



The Revolution in Electrochemistry
Sparkfuze® — the next generation of electrodes

Electrodes, *the beating heart of electrochemistry,* are still made with 1960s technology.

Context –

Electrodes are the underlying base technology at almost everything we produce in the modern world yet innovation is stuck in the past.

Known for more than 200 years, today's electrodes and catalysts are primarily based on inventions and patents from the 1960s era.

Problem –

These legacy, 1960s-era manufacturing methods are:

Inefficient | Energy-intensive | Costly | Hard to scale

Activated Electrodes
(Metals, Polymers, Carbon)

Industrial Core

- Chlor-alkali: Electrolysis → Cl_2 / NaOH / H_2 | \$96.5B
- Copper refining: Electrowin/refine → cathodes | \$340B
- Electroplating: Electrodeposition → coated parts | \$30.1B
- Cathodic protection: Impressed current → asset life | \$7.7B

Water & Disinfection

- Wastewater: Electro-AOP → treated effluent | \$92.7B
- Ozone: O_3 generation → disinfection | \$2.44B
- Desal & separations: ED/EDI → fresh water / UPW | \$16.6B
- Disinfectants: On-site electro-gen → HOCl solutions | \$63.1B

EXISTING MARKETS
(DEPLOYED TODAY)

EMERGING
OPPORTUNITIES

Energy Storage

- Cleaning products: Substitution wedge (program spend) | \$302B
- On-site H_2O_2 : Electro-gen → H_2O_2 | \$4.7B
- Persulfates: Electro-oxid → oxidants | \$1.1B
- Battery cells: R2R coat Cu/Al foils → cells/packs | \$432B
- BESS systems: Electrochem storage → grid systems | \$106B
- Flow batteries: Redox stacks → storage | \$1.18B
- Supercapacitors: Capacitive → modules | \$2.84B

Hydrogen & Power-to-X

- Electrolyzers: H_2O → H_2/O_2 | \$78B
- Battery recycling: Electro-refine → metals | \$43.4B
- Fuel cells: Electrocatalysis → power systems | \$18.2B
- E-fuels: H_2+CO_2 → fuels | \$66B
- Green NH_3 : Power → NH_3 | \$6–\$73B

Environment, Climate & Electronics

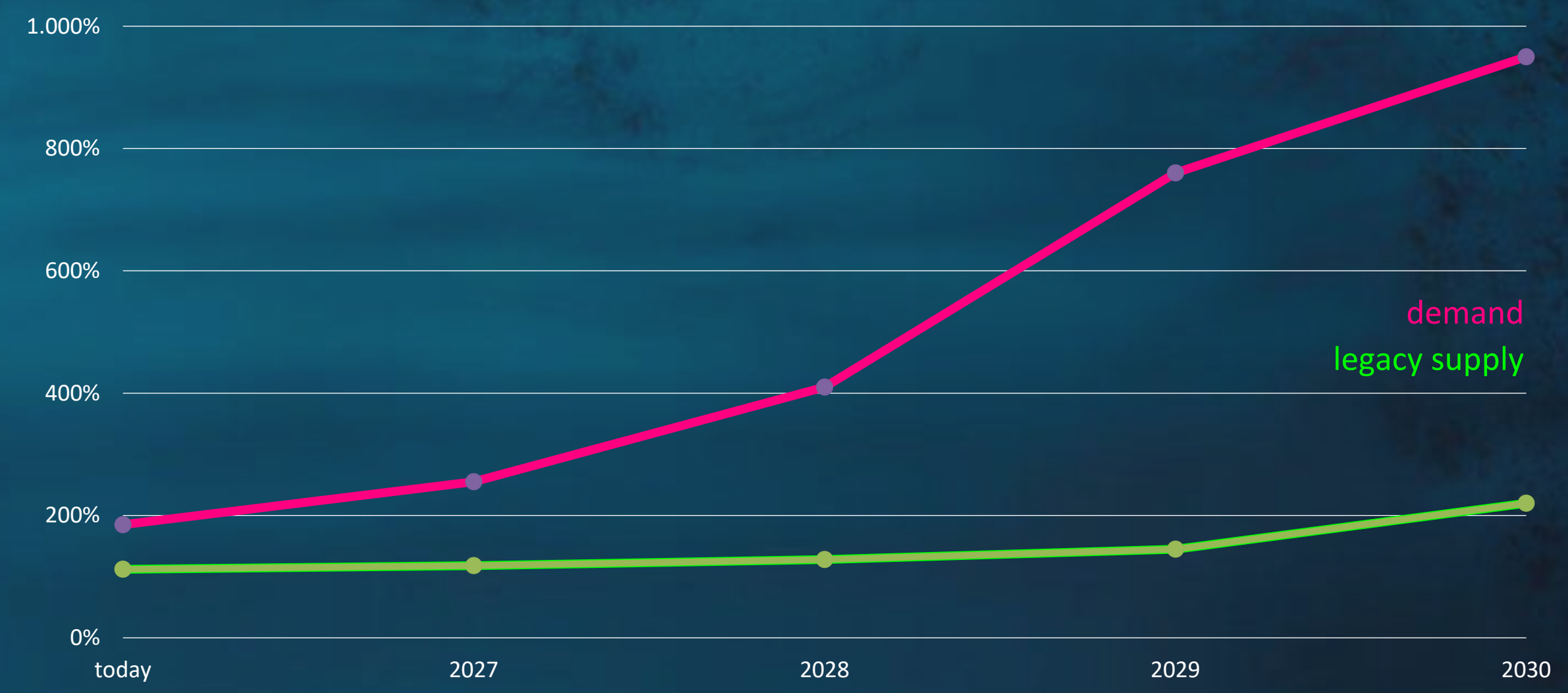
- PFAS removal: Treatment → PFAS-free water | \$3.0B
- AOP micropollutants: Electro-oxid → destroy organics | \$2.1B
- CCUS: Capture/utilisation → CO_2 managed | \$17.8B
- DAC: Direct air capture → removal | \$1.73B
- Semiconductors: Wet clean/etch → chem processes | \$29.3B
- Electrosynthesis: Electro-org → specialty chems | \$5.1B
- Biosensors: Electrochem → diagnostic devices | \$54.4B
- Electrochem sensors: Sensing → modules | \$18.4B



Why now: Electrode demand is accelerating but legacy manufacturing hits a hard ceiling.

A growing supply gap makes the manufacturing change inevitable.

Example: Global demand for activated electrodes driven by electrowinning and lithium recovery

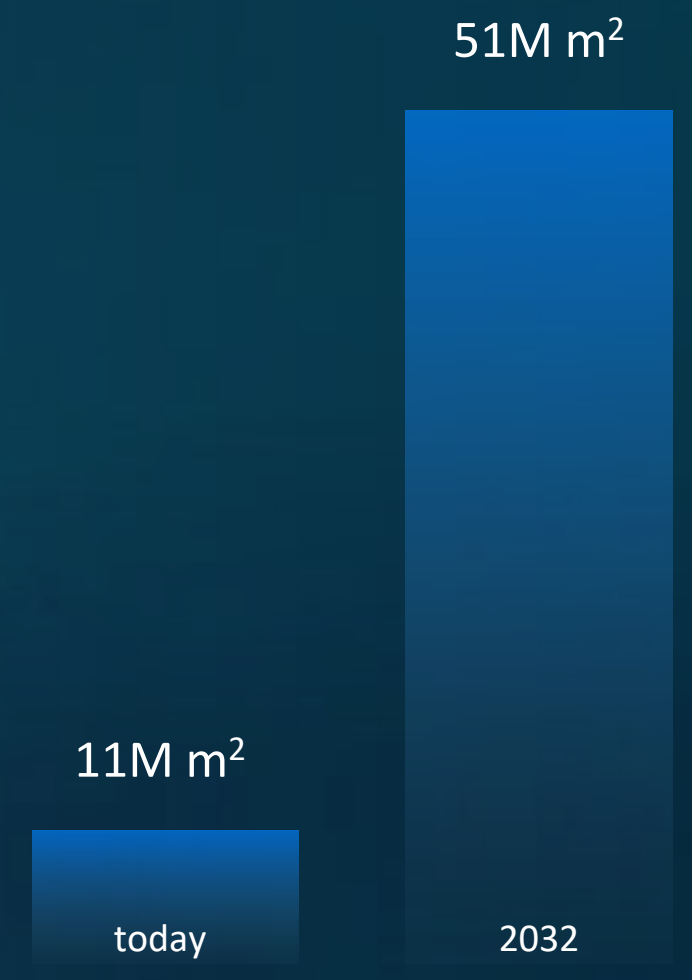


Why is demand accelerating?

- to name one: electrodes are key in the transition from fossil fuels to renewable energy Hydrogen, Batteries, Solar +++

Why is legacy supply capped?

- Multi-day batch cycles
- Hard to automate at scale
- Materials ceiling (only 7t/year of Iridium are produced)



Takeaway: You cannot meet the coming demand wave with a multi-day batch process. The gap forces a continuous manufacturing approach (e.g., Sparkfuze®).





JOLT is a deep tech company that
created Sparkfuze® – *the next generation of electrodes*





JOLT's Sparkfuze® Process *transforms how electrodes are made.*

Our scientists developed a genuine, proprietary approach to producing electrodes:

➤ *a surface solution-combustion process*

Their invention creates two radical outcomes:

1. Surface performance increases **10x***
2. Production time decreases by **1000x**

And addresses the most critical challenges in electrochemistry

Durability

Energy Efficiency

Needs for Rare Metals

Ink Stability

Uniformity in coating at scale

Performance Stability over time

*effective catalytic surface area



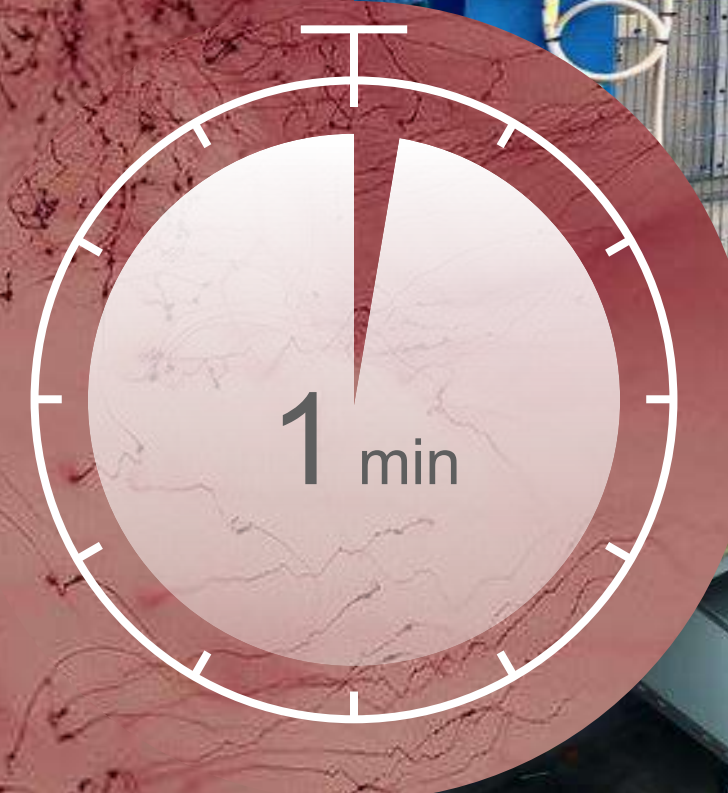


JOLT's production line in Barcelona

The Sparkfuze® Process *makes industrial scale feasible.*

The ability to coat electrodes
more than 1,000 times faster than anyone
is a game changer in many dimensions:

