

# **Investor Presentation**

## **FY24 Interim Results**

to 31 December 2023

**Keith Broadbent - CEO**  
**Patrick Carter – CFO**  
**John Mark Seymour – Commercial Director**



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# Presenters



**Keith Broadbent**  
**CEO**

Keith joined Haydale in July 2017 and was appointed the Group's CEO in March 2019. Previously Keith has held several senior positions at Princess Yachts International, Sunseeker, TT Electronics and Ultra Electronics.



**Patrick Carter**  
**CFO**

Patrick joined Haydale in June 2023 and is a qualified Chartered Accountant and Barrister. Previously Patrick has held CFO level positions at Aukett Swanke Plc, Charteris Plc and a number of private equity backed, UK and Asia based renewable energy companies.



**John-Mark Seymour**  
**Commercial Director**

John-Mark joined Haydale in 2013 and is now responsible for the development of strategic commercial and technical projects. John-Mark manages materials production through the HDPlas technology.



# Period Highlights

- **Group Revenues increased by 38% to £2.47m (H1 FY23 £1.78m).**
- Fund raise of £5.1m (gross) completed in October 2023.
- Petronas: Good progress on projects under the announced 2.5-year collaboration agreement with further project strands underway.
- Cadent:
  - Working prototypes of shower and water heater units produced.
  - Next phase to productionise under discussion: reducing weight and optimise for volume potential.
  - Over-the-radiator blanket project commenced using same HDPlas technology.
- Underfloor heating operational prototype in place at Ammanford incorporating zonal heating. Discussions with potential customers commenced.
- Thermal transfer fluid initiatives progressing with industry expert, Hydratech. Benefitting from Welsh Government support.
- US Silicon Carbide – higher powders sales compensating for slower than planned growth in tools - recruited additional tooling sales resource to support H2 forecast growth.



# Plasma Functionalisation for third party applications

- **Petronas** product development under a 2.5-year agreement signed in August 2023 continues to progress:
  - Project collaborations continue to give encouraging results and new project strands underway
  - Technical team visited sites in Ammanford, Wales in November 2023 and Loughborough in February 2024
- **Saint-Gobain** product development based on boron nitride functionalisation proven successful with materials plasma functionalised by Haydale being promoted with the development of a tactical go to market plan (brochures, web site & trade events being agreed)
- Continuing growth in customer commercial functionalisation services with first order received from new multinational chemical company (subject to NDA). We now have >20 customers in this area including **Hydrograph Clean Power Inc.** (see quote in appendix)
- Investment in Scanning Electron Microscope at Ammanford to bring certain testing services in house: improving customer interaction, saving costs and shortening turnaround times.



## Product Focus – Heating Products

### Low power heater ink applications:

#### Underfloor heating:

- Testing of prototype complete; aiming to take to next stage of project with field trials.
- Discussions underway with two potential B2B customers.

#### Portable heating devices (Cadent):

- Target market to support at risk clients of Cadent and other gas/electricity distribution companies. Video produced by Cadent: [www.haydale.com/second-innovation-in-low-power-hot-water-development-passes-to-next-stage](http://www.haydale.com/second-innovation-in-low-power-hot-water-development-passes-to-next-stage)
- Working prototype of portable battery powered hot water shower unit delivered and discussions on further productionisation underway. Market opportunities also in the outdoor leisure sector.
- Over radiator heater project in process.

#### EV and traditional automotive:

- Working test sample being produced of low power automotive seat heater using conductive ink technology. Discussions with a number of OEM automotive clients underway (early stage).





