Hydrogen (4% HGEN NAV)



### Distinctive 'cascade' technology for mobile refuelling



**Decant:** Maximum pressure reduces with every fill as tank is depleted. Lots of gas available but final vehicle pressure low.



**Cascade:** Low pressure storage used first. Higher pressure storage only used when needed. More vehicles are filled to full pressure. More gas available for filling.

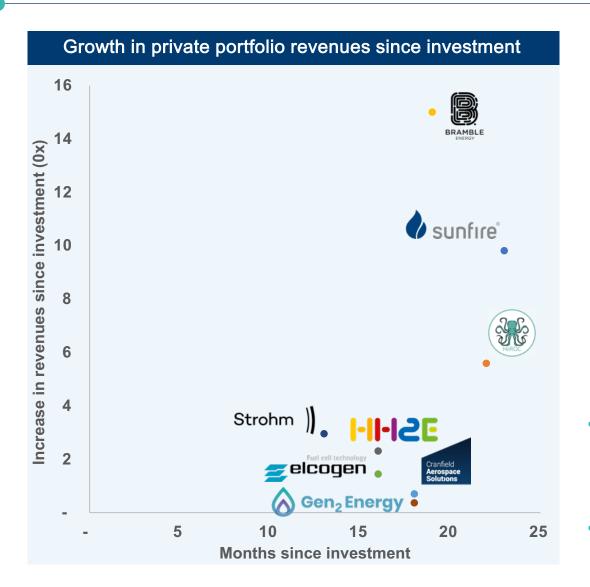


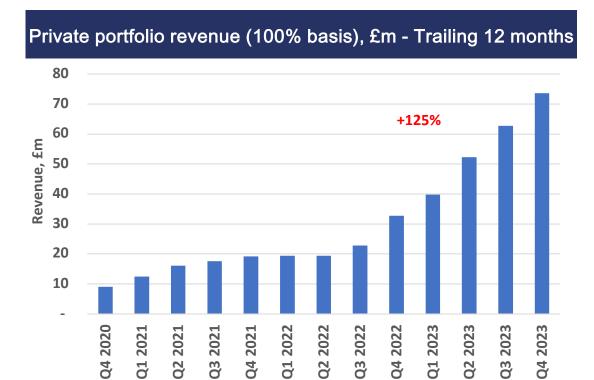
### **Corporate restructuring Q1 24**

- Market leader in mobile refuelling for ground transport and turboprop
- Distinctive 'cascade' technology to manage high pressure gas transport into low pressure gas sales
- Pioneer mobile refuelling units deployed successfully in 2022-23; Westfalen, AFC Energy, EMEC
- Company restructured to lower cost base and simplify shareholder register, following UK policy headwinds
- Relaunched as Swift Hydrogen under full ownership of HGEN, ahead of future funding rounds

# The portfolio is revenue generating and has produced consistent growth







- The aggregate revenue from private investments c. £74m for 12 months to 31 December 2023; increase of 125% from 12m to Q4 2022
- Robust demand especially transportation and distribution equipment, and electrolysers, as green hydrogen supply projects and transport sector off-takers expand capacity

# **Growing value for investors**



	% of invested portfolio (31 Dec 23)	Activity	Investments	2022-23 revenue growth (%)
Early stage	29%	<ul><li>IP demonstrators</li><li>Project developers</li></ul>	Cranfield HiiROC HH2E Gen2 Energy	+31%
Mid stage	10%	<ul><li>Manufacturing roll-out</li><li>Production project delineation</li></ul>	Thierbach Bramble	+870%
Growth	55%	<ul><li>Significant capacity growth</li><li>Industrial scale and EBITDA</li></ul>	Elcogen Sunfire Strohm	+119%
				2023: £74m (+125% vs 2022)

### **Growing value for our investors**

- Business plan delivery in invested companies
- Follow-on investment by 3<sup>rd</sup> parties at higher valuation
- Exit via IPO or trade sale, across all stages of the portfolio
- Portfolio companies have investment banks appointed for HGEN exit