- Higher throughput
- Lower energy input
- More cost-efficient
- Smaller footprint
- Larger formats



And this process is designed for **industrial scale**:

- Just-in-time electrode production
- Bespoke manufacturing solutions
- Closer to end customer and their needs

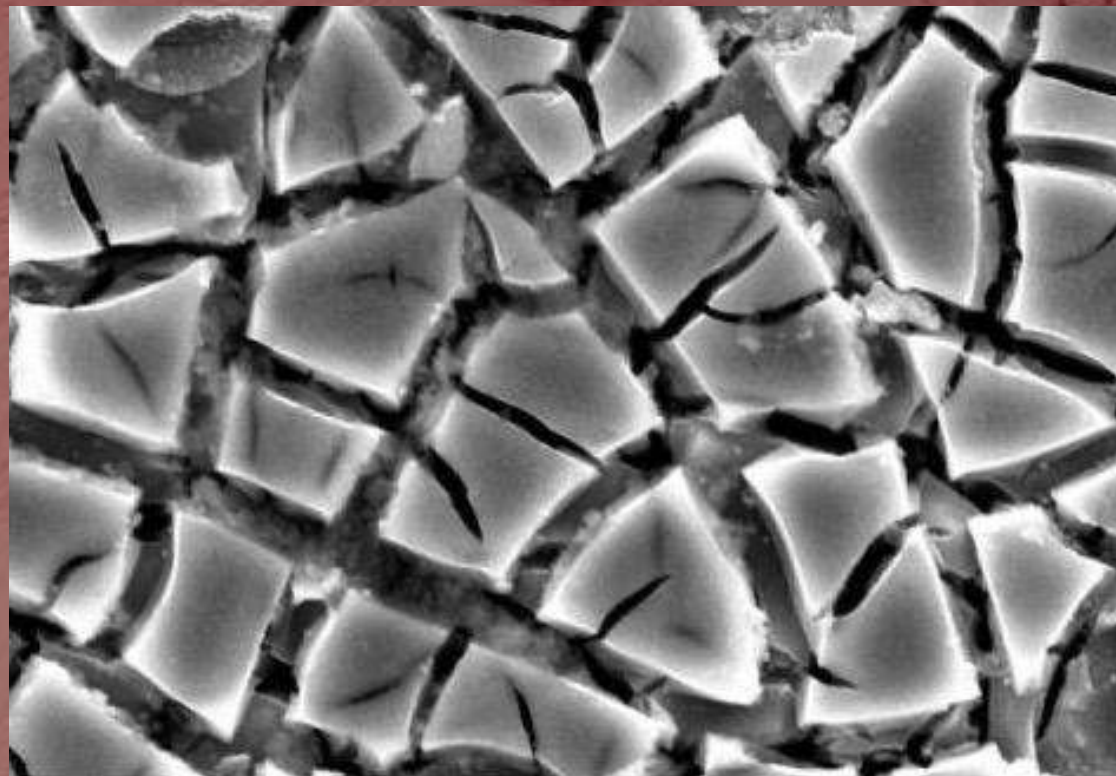


Next: scale to full industrial production



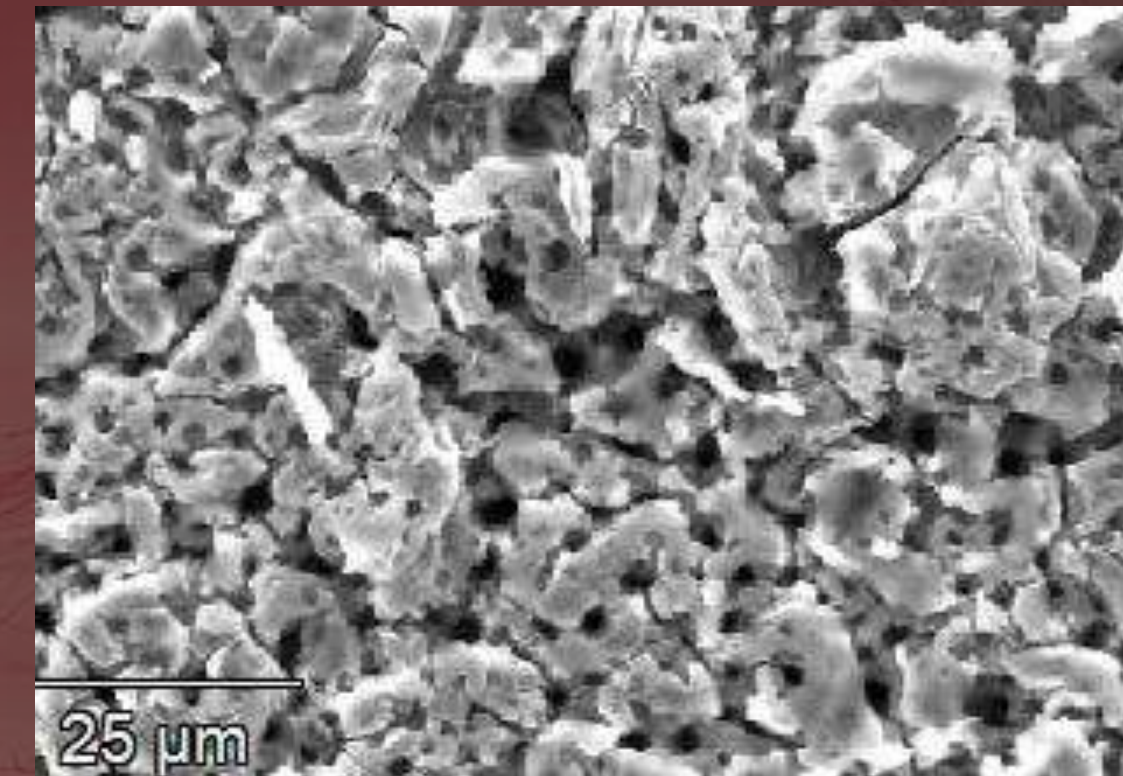
The Sparkfuze® *surface characteristics* are unmatched.

Competitive electrode “Dry Mud” surface

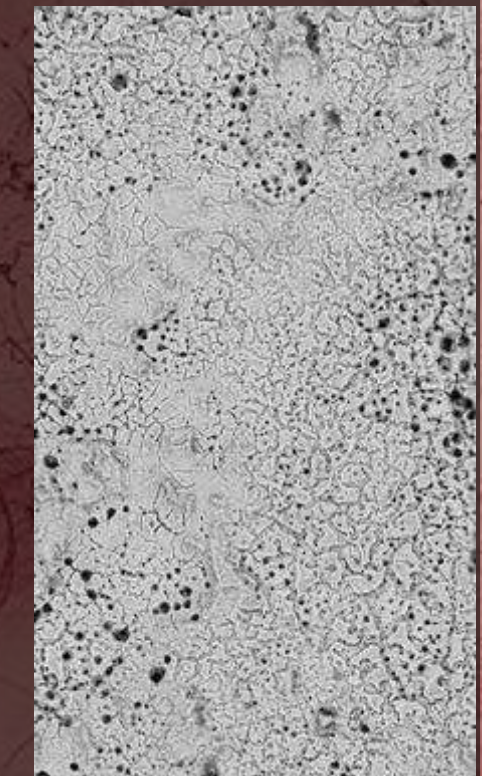


Cracking + flaking >> low durability flat surface
>> low energy efficiency
More energy consumption, more replacement needs, and more
manufacturing downtime.

Sparkfuze® Porous surface



While being porous
on a macro level
Sparkfuze® delivers
an unmatched
coating uniformity