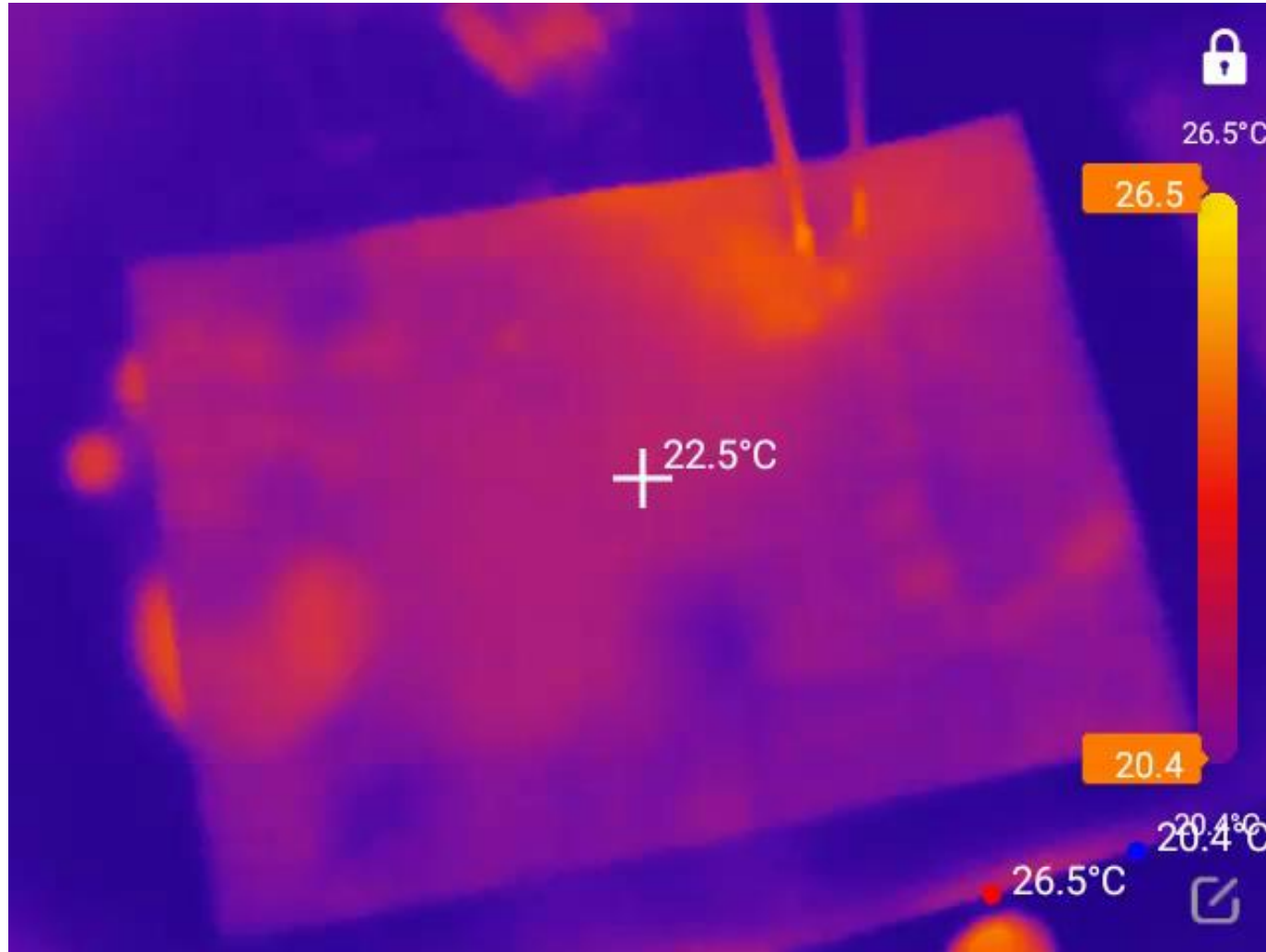
## On-site Demo room UFH prototype testing

**30%** Lower operating costs  
than standard wired systems  
when run off mains\*  
**17%** Lower operating costs  
than air-source heat pumps  
when combined with battery  
storage\*\*

\*Data gathered from Haydale prototype systems when compared to wired solutions  
\*\* Operational data compared to commercially available heat-pump costs and our prototype  
combined with battery



## Demonstration of UFH heat speed (video)





## Sensors

- Longer term testing with biomedical medical sensor manufacturer continuing with positive results still being seen.
- Validation work with a non-regulated chlorine sensor using Haydale sensor ink also progressing well.

