



Capture the Future

January 2025

Nano Innovations Shaping Industry and Climate.

Dotz Nano Limited [ASX:DTZ, OTC:DTZNY/DTZZF]
Corporate Deck; info@dotz.tech



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Dotz at a glance.

A pioneering developer of innovative climate and industrial nanotechnologies.

Groundbreaking carbon management technologies that facilitate the transition to a carbon-neutral world.

ASX

DTZ

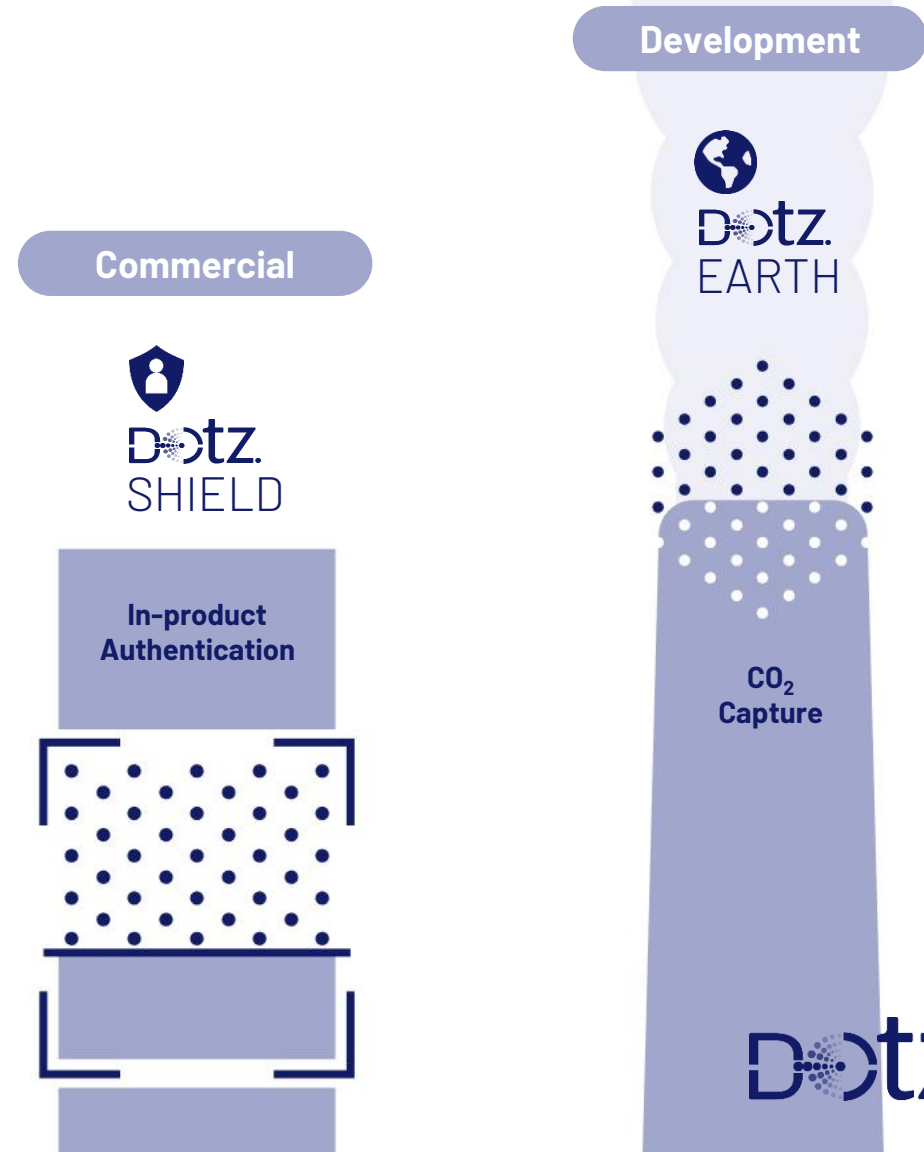
OTC

DTZZF/DTZNY

Global

HQ: Israel
R&D: Israel
Commercial: US

Partners



A global provider of carbon management technologies.

SUPERIOR TECHNOLOGY

- IP-protected nanotechnologies for a range of CO₂ capture and removal applications
- Superior performance delivering game-changing cost savings
- Validated by 3rd parties & piloting towards commercial viability

BUILT FOR GROWTH

- Partnership opportunities for global scaling across various sectors
- Highly scalable and de-risked business model
- Multiple revenue opportunities

EXPANDING MARKETS

- Target markets estimated to grow by more than 15x over the next decade
- Increasing regulatory pressure and corporate commitments to net-zero emissions are driving demand
- Governments are providing support and incentives to encourage carbon capture initiatives

Experienced leadership team with proven record of driving growth and creating value.