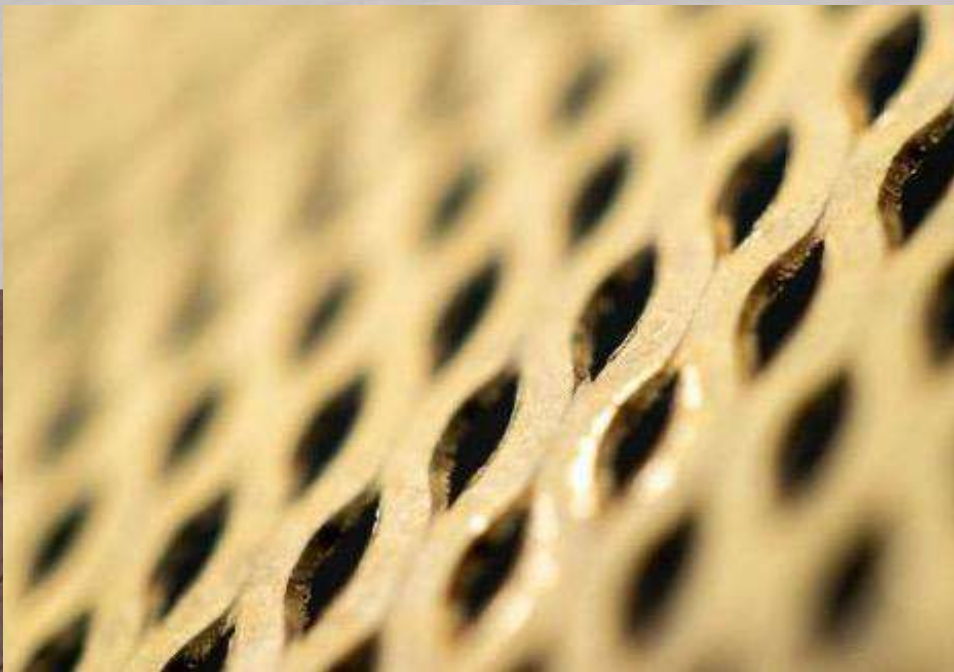
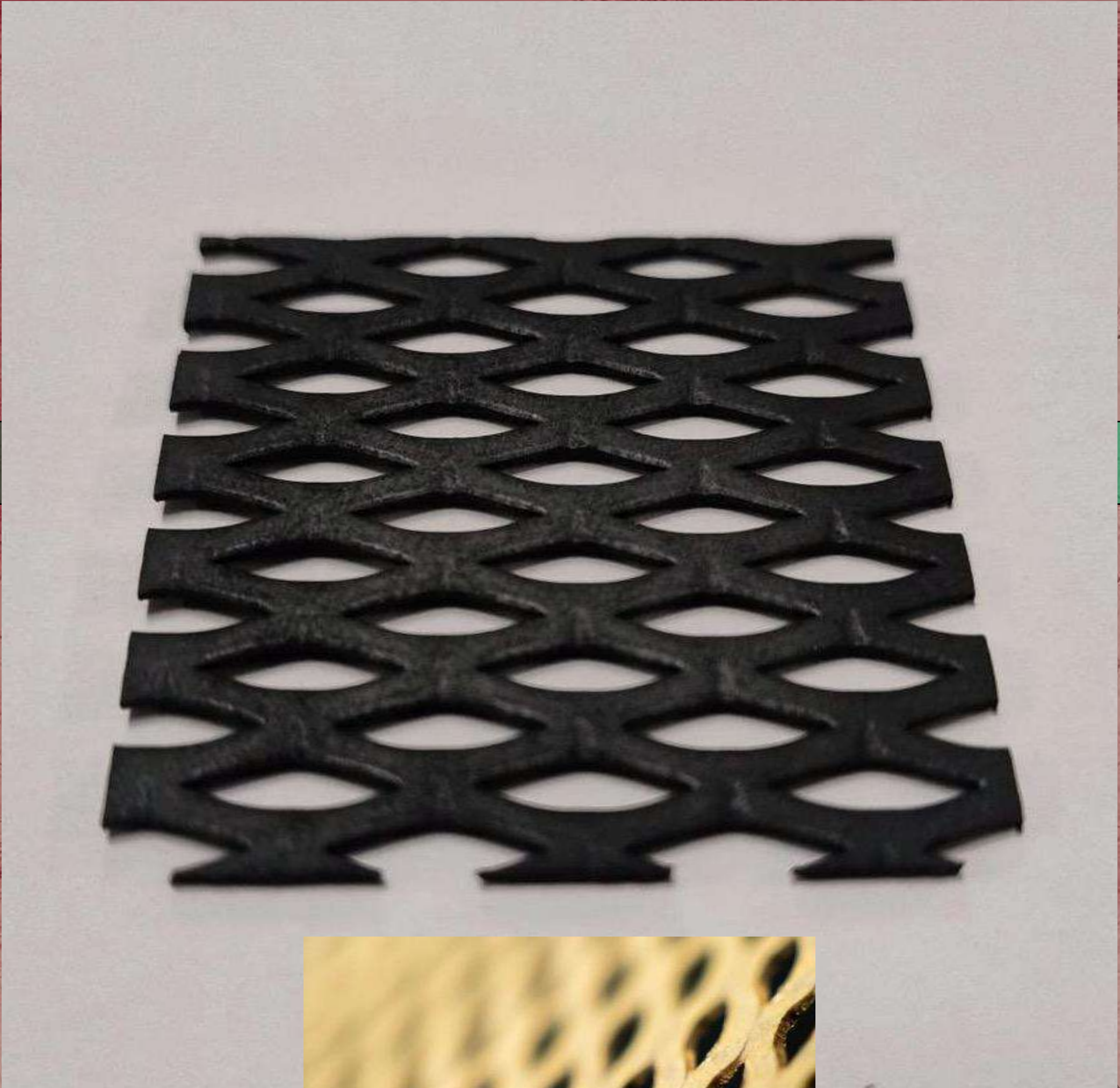
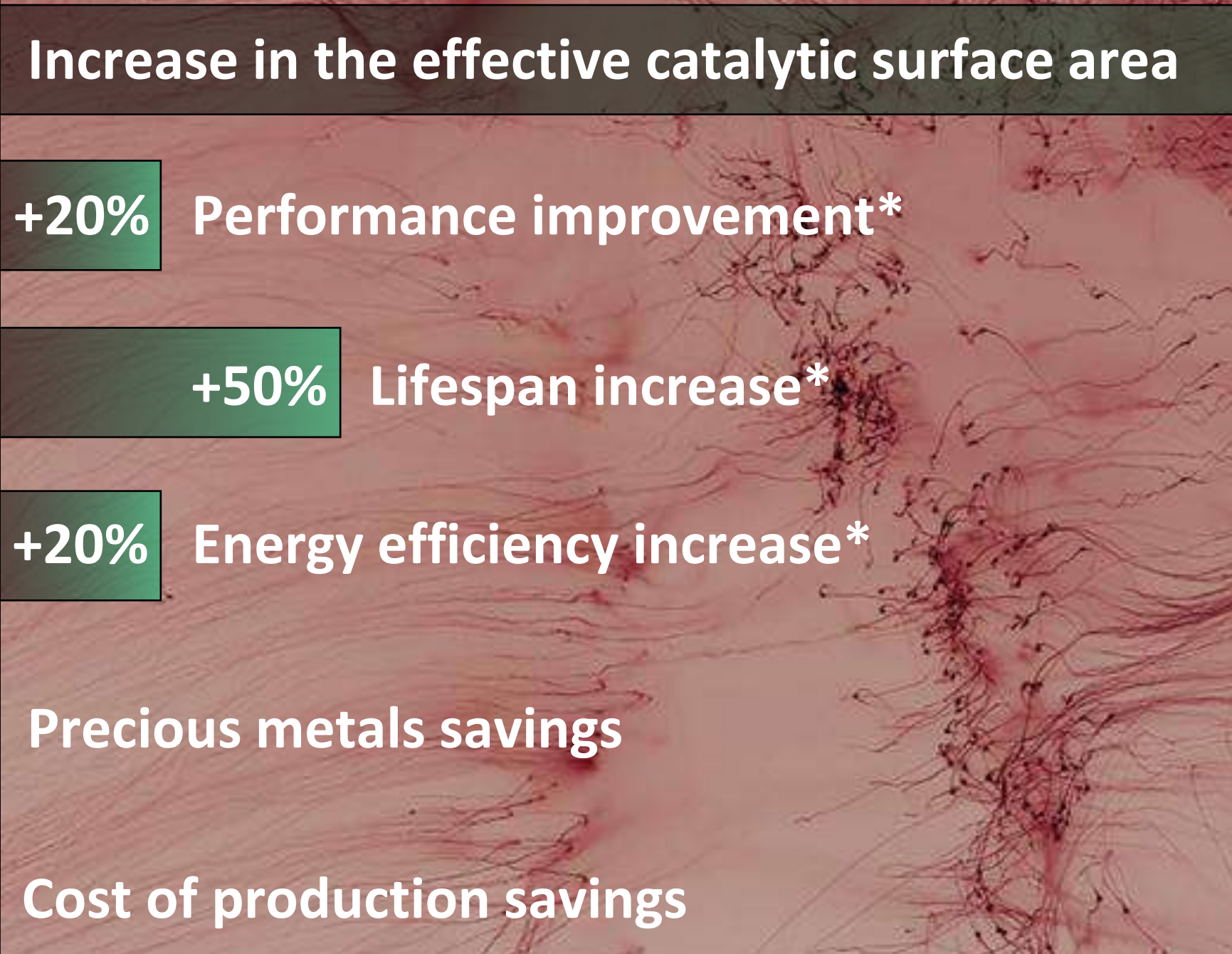


3D porous structure >> flexibility >> higher durability
10x surface area enables 10x energy efficiency,
guaranteed longer-term stable performance,
and less maintenance

The Sparkfuze® Electrode
enables clear, proven improvements
for industrial producers.

benchmark = nearest competitor

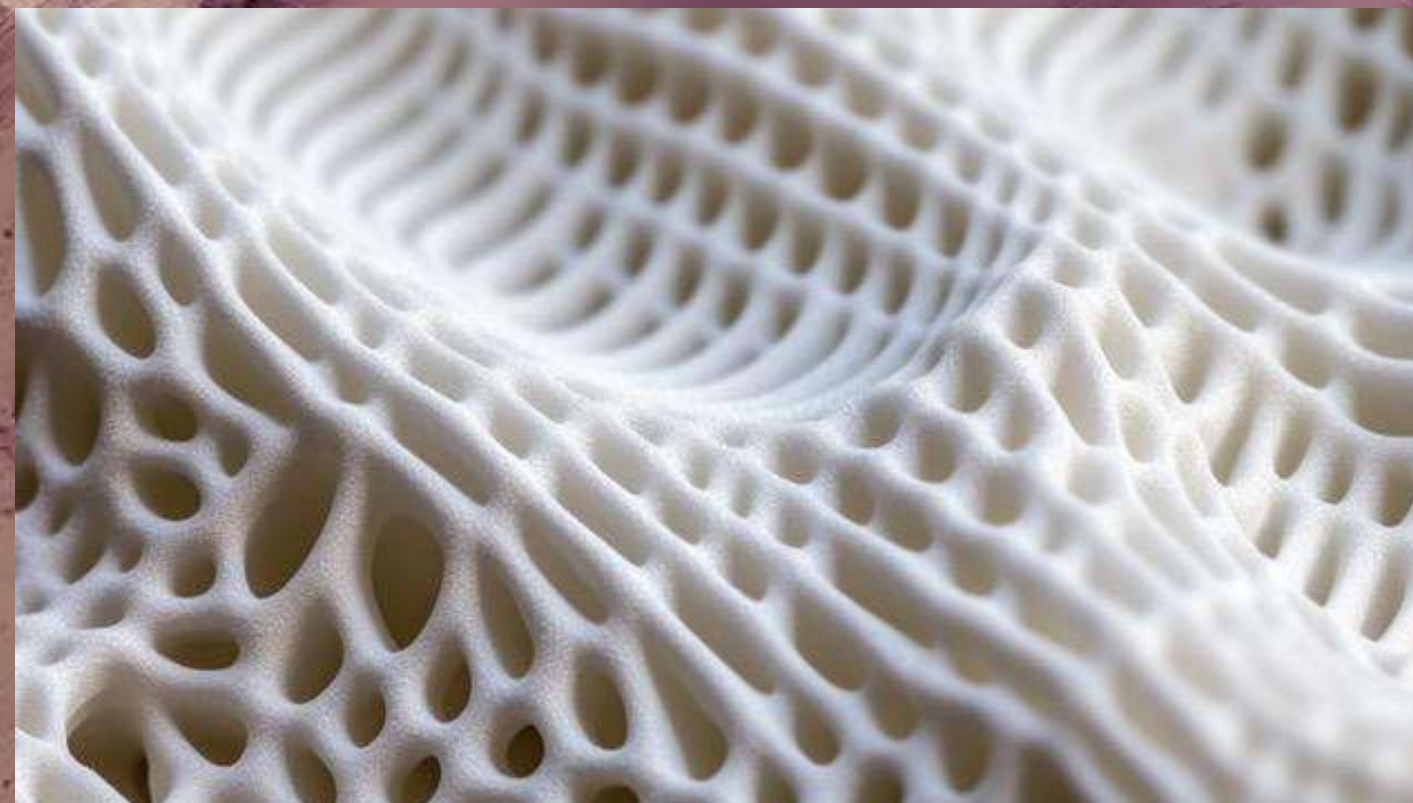
Our electrodes drastically outperform competitors



