

06.09.2023, ETH Industry Days



apheros

Foams for an Effective Cooling

Patent Pending

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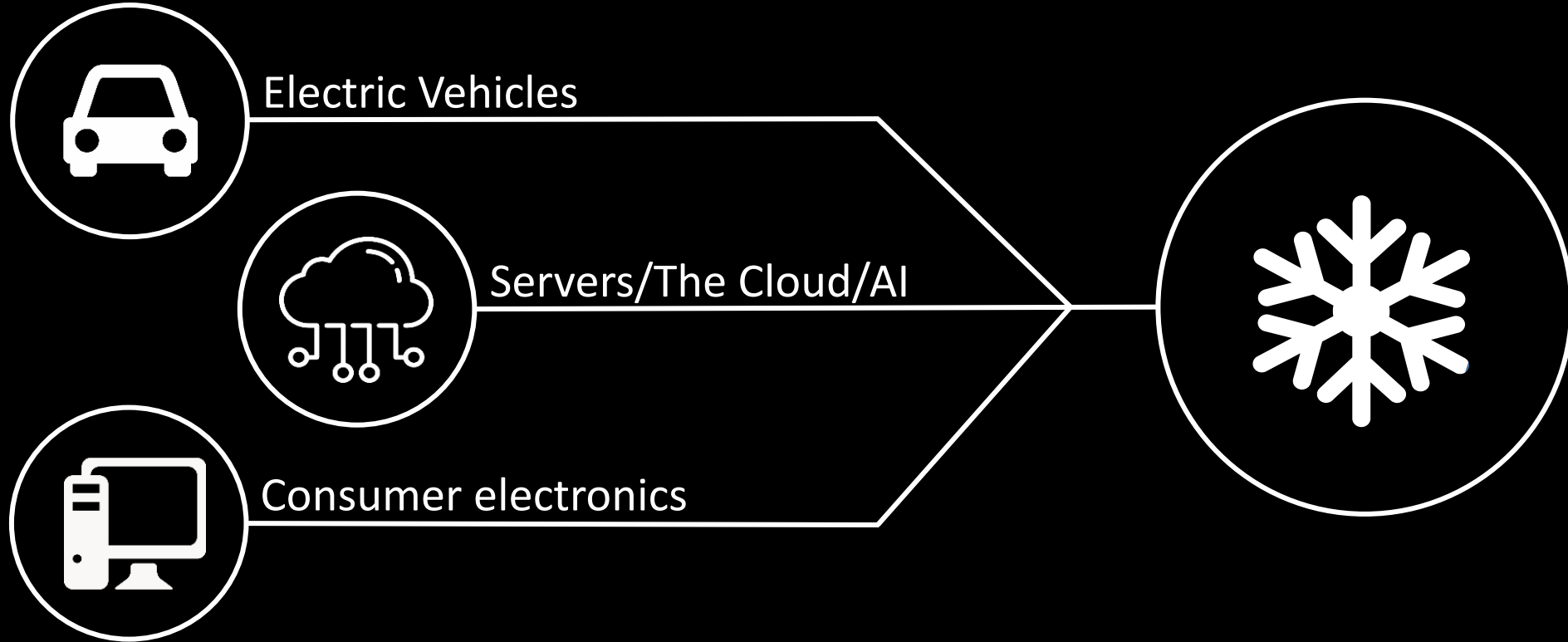
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Cooling - The limiting factor in product performance