# **Summary**



### Identifying the best investment opportunities

Specialist team

Active stewardship

Grow EBITDA and exit

>£500m pipeline



Revenuegenerating equipment suppliers

Distinctive project developers

Avoided GHG potential

10-15% target return including exits<sup>1</sup>

#### **Clear strategy to grow NAV**

(1) For an investor in HGEN at IPO, the total NAV return target is a target only and not a profit forecast. There can be no assurance that this target will be met, or that the Investment Trust will make any distributions or returns at all and it is should not be taken as an indication of the Investment Trust's expected future results. The Investment Trust's actual returns will depend upon a number of factors, including but not limited to the size of the Investment Trust, currency exchange rates, the Investment Trust's net income and level of ongoing charges. Accordingly, potential investors should not place any reliance on this target in deciding whether or not to invest in the Investment Trust and should decide for themselves whether or not the target total NAV return is reasonable or achievable. The illustrative returns has been calculated on the basis of various assumptions and inputs. There can be no assurance that these assumptions and/or inputs will be correct or that the associated potential revenues and returns will be generated.

### Q4 2023 highlights

- NAV per share 103.0 pence; an increase of 1.6% since 30 September 2023 (101.4 pence), and an increase of 5.8% since 31 December 2022;
- Private companies delivered £74m in LTM revenue up to Dec 2023, an increase of 125% from LTM up to Dec 22;
- Follow-on investments in two companies, totalling £1.0m;
- New strategic investment in Elcogen and HiiROC underpinning Company valuations
- \$29 billion of new investment into clean hydrogen and
   1.2GW of green hydrogen online in 2023, underscoring the positive industry outlook



Appendix: Invested companies summary

# **Fund holdings**



	As at 31 D	ec 2023	As at 30	Sep 2023
Private portfolio	NAV £m	NAV %	NAV £m	NAV %
Sunfire GmbH	27	20%	25	19%
Elcogen Plc	24	18%	22	17%
Strohm Holding B.V.	20	15%	20	15%
HiiROC Ltd	14	10%	11	8%
Cranfield Aerospace Solutions	12	9%	12	9%
Bramble Energy Limited	11	8%	8	6%
HH2E AG	7	5%	4	3%
NanoSUN Limited	5	4%	14	11%
Gen2 Energy	4	3%	4	3%
HH2E Thierbach Project	2	1%	2	1%
Private portfolio	127	95%	123	94%
Listed portfolio	2	2%	2	2%
Total investments	129	97%	125	96%
Cash and cash equivalents	5	4%	7	5%
Other assets/(liabilities)	(1)	(1)%	(1)	(1)%
Net Asset Value	133	100%	131	100%

# **Sunfire GmbH investment (Supply chain)**



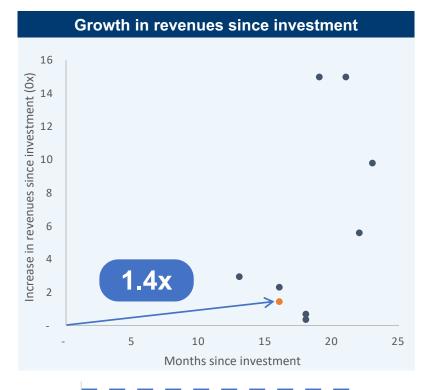
German industrial electrolyser producer, of pressure alkaline (AEL) and solid oxide electrolysers (SOEC)
• £22m / Oct 21 & Jan 23 / 20% of NAV
<ul> <li>Planet First Partners, Lightrock, SMS, Neste, CIP, Carbon Direct Capital Management, Blue Earth Capital, Amazon</li> </ul>
<ul> <li>Industry-leading electrolyser manufacturer</li> <li>Revenues from a growing global customer base</li> <li>Strong product credentials with top in-house engineering and product design</li> <li>500MW / annum electrolyser production at three sites in EU</li> </ul>
<ul> <li>Secured large scale order of 100MW electrolyser for EU refinery</li> <li>FID of 30MW green hydrogen at Bad Lauchstädt Energy Park</li> <li>New serial alkaline electrolysis production facility in Solingen, Germany with investment of EUR 30m at the facility + Vitseco JV</li> <li>E169m IPCEI grant to support production technologies</li> </ul>
<ul> <li>Building up alkaline capacity to &gt;GW scale to match order book</li> <li>Conversion of strong revenue growth to EBITDA to underpin exit for investors</li> </ul>