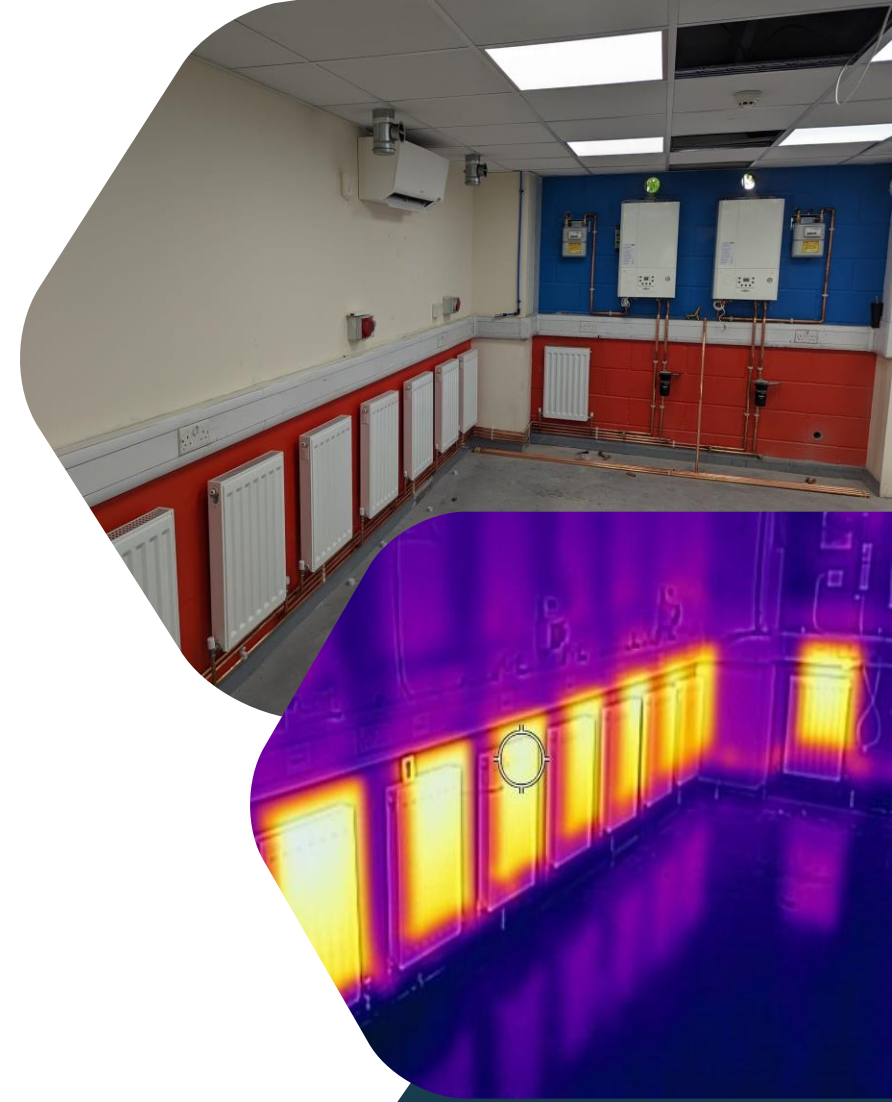
## Thermal Transfer Fluids:

- Working with leading high performance heat transfer fluid specialists, **Hydratech**, to formulate the necessary additives (inhibitors, glycols, etc) required to take our patented graphene enhanced thermal fluid to market.
- Welsh Government funding secured to support the commercialisation phase.



## Graphene enhanced heat transfer fluid: initial tests show a c. 30% improvement in thermal conductivity compared to existing thermal fluids and/or water

- Haydale has effective product control and scalability for graphene enhanced thermal fluids (> 2,000L per day).
- Working with Hydratech, our commercial partner; who already has a large part of the market, we are aligned to next stages for this product.
- In December 2023 Haydale (with Hydratech) was awarded funding from the Welsh Government to develop this to a finished product and gain installation know how.
- Product validation with graphene complete. Ongoing work to develop complementary inhibitors and glycols to meet product standard qualification.
- The next steps will be **application trials** followed up by product certification if successful.



## Product Focus – SiC Cutting Tools

- SiC powder and particulate sales strong during H1 offsetting slower than anticipated growth in tooling sales.
- Expansion of organisational infrastructure to support business growth into the sale of SiC cutting tools in the period included:
  - 4 Manufacturer reps agreements signed in July 2023;
  - Detailed parts catalogue released in Sept 2023;
  - Stock in place by Nov 2023; and
  - MRP system in process of being implemented to support tooling manufacturing and sales.
- Post Period key actions:
  - Strategic reinforcement of tooling sales team a key action – completed Jan 2024;
  - Discussions underway with 5+ manufacturer reps to add to the sales growth effort through the above; and
  - US specific website went live in Jan 2024.