*dependent on application

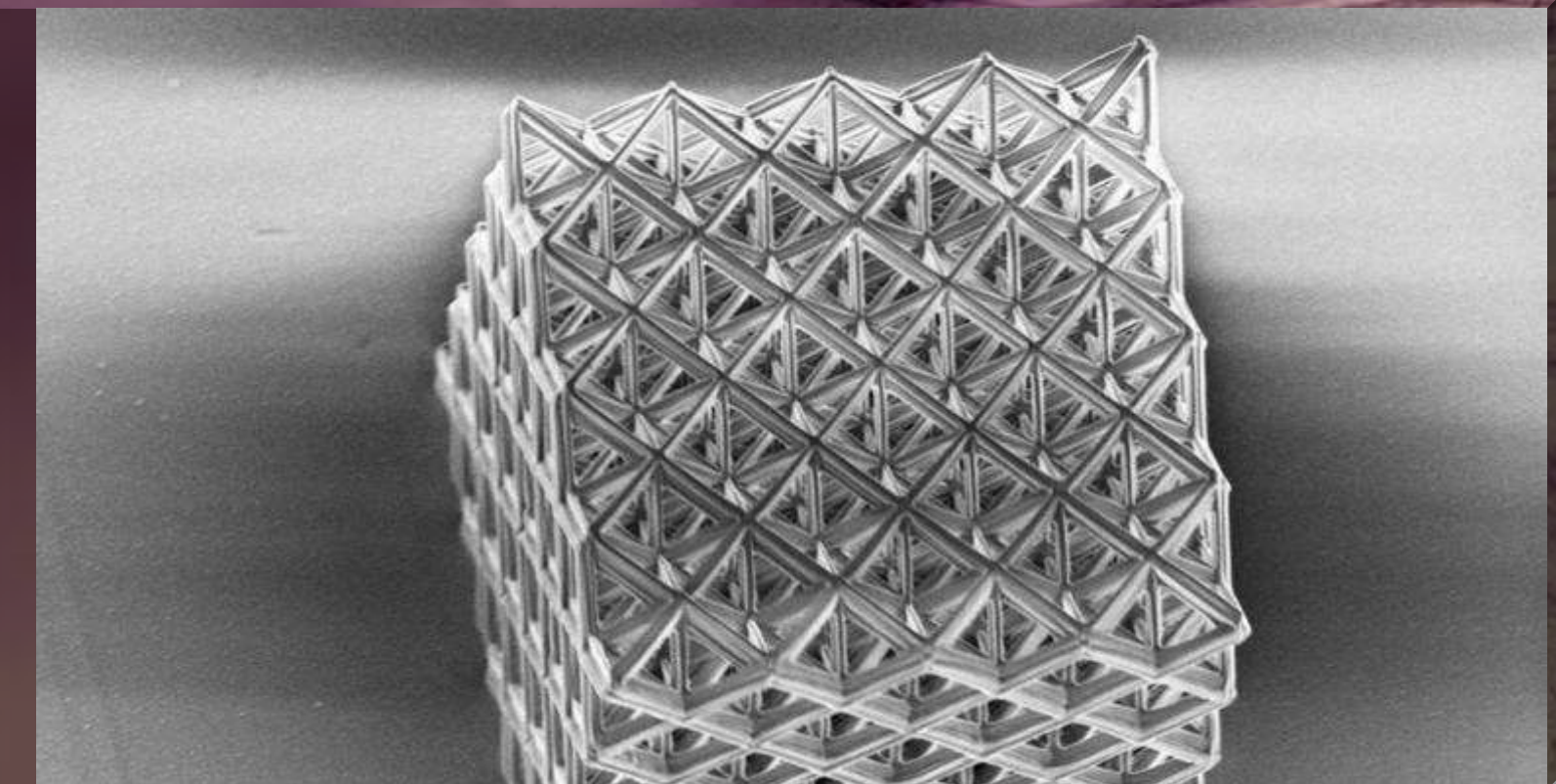


Sparkfuze® is a *coating platform*
for advanced materials and 3D-geometries.



Unique ability to coat with
fewer rare metals.

Enables coating on a wide range
of substrates.



The Differentiator:

*Catalysts coated at
180–250°C*

(vs. 400–600°C in
traditional baking)

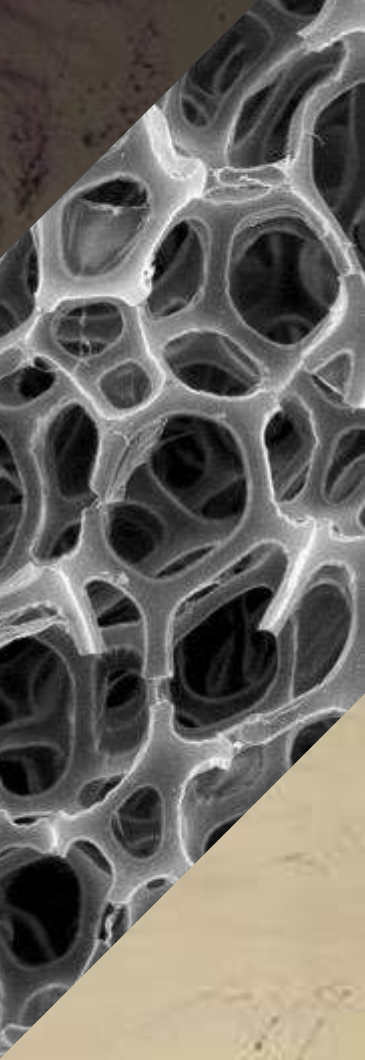
Protecting:

- sensitive substrates
(beyond traditional
metal surfaces)
- more refined 3D
geometries



Supports 2D AND 3D-geometries

3D: foam • felt • foil
2D: plate • mesh • expanded
structures





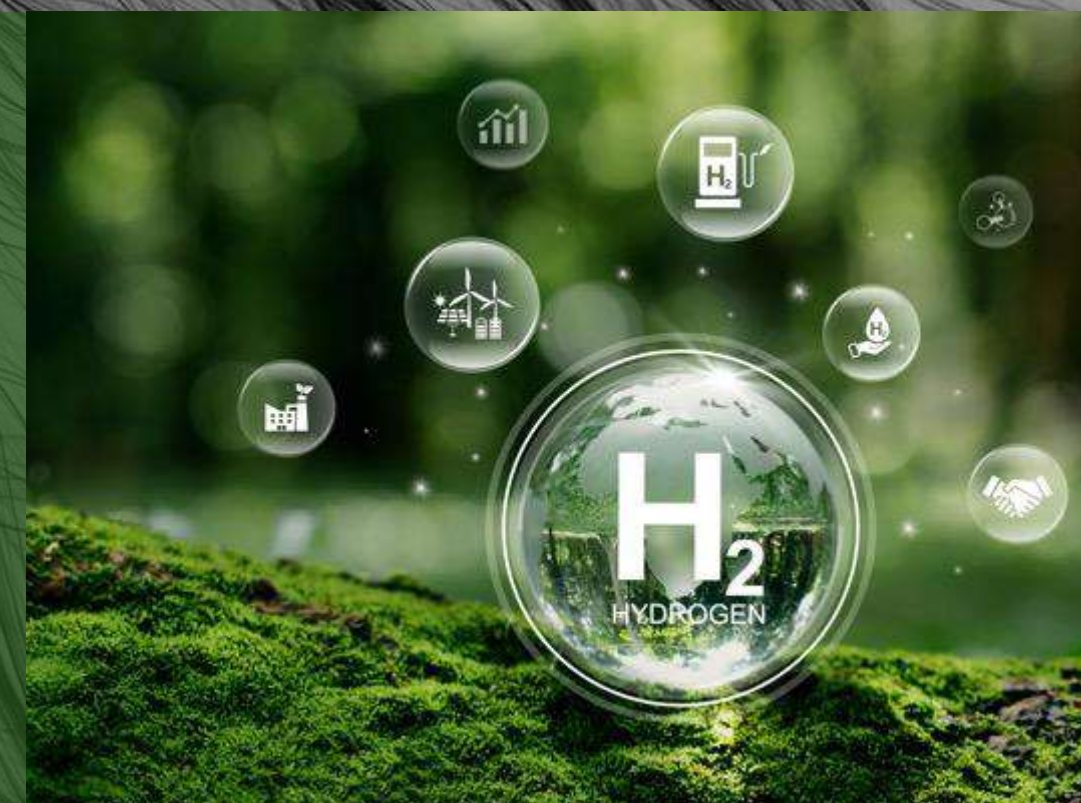
The Result:

Over time, JOLT unlocks the recurring *replacement of all existing MMOs...*

...while creating *new products + categories* never before possible.

Product range of Sparkfuze® variants today:

Green Hydrogen
Chlor-Alkali Industry
Chlorination
Water Treatment



Producing chemicals on-demand + on-site will unlock business cases and end consumer products that never existed before, because they were not feasible nor affordable.