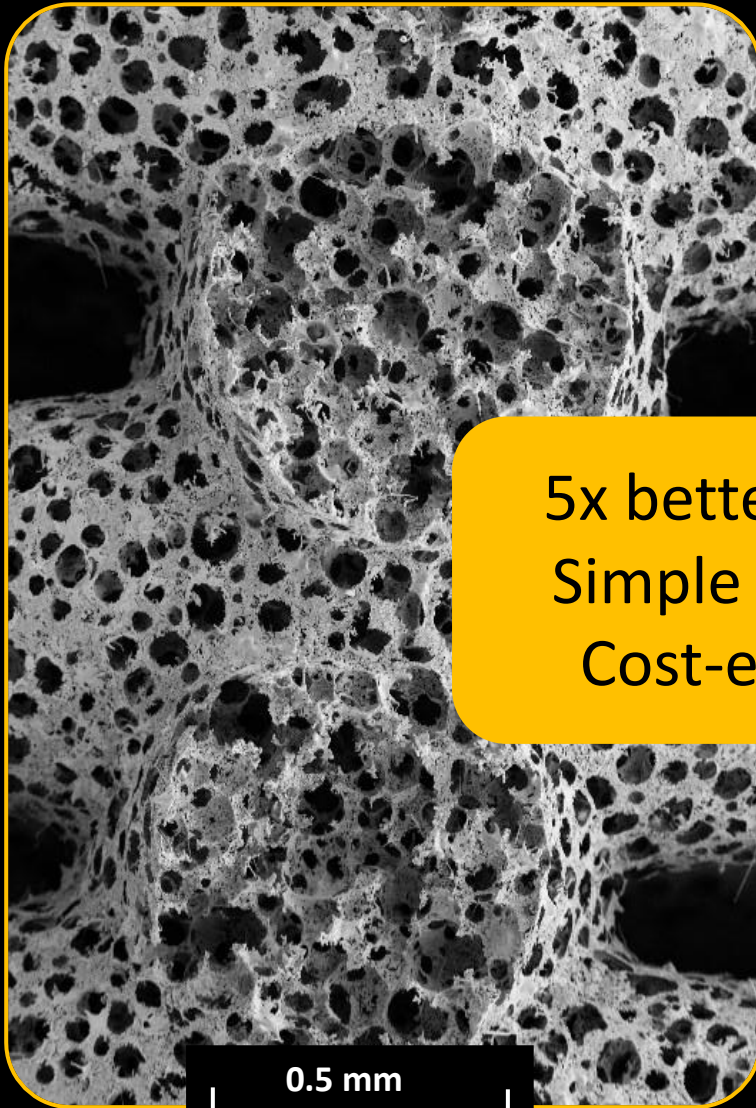


Leasing/subscription models

6 % of total global energy



apheros foams for efficient cooling



5x better cooling
Simple interface
Cost-effective

- ❖ Huge surface area
 - ❖ 1 million m^2/m^3
 - ❖ 1000x industry standard
- ❖ Low density
 - ❖ $< 1 \text{ g}/\text{cm}^3$
 - ❖ floats on water
- ❖ High purity
- ❖ Low production costs
- ❖ Growing metal/alloy range

W
Tungsten

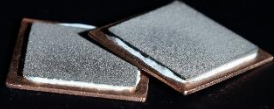

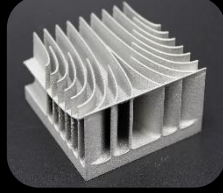
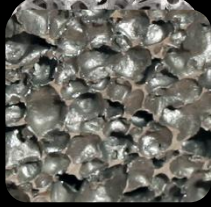











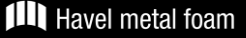





Nickel

Ti
Titanium



High performance at affordable rates

		Finned Alu 	3D printed 	Metal Foams 
Cooling efficiency	+++	+	+++++	+++
Integration	+	--	++	-
Thermal interface	+++	-	-	+
Product "feel"	+++	+++	+++	--
Price Range	5 - 100 \$	0.2 - 100 \$	>> 5000 \$	>> 100 \$
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apheros markets and customers

Cooling

(20B \$ CAGR 6.1%)¹

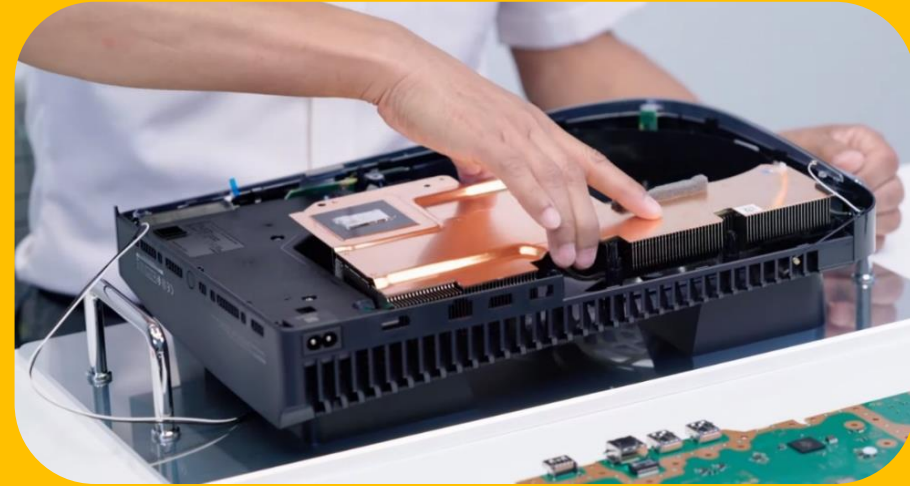


Heat Sinks

(6.2 Bn. CAGR 7.5%)