# FY24 Interims Income Statement

- **38% increase in YoY H1 revenues**
  - Driven by growth in both US and UK operations.
  - Gross margin of 57% increased from FY23 H1 due to sales mix in the US.
- **Reinforcement of operational capability and inflationary rises** led to increase in Adjusted Admin Expenses but no step changes required to be able to support forecast revenue growth.
- **Adjusting administrative items**
  - Share based payment expense reduced following expiry of warrants in September 2023 and senior staff changes.

PROFIT & LOSS	Dec-23	Dec-22	Change		Jun-23
	Unaudited £'000	Unaudited £'000	£'000	%	Audited £'000
Revenue	2,466	1,782	684	38.4%	4,301
Gross Profit	1,406	941	465	49.4%	2,390
<i>Gross profit margin</i>	57%	53%		4%	56%
Other Operating Income	237	195	42	21.5%	377
Adjusted Admin Expenses	(3,257)	(3,023)	(234)	-7.7%	(6,260)
Adjusted Operating Loss	(1,614)	(1,887)	273	14.5%	(3,493)
Adjusting Administrative items:					
Share based payment exp.	42	(257)	299		(589)
Dep'n & Amort'n	(757)	(727)	(30)		(1,552)
Restructuring	(35)	-	(35)		-
Impairment	-	-	-		(531)
Total Trading Admin Expenses	(4,007)	(4,007)	-	0.0%	(8,932)
Loss from Operations	(2,364)	(2,871)	507	17.7%	(6,165)
Finance Costs	(164)	(138)	(26)	-18.8%	(407)
Loss before Taxation	(2,528)	(3,009)	481	16.0%	(6,572)
Taxation	136	182	(46)	-25.3%	407
Loss from Cont. Ops.	(2,392)	(2,827)	435	15.4%	(6,165)



# FY24 Interims Balance Sheet

- Fixed assets reflect normal amortisation, US impairment in H2 FY23 and US FX.
- Inventories reflect sales and usage of Silicon Carbide stock over period.
- Pension obligation fallen due to actuarial revaluation.
- Other current liabilities increased due to Innovate Loan current element, terms currently in discussion, fully covenant compliant.
- Other non-current payables relate to reduction in the lease liabilities (IFRS16).
- £32m of tax losses available to shield future profits.

BALANCE SHEET	Dec-23 Unaudited £'000	Dec-22 Unaudited £'000	Change		Jun-23 Audited £'000
			£'000	%	
<b>Non-current Assets</b>					
Goodwill & intangibles	2,409	2,431	(22)	-1%	2,445
Tangible fixed assets	5,260	7,265	(2,005)	-28%	5,915
	7,669	9,696	(2,027)	-21%	8,360
<b>Current Assets</b>					
Inventories	1,603	1,996	(393)	-20%	1,733
Trade receivables	1,019	904	115	13%	564
Other receivables	874	782	92	12%	852
Cash	3,300	2,971	329	11%	1,378
	6,796	6,653	143	2%	4,527
<b>Current Liabilities</b>					
Trade & other payables	(1,598)	(1,709)	111	6%	(1,899)
Other current liabilities	(551)	(115)	(436)	-379%	(114)
	(2,149)	(1,824)	(325)	-18%	(2,013)
<b>Non-current Liabilities</b>					
Bank loans	(1,106)	(1,357)	251	18%	(1,363)
Pension obligations	(422)	(1,030)	608	59%	(577)
Other payables	(1,649)	(2,283)	634	28%	(1,962)
	(3,177)	(4,670)	1,493	32%	(3,902)
<b>Total Net Assets</b>	9,139	9,855	(716)	-7%	6,972





# FY24 Interims Cashflow Statement

## ➤ Operational cash outlay down YoY

- As the near-term potential of silicon carbide is realised, monthly net cash burn is expected to decline through H2 and improve further through FY25, as graphene revenues start to build.
- No significant fixed asset investment planned/required.
- R&D tax credit will be received in H2.

## ➤ Successful fund raise in October 2023

- £5.1m gross proceeds.

## ➤ Debt at Dec 23: £1.39 m (YE 23: £1.37 m)

- Innovate & Covid related govt debt.
- Covenants met.
- In process of extending terms on Innovate loan.