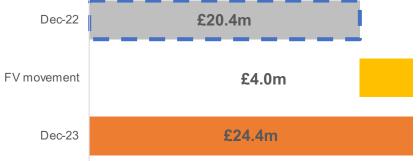


# **Elcogen Plc investment (Supply chain)**



Company description		
Fuel cell technology elcogen www.elcogen.com	Solid oxide fuel cell and electrolyser manufacturer with presence in Estonia and Finland	
Investment size / date / % of NAV	• £20m / May 22 / 18% of NAV	
Co-investors	Biofuel OÜ, VNTM Powerfund II	
	<ul> <li>Industry-leading innovator and supplier of solid oxide cells and stacks, with manufacturing facilities in Finland and Estonia, ready for expansion</li> </ul>	
Why invested	<ul> <li>Over 60 established industrial customers worldwide, and &gt; 10 year track record</li> </ul>	
<b>,</b>	<ul> <li>High-end offering based on advanced solid oxide technology with low operating temperatures and superior economics</li> </ul>	
	<ul> <li>Developed a reversible ceramic technology that converts hydrogen into emission-free electricity and vice versa</li> </ul>	
Total addressable market	• >£40bn (by 2030)	
	IPCEI grant E25m for technology development	
Recent developments	<ul> <li>Site selection and detailed design for new production site in Tallinn for annual capacity 360MW cells / 200MW stacks (SOEC mode)</li> </ul>	
	<ul> <li>E45m investment from HD Hyundai + collaboration for marine &amp; South Korea manufacturing</li> </ul>	
Key milestones	<ul> <li>Pending onset of construction of greenfield plant in Tallinn</li> </ul>	