Intrinsic Air Convection

Sales Volume:
10 – 100k per client



Grease Reservoirs

(2B \$, CAGR 2.9 %)²



High thermal stability

Sales Volume:
50 - 350k per client



H₂ Production

(3.8B \$, CAGR 32 %)³



Huge surface area

Sales Volume:
2 tons



Battery Electrodes

(57.8B \$, CAGR 15.8 %)⁴



High Purity

Sales Volume:
7 tons





We work closely with customers

Testing in Progress at



Parts ordered



Confidential



Our co-founders



Julia Carpenter
CEO

Ph.D. Material Science

CAS ETHZ in ELTV

Inventor of apheres technology

Has seen every ballet at the
Zürich Opera since 2005



Gaëlle Andreatta
CTO

Ph.D. Chemistry

EMBA-X HSG

15 years exp. in
DeepTech and TechTransfer

Enjoys Absinth (from Neuchâtel)



The road so far



The road ahead

Achievements

- 2021Q3 1st Prototype
- 2022Q1 Patent Submitted
- 2023Q1 PoCs 1-3 launched
- Total of CHF 580k in grants and convertible loans
- 2023Q2 MVP ready
- 5 academic collaborations
- 2023Q3 PoC 4 launched
- Apheros AG founded

Today

Tomorrow

Next Steps

- 2023Q3 PoC 1 completed
- Copper ready
- 2023Q4 PoCs 2-5 completed
- 1st Scale-up completed
- 2024Q1 Seed round
- Market Entry
- 2024Q2 Industrialization



Metal foams in action

1 Million

Closing Jan. 2024

Our milestones in 2024

1. Industrialization (5'000 parts/month)
2. Five customers

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Financials

	2023	2024	2025	2026	2027	2030
Sales (kg)	2	27	293	2'019	10'536	92'760
Average Revenue (kCHF)	33	208	718	2'971	6'997	64'423
FTE	4	8	18	25	30	68
COGS	15	70	172	713	1'679	15'461
Gross Profit Margin	54.5	66.3	76	76	76	76
OPEX	216	753	2'095	4'238	6'216	31'711
EBITDA Margin %	-475	-203	-243	-127	-16.6	26.8
Financing	2023	2024	2025	2026	2027	2030
Equity		1000		5000		
Grants & Loans	540	2750				

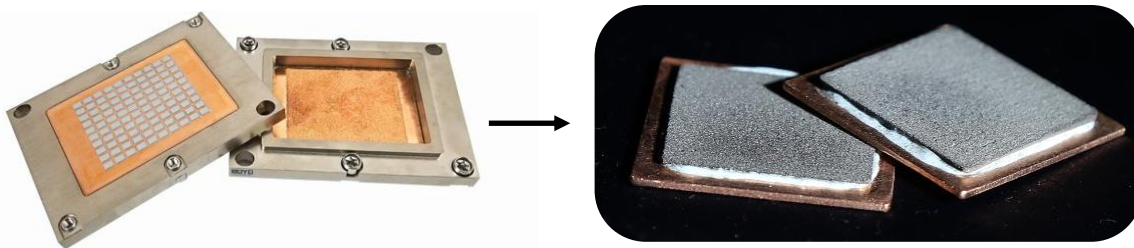


Providing the best solutions for our customers

Immersion cooling



US leader of thermal solutions



Improved bubble transport

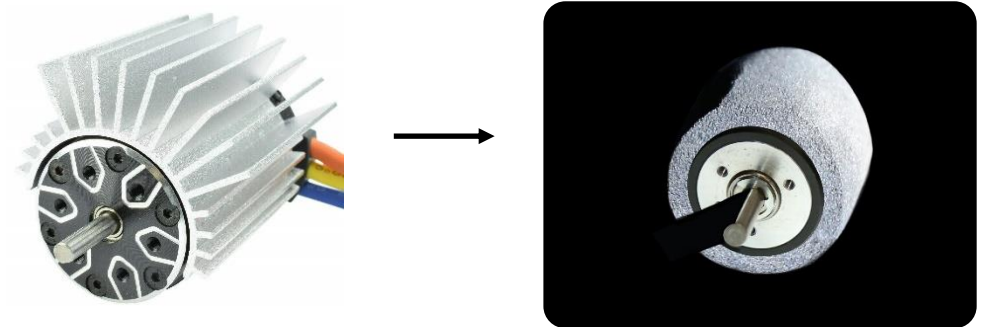
Testing in progress at Boyd

Low complexity: one-to-one replacement

Passive air cooling



leading provider of high-precision motors



Stable thermal interface

Paid pilot launched

High complexity: added value on current product