CASH FLOW	Dec-23 Unaudited £'000	Dec-22 Unaudited £'000	Change		Jun-23 Audited £'000
			£'000	%	
<b>Operating cash flow before</b>					
<b>working capital changes</b>	(1,758)	(1,844)	86	5%	(3,674)
Working capital movement	(326)	(1,276)	950		(417)
R&D Tax Credit Received	-	423	(423)		427
<b>Net Cash used in Operations</b>	<b>(2,084)</b>	<b>(2,697)</b>	<b>613</b>	<b>23%</b>	<b>(3,664)</b>
Purchase of tangible assets	(28)	(159)	131		(203)
Purchase of intangible assets	(150)	(132)	(18)		(421)
<b>Net cash used in investing activities</b>	<b>(178)</b>	<b>(291)</b>	<b>113</b>	<b>39%</b>	<b>(624)</b>
<b>Cash flow used in financing activities</b>					
Finance costs	(115)	(77)	(38)		(209)
Finance costs - right of use asset	(49)	(60)	11		(116)
Payment of lease liabilities	(141)	(296)	155		(261)
Gross proceeds from share issue	5,063	5,511	(448)		5,510
Share issue costs	(588)	(371)	(217)		(371)
Net Loan drawdown/(repayment)	15	14	1		(53)
	4,185	4,721	(536)	-11%	4,500
Effect of Exch diffs	(1)	52	(53)		(20)
<b>Net change in cash</b>	<b>1,922</b>	<b>1,785</b>	<b>137</b>		<b>192</b>
<b>Balance at period end</b>	<b>3,300</b>	<b>2,971</b>	<b>329</b>	<b>11%</b>	<b>1,378</b>



# Summary

- We continue to build our client portfolio: adding major customers with negotiated contracts and commercial orders.
- **UK**
  - Our patented functionalisation powder technology projects are progressing well with major customers extending the scope of our involvement; in some cases we now talk directly to their customers for the first time as trust increases.
  - Underfloor heating and thermal fluid projects on track and progressing well; next stage commercial development planned and in discussions with potential first customers.
  - Biomedical and other sensors: testing continuing to customer requirement.
- **US:**
  - Additional sales resource secured to focus on tooling.
  - Asian customer/partner engaged with ongoing commercial discussions.



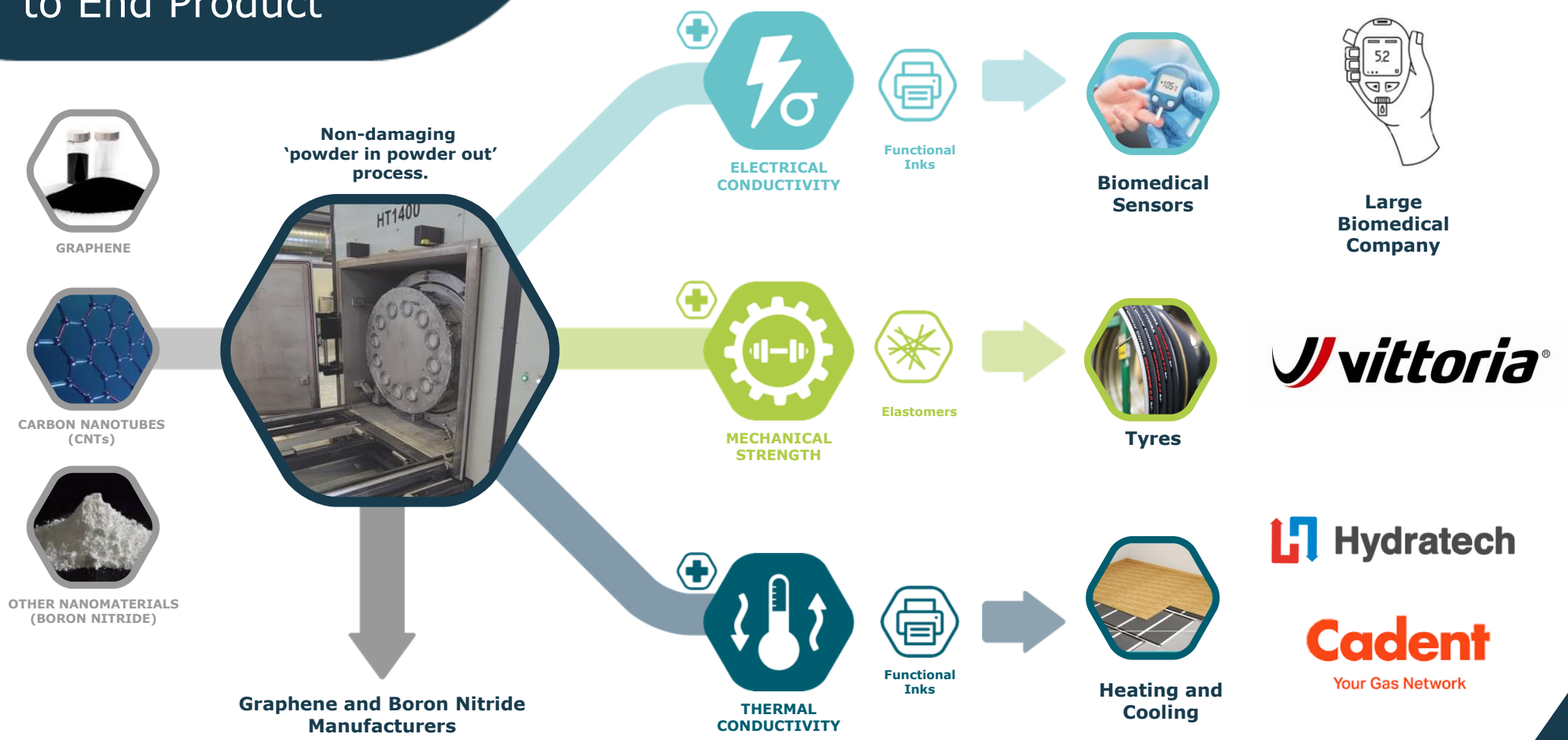
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# Appendix