Metal purification and deposition by Electrowinning and Electroplating



Blue Salt – consumer HOCl-generating device for cleaning removable oral appliances

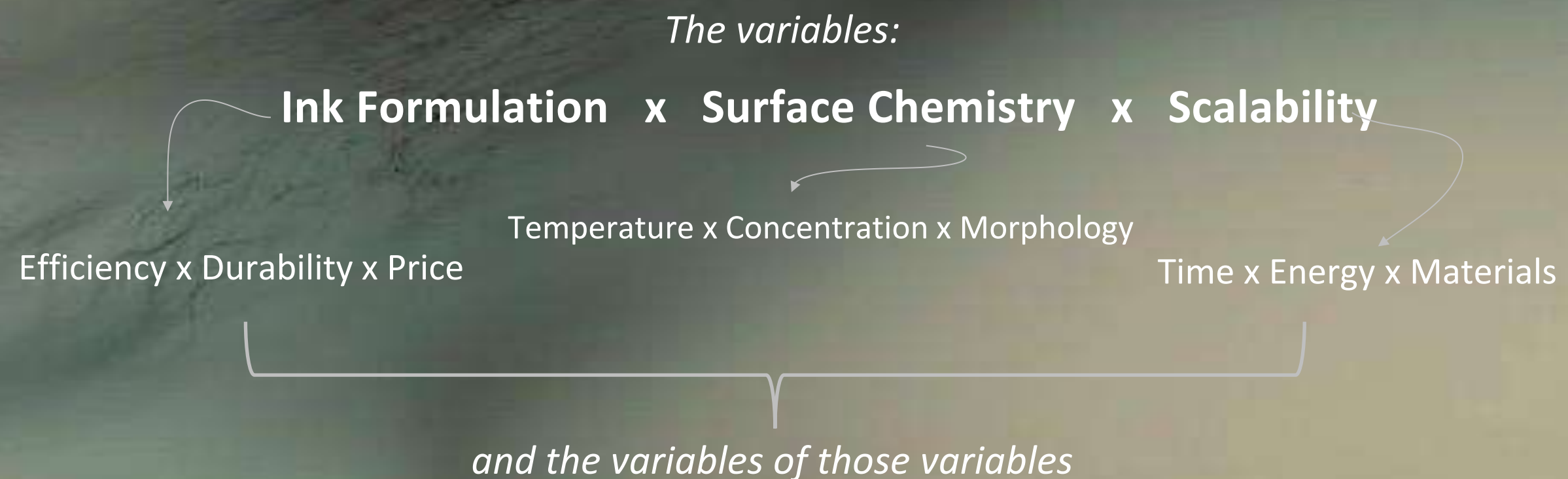
Water4l – modular safe drinking water device for remote areas + emergency (pilot project in Kenya)





Innovation in electrodes means facing *exponential complexity*

The bottleneck of finding new catalysts and electrodes is the complexity, i.e. multiple stacked variables leading to millions of potential candidates.



The result is like searching for a
{needle in a haystack}³

JOLT's generational leap in reinventing electrode production now shatters this bottleneck.



The Super-Moat

A proprietary AI automated research loop

Our proprietary data management feeds a fully automated research engine running 1,000 times faster than established best practices.

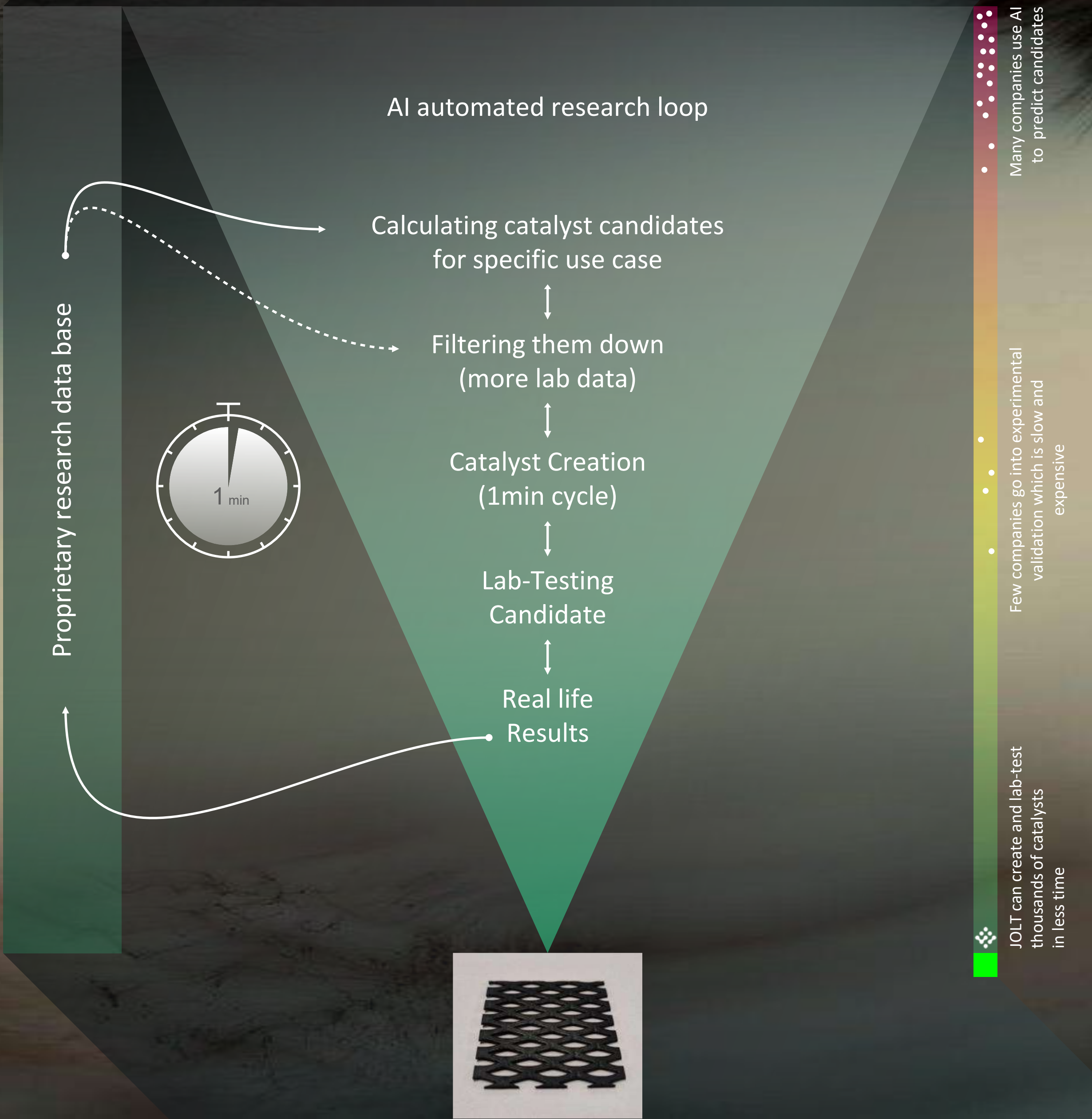
Many startups can calculate and predict potential candidates and bring a billion potential candidates down into the 10,000s.

But those tens of thousands remain to be physically tested.

In sharp contrast to our competitors with calculated predictions, we can, due to our ultra-short lab cycle, validate candidates by running **AI predictions with real lab data.**

JOLT runs its validation cycles 1,000+ times faster than competitors. This automated loop leads to a massive compounding research advantage at real, industrial scale.

Based on real lab data our automated research evolves faster and deeper and in more scalable reality.





IP & Structural MOAT

Why Sparkfuze® cannot be copied



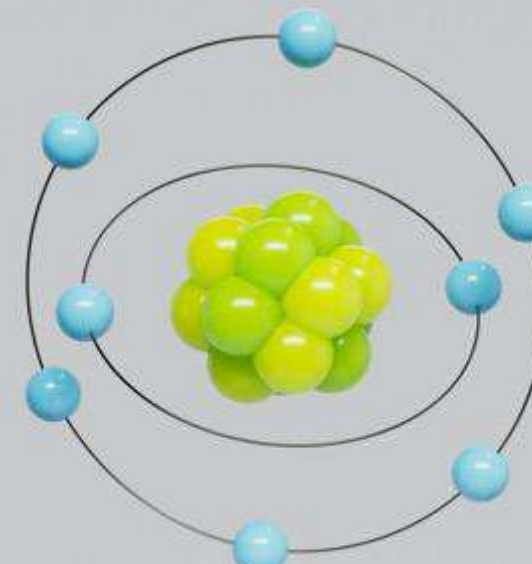
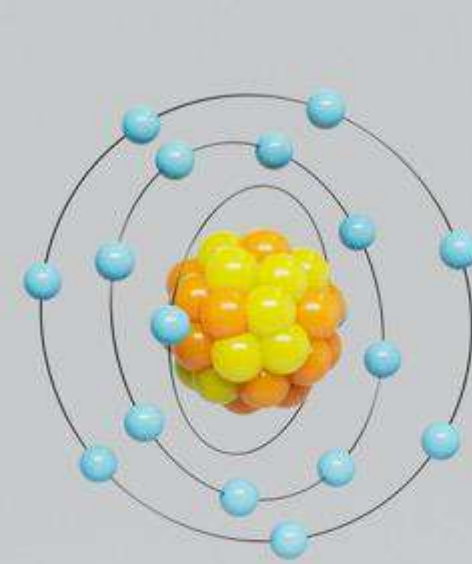
LOCKED BY PHYSICS

Active components are consumed, making it impossible to reverse engineer and recover the catalyst.



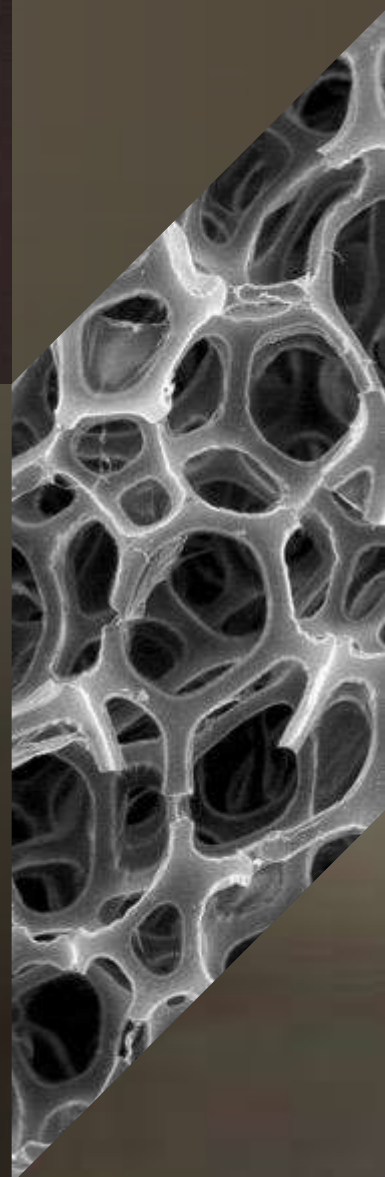
PROTECTED BY PATENTS

Process-level patent
PCT/EP2021/059779
Ongoing filings (H_2 , Cl_2 , O_2)



PROPRIETARY KNOW-HOW

- Catalyst precursor chemistry & transient intermediates
- Ink preparation, stability window, and application parameters
- Endochemical activation sequence
- Process control during sub-minute thermal excursion



JOLT's *interdisciplinary team* of 34 experts
is producing the future of electrochemistry.