EXECUTIVE TEAM



Sharon Malka
CEO



Michael Shtein, Ph.D.
Founder, CTO



Liat Bar Ziv Alperovitz
CFO



Shirley Shoshaney-Kleiner
CMO



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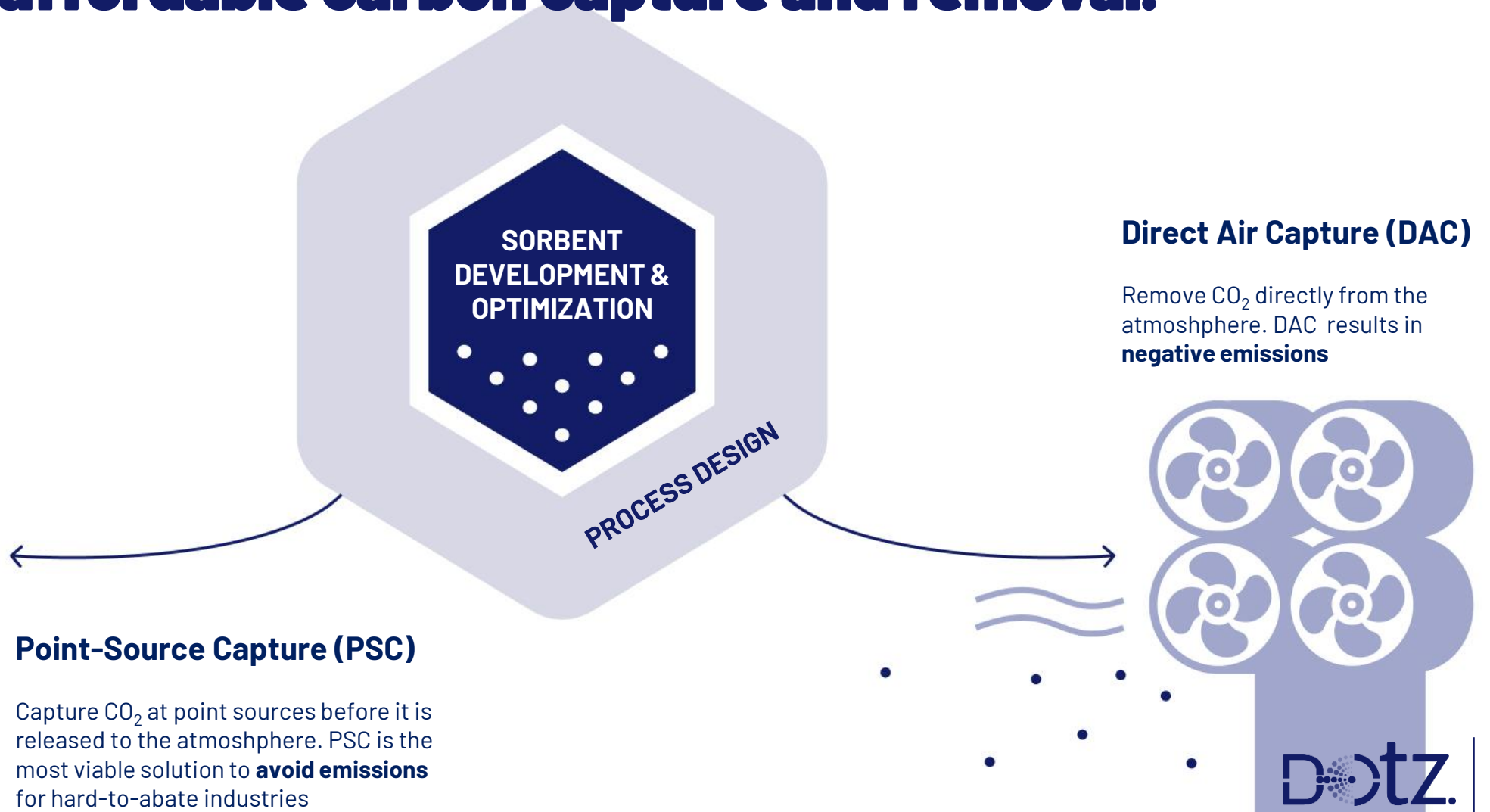
CO₂ Capture