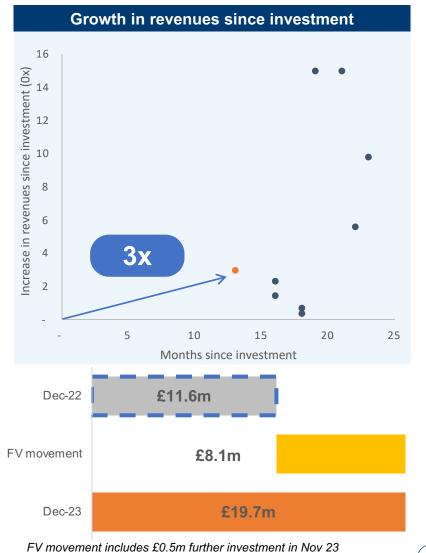




# **Strohm Holding B.V. investment (Storage & Distribution)**



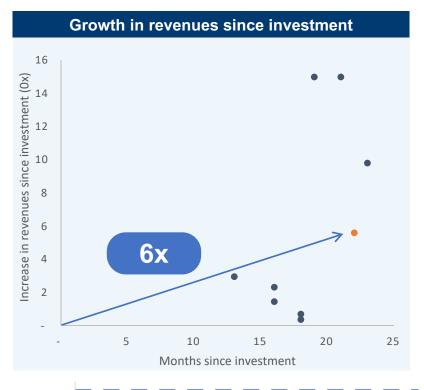
Strohm )	Netherlands-based hydrogen pipeline company		
Investment size / date / % of NAV	• £10m / Aug 22 & Dec 22 & Nov 23 / 15% of NAV		
Co-investors	<ul> <li>Shell Ventures, Chevron Technology Ventures, Evonik Venture Capital, ING</li> </ul>		
	<ul> <li>Industry leaders in offshore hydrogen and CO2 pipelines, where HGEN sees significant market growth</li> </ul>		
Why invested	<ul> <li>Thermoplastic Composite Pipe ("TCP") has c.50% less greenhouse gas emissions than metal. Can transfer up to nine times the amount of hydrogen energy compared to a cable.</li> </ul>		
	<ul> <li>TCP's flexibility, lack of corrosion, fatigue and embrittlement make it the superior pipeline solution for offshore wind farms, generating hydrogen</li> </ul>		
Total Addressable Market	• c. £700m (2030) to >£1.7b (2040)		
Recent developments	<ul> <li>Netherlands plant expansion completed: 140km/year capacity</li> <li>Launched Field Service Group following contract of over EUR 30m</li> <li>Selected for 10MW offshore green hydrogen "HOPE", Belgium</li> <li>Increased orderbook- orders from ExxonMobil, TotalEnergies, PRIO</li> </ul>		
Key milestones	<ul> <li>Grow revenues from energy transition (CO2 and Hydrogen)</li> <li>Positive EBITDA 2024</li> </ul>		

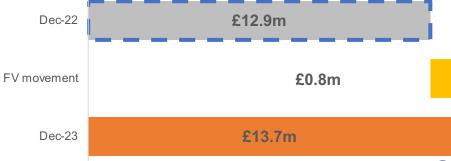


# **HiiROC Limited investment (Storage & Distribution)**



UK-based thermal plasma electrolysis developer, with world-leading (IP-protected) technology for low-cost, zero-emission hydrogen, also enabling flare/waste gas mitigation and CO2 capture using biomethane		
• £10m / Nov 21 / 10% of NAV		
<ul> <li>Melrose Industries, Centrica, Hyundai, Kia, Wintershall Dea, VNG, Cemex</li> </ul>		
<ul> <li>Proprietary technology to convert natural gas, flare gas and biomethane into hydrogen and solid carbon black</li> </ul>		
<ul> <li>Industrial off-takers of the product such as Centrica, Hyundai and CEMEX also on the shareholder register</li> </ul>		
<ul> <li>Highly scalable modular solution, producing 100kg / day of hydrogen from a single unit through to large plants capable of 100's of tonnes / day of hydrogen, alongside carbon black</li> </ul>		
• >£40bn (by 2030)		
<ul> <li>Setting up US and Middle East offices for sales expansion</li> <li>Won the first UK project with Centrica to inject hydrogen at Brigg Gas Fired Power station, as part of the Net Zero Technology Centre's £8m Open Innovation Programme</li> <li>Cemex CVC increased stake, underpins HGEN valuation</li> </ul>		
<ul> <li>HiiROC technology in scope for UK LCHS</li> <li>Pilot units contracted for deployment</li> </ul>		