Headquartered in
Barcelona, Spain



The JOLT Team

1 Product & Innovation
1 Project Management
11 R&D
3 Software
12 Operations
5 Finance & Admin



Arturo Vilavella
Founder & COO

30+y chemical engineer
COO, Master ESADE



Leon Rizzi
Founder & CEO

30+ years at C-level
2 startups founded/exited



Dr. Alberto Bucci
Founder & CTO

15+ years international research
Inventor of Sparkfuze®



Mariachiara Benedetto
CIO

30+ years of innovation
In electrochemistry



Daniel Miniño
CFO

10+ years financial advisory
PMD ESADE, Master EADA

JOLT has been producing
with Sparkfuze® since 2024

TITANIUM
automated line
Q1 2028
38.2K m²/line



NICKEL
automated line
Q1 2028
800K m²/line



Chlorine (TITANIUM) + Hydrogen (NICKEL)
plants in Italy, USA, KSA, Chile
going online from 2028



Our Sparkfuze® Nickel demo line
in Barcelona has a capacity of
20k–60k m²/year

Sparkfuze® Titanium demo line
Set 2026
+ 1,000 m²/year

**+500–600x output
per factory m²**

For reference: De Nora Industries, the
market leader, has a global capacity of
1M m² of coated electrodes per year.

JOLT can produce 800K with just one line,
while our factory will have multiple lines.



Legacy 'Paint & Bake' MMO | €50-60M per GW
= **5+ years** to build and bring online

Sparkfuze® automated line | €2.5M per GW
= **10-12 months** to deploy



Pipeline Snapshot

Signed deals, tenders, and global OEM engagement

SIGNED

- #1 Global OEM in Swimming Pool Disinfection Market (Under NDA) – signed in July a prepayment on pilot line for pool electrodes, leading to industrial supply 2028 onwards
- Signing similar multinational deals in 2026 for chloralkali and hydrogen electrolyser OEMs
- Ansaldo Energia — €2.35M anodes contract; 2× cathodes upsell (2026); industrial volumes (2027).
- Blue Salt — consumer HOCl-generating device for cleaning removable oral appliances.

2027: 20,000 devices / 100 sheets minimum

2028: 175,000 devices / 875 sheets minimum

2029: 400,000 devices / 2,000 sheets min.

→ (RSP €100 | 400 electrodes/sheet/200 devices)

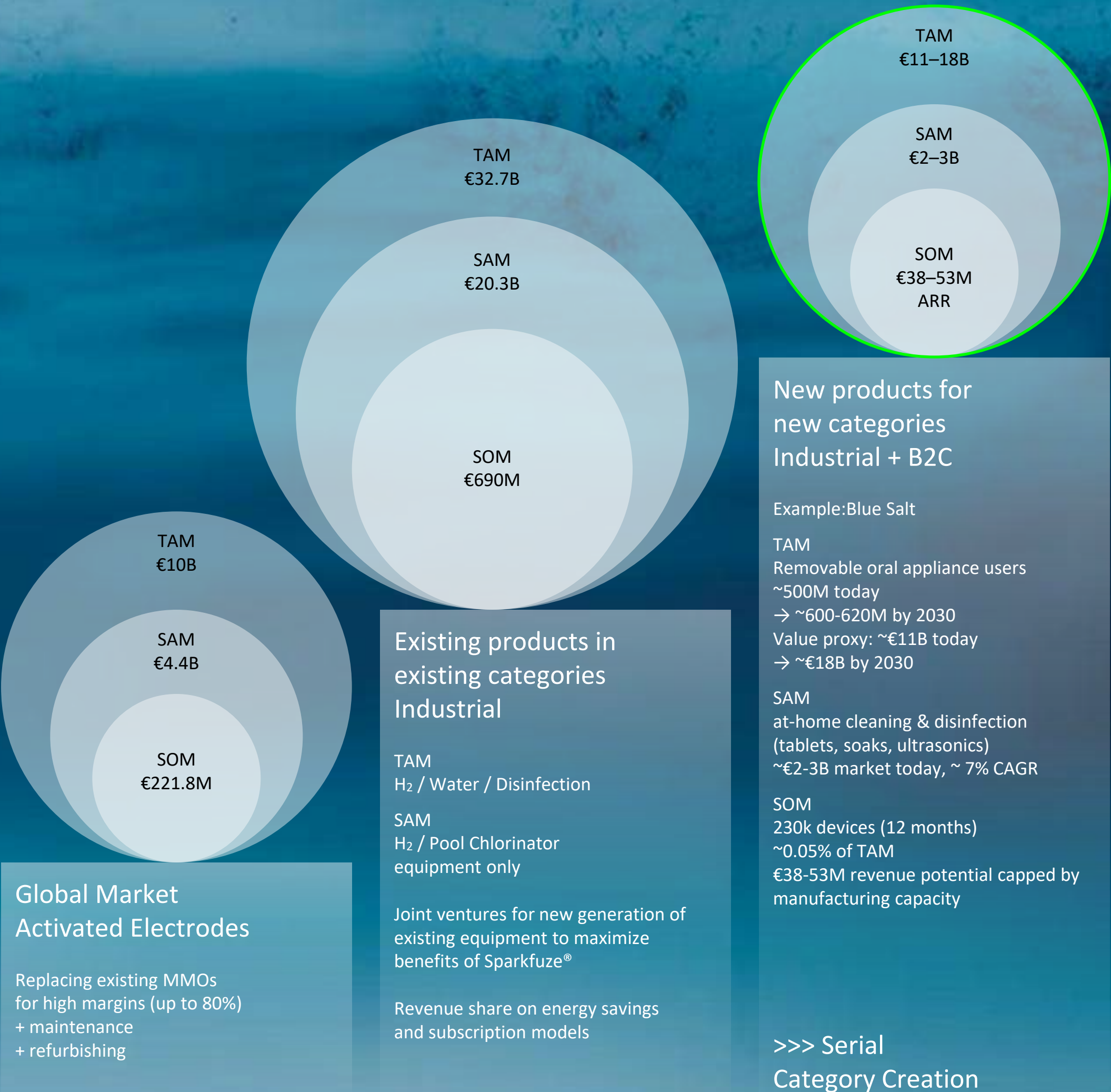
TENDERS / GRANTS

- Chile (CORFO) — won \$10M grant for electrolyzer development; linked to 25 GW green H₂ / green ammonia program; 8-figure revenue potential from 2028
- Democratic Republic of Congo – backed by FOMIN, the DRC sovereign wealth fund – for electrowinning cobalt, copper, nickel, zinc

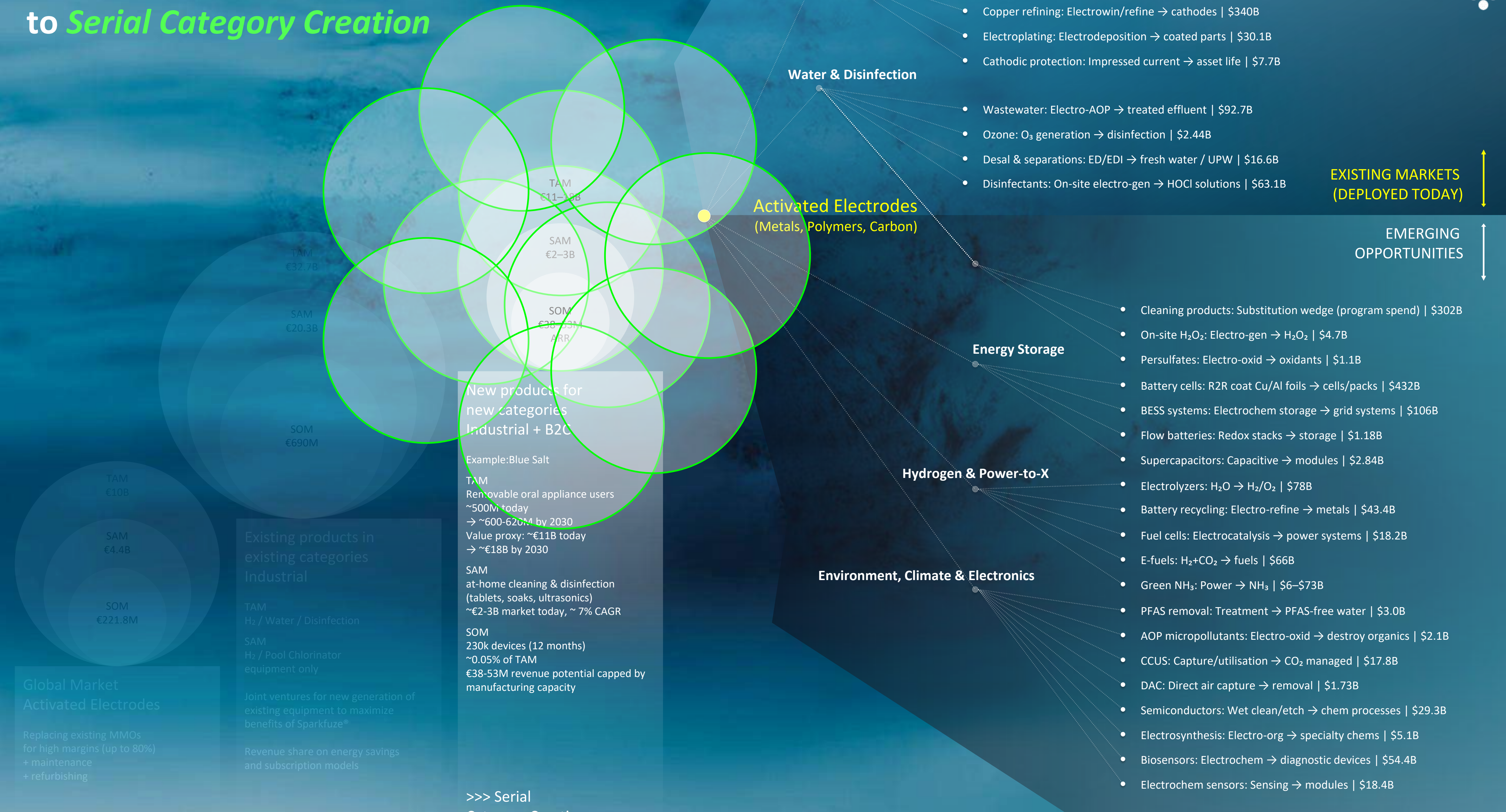
30+ OEMs GLOBALLY

- 30+ OEMs worldwide in MOUs and/or commercial trials.
- \$1.5M in grants supporting programs.
- First 3-year offtake agreement in progress.