Unlocking Graphene



# Powder Functionalisation to End Product



**Graphene and Boron Nitride Manufacturers**



**SAINT-GOBAIN**



**PETRONAS**



**HYDROGRAPH**



# Board of Directors



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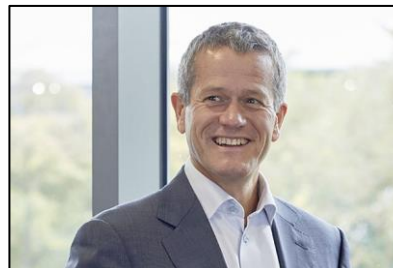
**Theresa Wallis,  
Independent Non-Executive  
Director & Audit Committee  
Chair**

Theresa joined the Board of Haydale in June 2020. Theresa worked previously as Principal Executive of ANGLE plc and has held several non-executive directorships.



**David Banks,  
Non-Executive Chair**

David joined Haydale as Non-Executive Chair in July 2017. David worked in stockbroking for over 35 years, raising money for many successful small and medium sized industrial PLCs and is responsible for liaison with our major shareholders.



**Gareth Kaminski-Cooke,  
Independent Non-Executive  
Director**

Gareth joined Haydale in Jan 2024. He has an engineering and manufacturing and sales background across a number of industry sectors, both in the UK and internationally.





# Customer Testimonials

"Thermal conductivity is important where heat management is required. This applies to large, complex applications in aerospace and automotives and to everyday electronics, from computers to mobile phones. **This testing and application development will enhance HydroGraph's current pipeline of potential customers, with 20+ businesses** taking quantities of graphene sufficient for end-user testing. The tests were done using our flagship fractal graphene product, FGA-1, functionalized by Haydale"

Ranjith Divigalpitiya  
**HydroGraph Chief Science Officer**

**Product:**  
Conductive Resins



"We have developed, in the form of a portable Graphene Ink based portable water heater, a solution to enable customers to wash, clean and live independently if they are off gas or electricity.

We have really enjoyed working with the Haydale Team, **who share our values and passion for developing innovations that make a difference** and can aid our journey to sustainability. The first prototype looks super-efficient and I look forward to taking it through to the next stage "

Jo Giles  
**Head of Innovation  
Cadent**

**Product:**  
Low Power Hot Water Tank,  
conductive inks



"We have been producing duplicate parts with both our standard and the nano-enhanced version and can say with confidence that the Haydale material has **delivered more than 500 parts without any deterioration of the mould surface.** Using the standard version, we would expect approximately 250 pulls from a tool before it is replaced."

Matt Bradney,  
**Prodrive Director  
of Business Development**

**Product:**  
Graphene Prepreg Composite Tooling

"Our unique know how of graphene helps us make the **most advanced bicycle tyres on the planet.** We are very pleased to partner with Haydale to further innovate in this field and have local production of graphene in Thailand as a common goal."

Stijn Vriends  
**Vittoria Group  
President and CEO**