# **Cranfield Aerospace Solutions Ltd**



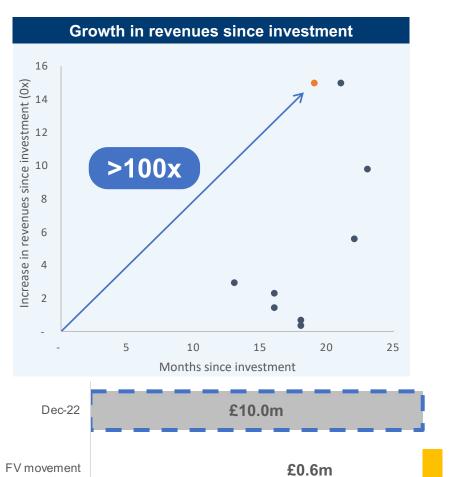
Company description  Cranfield Aerospace Solutions	UK-based passenger flight innovator, powering turboprop flight with hydrogen	
www.cranfieldaerospace.com		
Investment size / date / % of NAV	• £9m / Mar 22 & Apr 23 & Sep 23 / 9% of NAV	
Co-investors	<ul> <li>Safran Ventures, Tawazun Strategic Development Fund, Motus Ventures</li> </ul>	
Why invested	<ul> <li>Technology leader in delivering hydrogen powered turboprop flight</li> <li>Aerospace market leader in the design and manufacture of new aircraft design concepts, complex modifications to existing aircraft and integration of cutting-edge technologies</li> <li>Working on certification of the Britten-Norman Islander passenger aircraft using hydrogen</li> </ul>	
Total addressable market	• £1.4bn (by 2030)	
Recent developments	<ul> <li>Achieved the preliminary design milestones for Project Fresson</li> <li>Welcomed Evolito as the motor &amp; inverter supplier for its hydrogen-powered aircraft demonstrator</li> <li>MOU with Dronamics opens up second plaform for hydrogen-electric flight, alongside Britten Norman</li> </ul>	
Key milestones	<ul><li>Test flight 2024/25</li><li>Commercial certification 2026</li></ul>	



# **Bramble Energy Limited**



Company description  BRAMBLE  www.brambleenergy.com	UK-based fuel cell and portable power solutions company		
Investment size / date / % of NAV	• £10m / Feb 22 / 8% of NAV		
Co-investors	IP Group, BGF, Parkwalk, UCL Technology Fund		
Why invested	<ul> <li>Pioneering revolutionary fuel cell design and manufacturing techniques</li> <li>Novel printed circuit board design - low cost, scalable and recyclable</li> <li>Working with leading global automotive businesses to scale-up high-power density, mobility fuel cell systems</li> </ul>		
Total addressable market	• >£100bn (by 2030)		
Recent developments	<ul> <li>New facility with state-of-art hydrogen innovation hub</li> <li>Testing high powered PCBFC with Tier 1 Automotive Manufacturers</li> <li>Awarded £12 million UK Government funding to provide fuel cell technology to hydrogen buses</li> </ul>		
Key milestones	<ul> <li>Upgraded to a new facility as part of scaling up of units to 30kw-100kw</li> <li>Mobility technology development and testing of novel printed circuit board design by end users in automotive</li> </ul>		



£10.6m

Dec-23

# **HH2E & Thierbach investments (Hydrogen Production)**



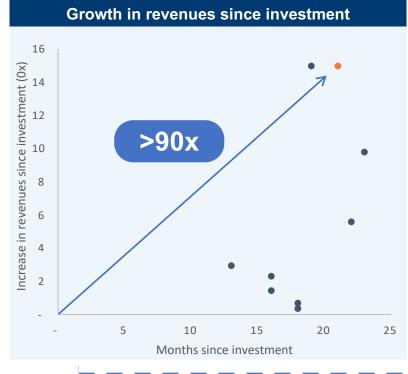
			CAPITAL   FUTURE FUEL. NOW
Description		_	
1-11-12E	German green hydrogen project developer with a focus on industrial customers. Operator of the Thierbach green hydrogen development project, in which HGEN has a direct investment.		Lubmin
www.hh2e.de		_	
Investment size / date /	<ul> <li>HH2E: £5m / May 22 / 7% of NAV</li> </ul>		Berlin
% of NAV	<ul> <li>Thierbach project (invested to date): £2m / Jan 23 &amp; May 23</li> </ul>		
Co-investors	Foresight Group LLP		Frankfurt
	<ul> <li>A prominent leader in Germany focused on green hydrogen and battery storage project development</li> </ul>	_	
Why invested	<ul> <li>Assessing 5 new projects for Final Investment Decision ("FID")</li> </ul>	Thierbach	
<b>,</b>	<ul> <li>Provides HGEN with investment rights in multiple large-scale industrial decarbonization projects, with first project investments underway (Thierbach &amp; Lubmin)</li> </ul>		Munich
Total Addressable Market	<ul> <li>&gt;£100bn (based on German government forecasts for green hydrogen demand by 2045)</li> </ul>	Dec-22	£5.1m
Recent developments	<ul> <li>EUR 13m spend (HGEN EUR 2.8m) on Front End Engineering and Design (FEED), land purchase, key equipment (Thierbach)</li> </ul>	movement	£3.8m
Key milestones	• FID – 24 (Thierbach and Lubmin), subject to funding	Dec-23	£8.9m