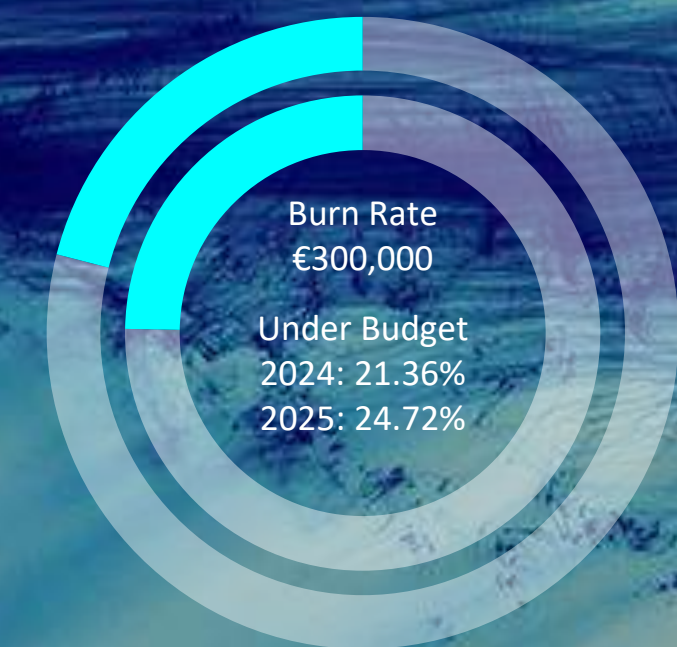
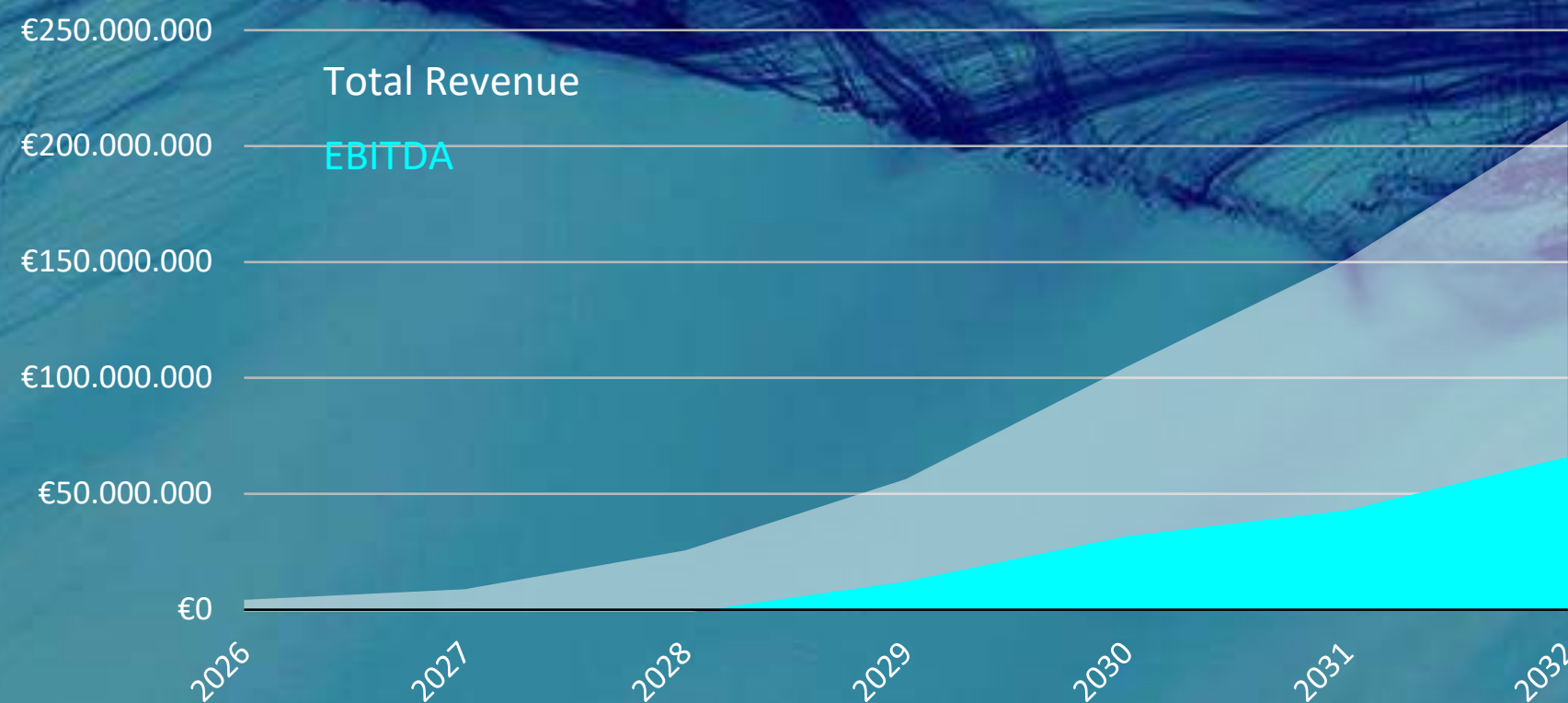
From replacing existing electrodes to *Serial Category Creation*



From replacing existing electrodes to *Serial Category Creation*



2032 Turnover of €211M with EBITDA of €57M



*Strict expense control keep JOLT at 25% of the expected budget in 2025

	2026	2027	2028	2029	2030	2031	2032
Total Revenues	206.466 €	4.614.520 €	18.793.648 €	56.311.972 €	104.772.984 €	151.394.496 €	211.099.808 €
Total COGS	71.115 €	2.677.572 €	11.374.748 €	34.207.976 €	63.779.109 €	93.058.150 €	131.796.539 €
Gross Profit	135.351 €	1.936.948 €	7.418.900 €	22.103.996 €	40.993.875 €	58.336.346 €	79.303.269 €
Personnel Expenses inc. R&D	2.326.844 €	3.311.011 €	5.896.575 €	8.032.485 €	8.596.335 €	13.805.735 €	14.238.360 €
G&A Expenses	1.171.112 €	2.124.561 €	3.347.955 €	3.682.751 €	4.051.026 €	7.000.732 €	7.700.805 €
EBITDA I	(3.362.606 €)	(3.498.613 €)	(1.825.631 €)	10.388.761 €	28.346.514 €	37.529.879 €	57.364.104 €
%	(1.629%)	(76%)	(10%)	18%	27%	25%	27%
Services & Royalties	4.050.000 €	2.696.094 €	5.289.200 €	(3.489.200 €)	-	-	-
EBITDA II	687.394 €	(802.519 €)	3.463.569 €	6.899.561 €	28.346.514 €	37.529.879 €	57.364.104 €
Operating Cash Flow	(1.915.990 €)	1.233.365 €	6.570.172 €	8.479.736 €	21.460.279 €	38.209.229 €	47.051.140 €
Total expenses as % of revenue	1.694%	118%	49%	21%	12%	14%	10%

Pilot Lines

Industrial Lines



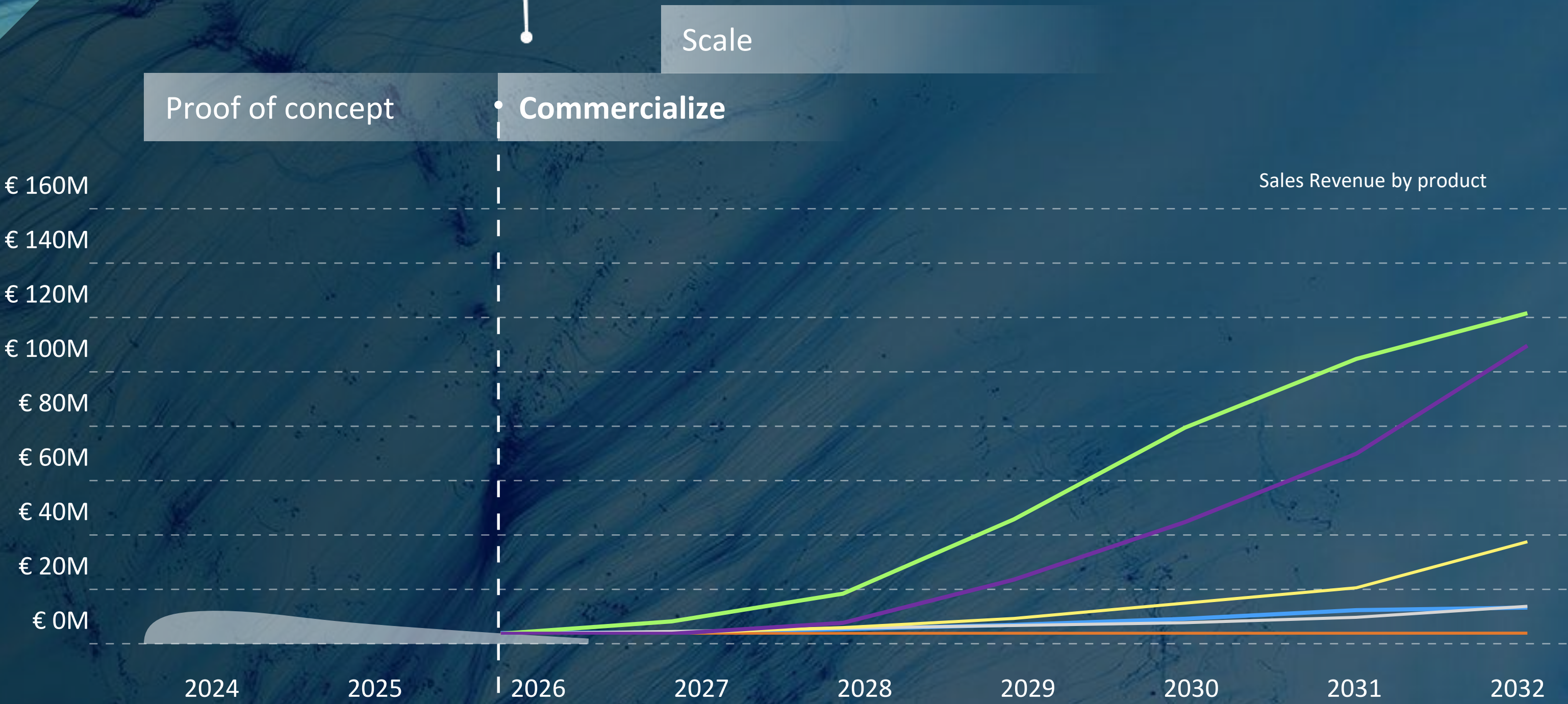
Financial Overview

Scaling Strategy

+ Sales by product

	2026	2027	2028	2029	2030	2031	2032
Total Nickel Pilot Lines	1	1	1	1	1	R&D	R&D
Total Titanium Pilot Lines	0	1	1	R&D	R&D	R&D	R&D
Total Nickel Automated Lines	0	0	0	0	0	1	1
Total Titanium Automated Lines	0	0	1	1	1	2	2
Occupation of all lines	2%	36%	67%	33%	54%	38%	53%

Pilot lines will be used exclusively for R&D.



Ink Coating Gross Margin	2026	2027	2028	2029	2030	2031	2032
Sparkfuzer H2A	97%	97%	97%	97%	97%	96%	96%
Sparkfuzer H2C+	58%	58%	58%	58%	58%	57%	57%
Sparkfuzer OGE370 (Ti Mesh)	36%	36%	36%	36%	36%	36%	36%
Sparkfuzer H2C100 is Gen 2	43%	43%	43%	43%	43%	39%	39%
Sparkfuzer CGE100	49%	49%	46%	46%	46%	46%	46%
Sparkfuzer OGE370 (Ti Plate)	46%	46%	46%	46%	46%	46%	46%

- **Sparkfuzer® H2A** – anode for hydrogen (precious metal free)
- **Sparkfuzer® H2C** – various cathodes for hydrogen & chlor-alkali (trace precious metals)
- **Sparkfuzer® CGE100** – anode for chlorine gas (water treatment & disinfection & chlor-alkali)
- **Sparkfuzer® OGE370** – anode for oxygen gas (electro-oxidation water treatment, electrowinning, electroplating, cathodic protection)



Investment & Use of Funds

High-level cap table (FD)

- Founders: 49.63%
- Institutional & Gov: 14.74%
- VCs: 25.49%
- Family Offices: 10.15%



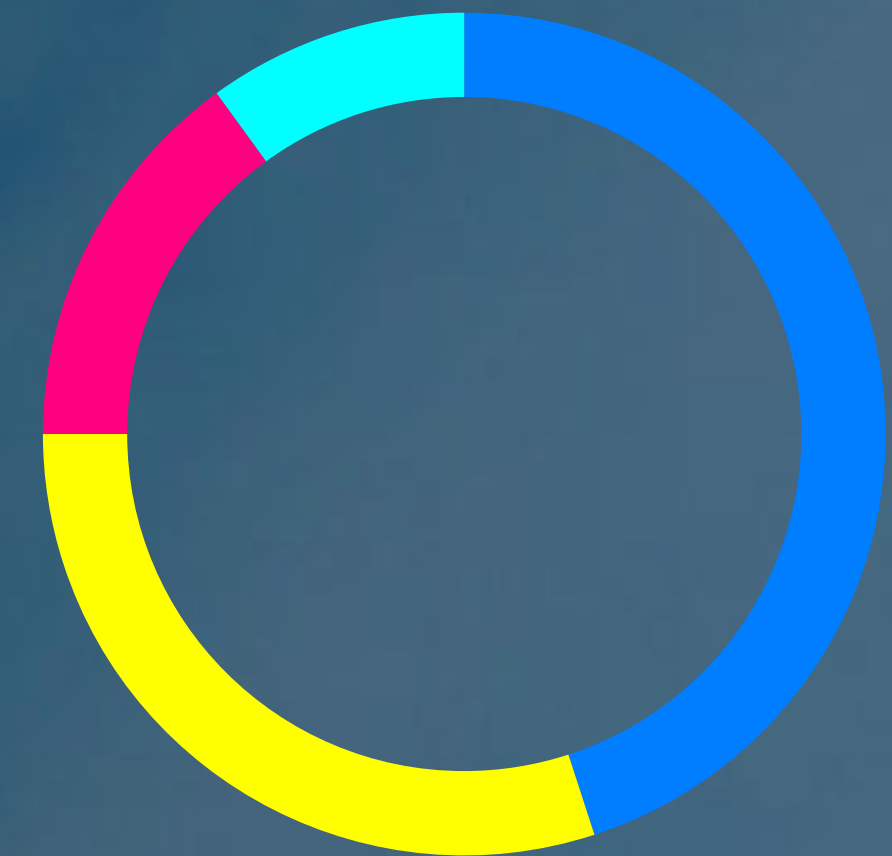
Capital raised to date
€13.5M total = €12.0M equity + €1.5M loan (Avançsa)

Investment description

- Raise size: €5M

Use of Funds

- 45% Chlorine production scale-up (jul 2027)
- 30% Hydrogen electrode growth + integration (TLR9 → volume)
- 15% platform expansion (oxygen/chlor-alkali) only with partner-led milestones
- 10% QA, patents, certification, warranties, legal





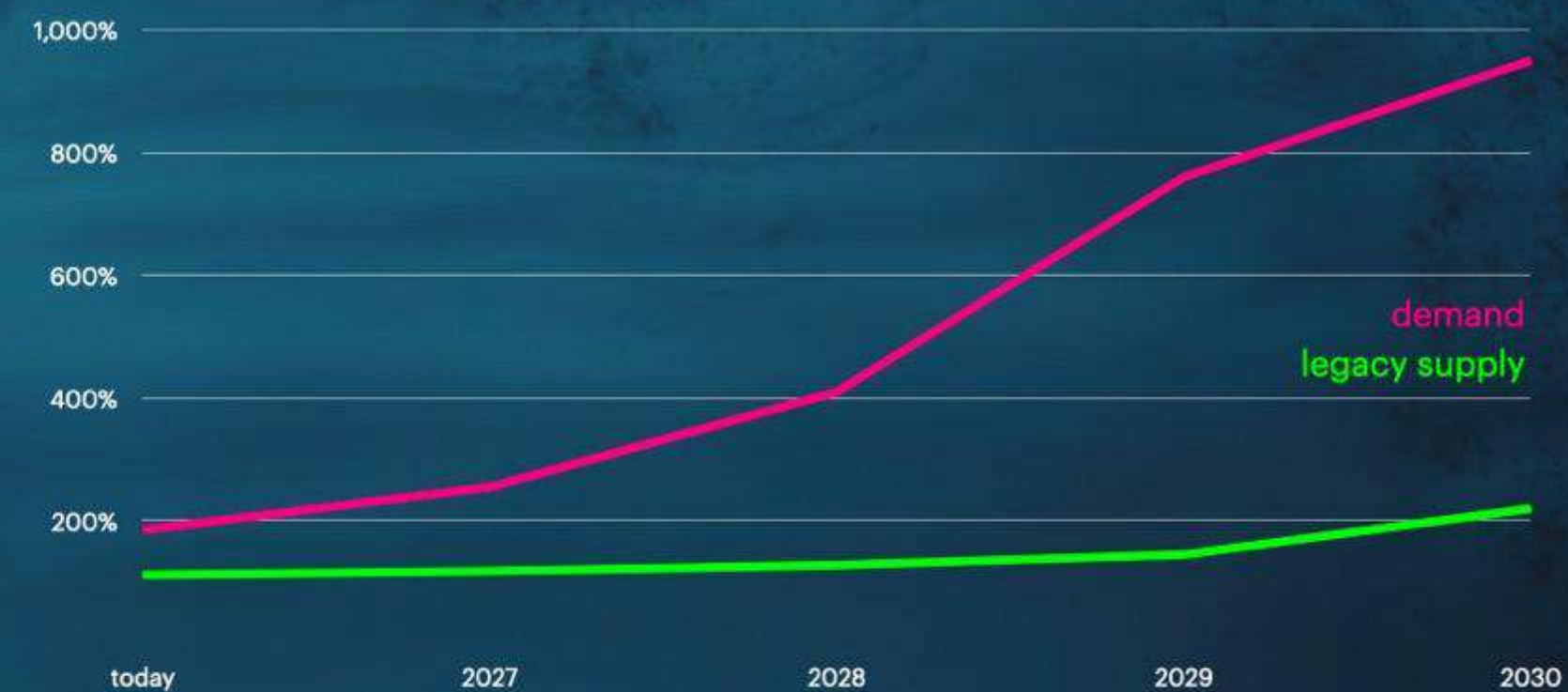
Conclusion

Existing, critical industries are facing a giant **electrode demand gap** that legacy manufacturers cannot meet.

JOLT offers these industries their only solution by turning 2-3 days of legacy production into **one minute** of Sparkfuze®.

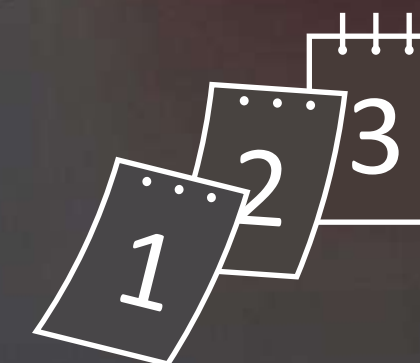
Why now: Electrode demand is accelerating but legacy manufacturing hits a hard ceiling.

A growing supply gap makes the manufacturing change inevitable.

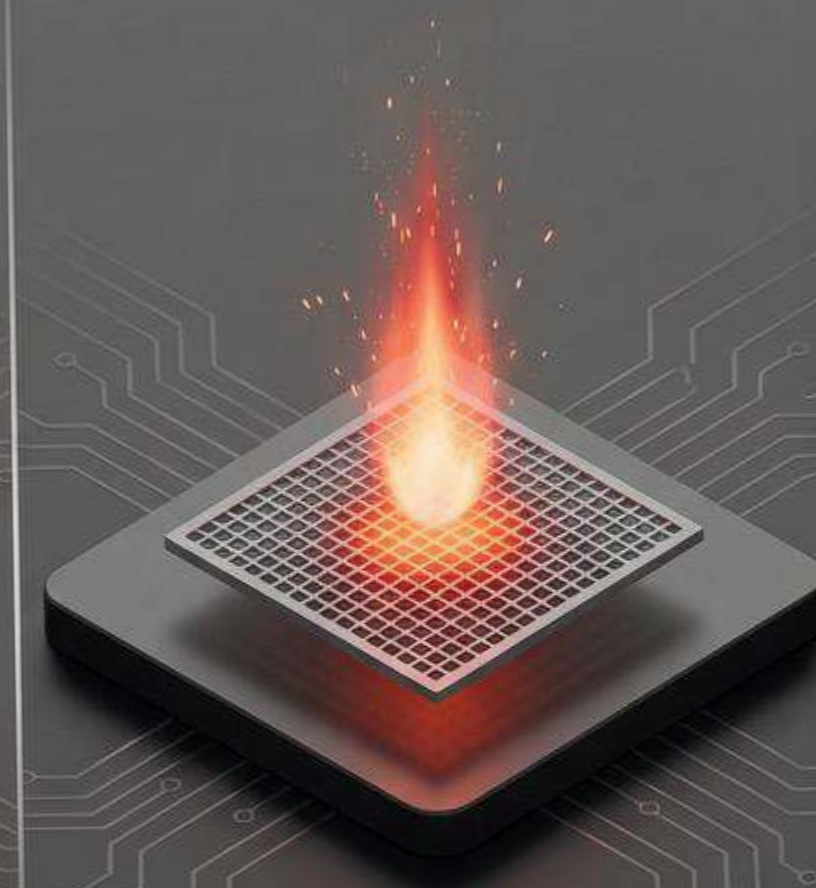


Takeaway: You cannot meet the coming demand wave with a multi-day batch. The gap forces a continuous manufacturing approach (e.g., Sparkfuze®).

Traditional Baking Process



Sparkfuze®
Solution-Combustion





The Revolution in Electrochemistry
Sparkfuze® — the next generation of electrodes

Joltech Solutions SL
Botanica 107-109
08908, L'Hospitalet de Llobregat
Barcelona, Spain

info@jolt-solutions.com
+34 937 079 658