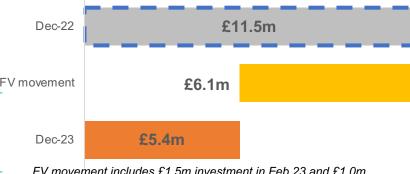
FV movement includes £1.9m investment in H1 23 for Thierbach project

### **NanoSUN Limited**



Company description  Nanosun.co.uk	UK-based developer of hydrogen distribution and mobile refueling equipment		
Investment size / date / % of NAV	• £11m / Dec 21 & Feb 23 & Jul 23 / 4% of NAV		
Co-investors	Westfalen Group		
Why invested	<ul> <li>Provides flexible and low-cost connection between hydrogen customers such as truck stops, and concentrated hydrogen supply sources</li> <li>Flat-bed solution with 60% lower cost than alternative systems</li> <li>Accelerating large-scale roll out of fleets of hydrogen buses, trucks, vans and forklifts</li> <li>High quality order book with clients including Westfalen</li> </ul>		
Total addressable market	• £800m (2025 UK/EU) to >£20bn (2030 globally)		
Recent developments	Business restructured early 2024 and relaunched as Swift Hydrogen Near term deliveries expected in EU, as UK slows down on energy transition in transport sector		
Key milestones	Continued roll out and delivery of Pioneer units to hydrogen refuelling customers, driving financial growth		





FV movement includes £1.5m investment in Feb 23 and £1.0m investment in Jul 23

# **Gen2 Energy**



			CAPITAL   FUTURE FUEL, NOW
Company description  Gen <sub>2</sub> Energy  www.gen2energy.com	Norwegian green hydrogen project developer		
Investment size / date / % of NAV	• £4m / Mar 22 & Nov 23 / 3% of NAV		Holandsvika • 500MW – est. 2027
Co-investors	<ul> <li>HyCap, Vitol, Hoegh LNG, Knutsen Group</li> </ul>		Electrolysis with shipping transport     HGEN investment 2024-2025
Why invested	<ul> <li>Leading green hydrogen project developer, with solid plans to convert low-cost hydroelectric power to hydrogen for export</li> </ul>		Nesbruket • 200MW – est. 2026
	• Up to 925MW green hydrogen projects in Norway, with expected production in 2025-2027		Electrolysis with shipping transport     HGEN investment 2023-2024
	<ul> <li>Co-invested with Norwegian LNG and ship operators that provide input to the Gen2 hydrogen export solution</li> </ul>		Afjord  150MW – est. 2027  Electrolysis with shipping transport
	HGEN has follow-on investment rights in multiple project SPVs		HGEN investment 2024-2025  Jelsa
Total addressable market	• >£100bn		80MW – est. 2026     Electrolysis with shipping transport
Recent developments	<ul> <li>Entered agreement with Port of Helgeland on planning and design of a new quay</li> </ul>		HGEN investment 2023-2024
	<ul> <li>Provaris Energy collaboration agreement for marine storage and shipping solutions</li> </ul>	Dec-22	£3.4m
	<ul> <li>Detailed zoning plan for Gen2 Energy's hydrogen facility in Mosjøen approved, hydrogen offtake being signed</li> </ul>	FV movement	£1.0m
	Term sheet agreed with SEFE for Germany hydrogen offtake	Dag 22	CA Am
Key milestones	First hydrogen project FID at Mosjøen in 2024	Dec-23	£4.4m

### **Contact us**



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