Sorbent innovation driving affordable
carbon management solutions



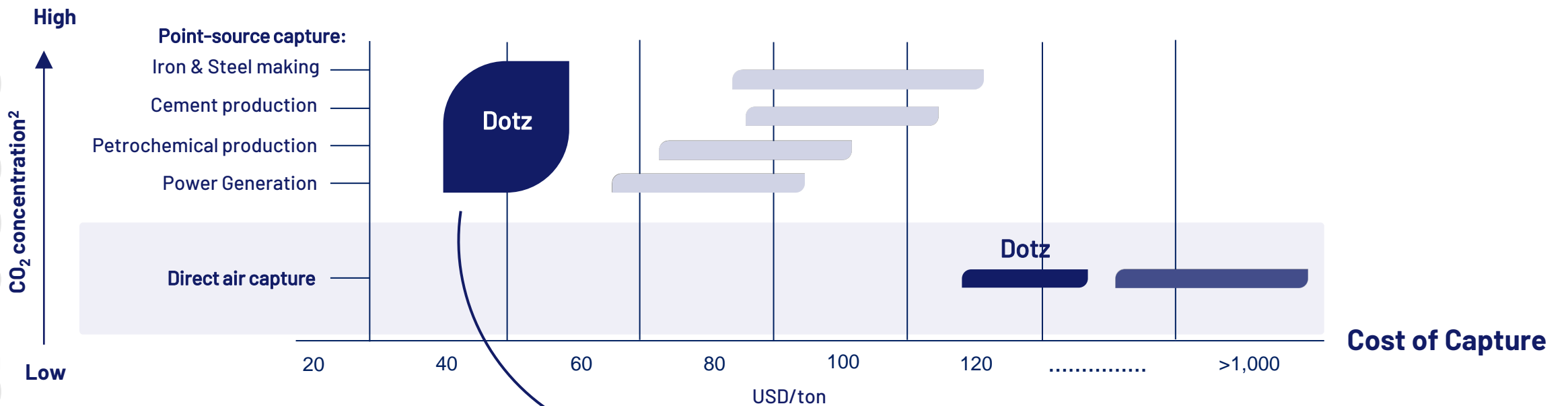
Integrating innovative sorbents with advanced process designs for affordable carbon capture and removal.

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Innovation driving low-cost carbon management solutions.

Average Cost of CO₂ Capture, Transport and Storage¹



Cost reduction key drivers

- High CO₂ working capacity
- Low energy penalty
- Reduced CAPEX & cost of sorbent

¹Source: IEA

²Source: Bettenhausen, Craig. "The life-or-death race to improve carbon capture," Chemical & Engineering News

Estimates of cost to capture a ton of CO₂ vary by industry and such factors as the amount of exhausted gas from a plant, the concentration of CO₂ in the exhaust and its pressure

 Superior technology

A new era of sorbents with enhanced performance.

High CO₂ working capacity with a low energy penalty and low cost of sorbent

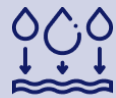
- Modified sorbents
- Chemical absorption
- Ultra-high surface area
- Regeneration via temperature swing (TSA)
- Applicable for low CO₂ content flue gases (<10%)

DAC SORBENTS

POINT-SOURCE SORBENTS

- Nanoporous carbon-based & polymeric sorbents
- Physical adsorption
- Unique porosity – high volume of ultra-micropores
- Regeneration via vacuum swing (VSA) and temperature swing (TSA)
- Applicable for high CO₂ content flue gases (>10%)

BENEFITS



High CO₂ adsorption capacity



High selectivity



Low moisture affinity



Resistance to impurities



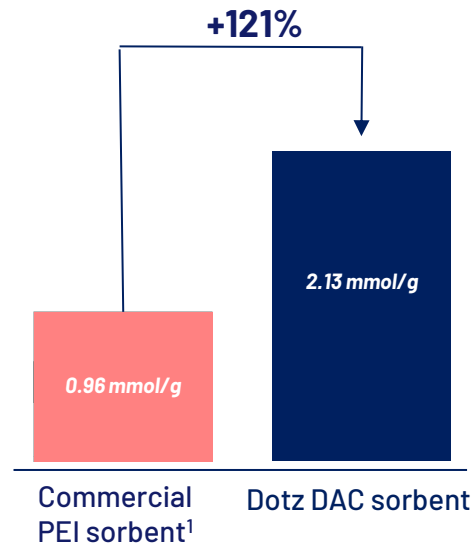
Lower energy penalty



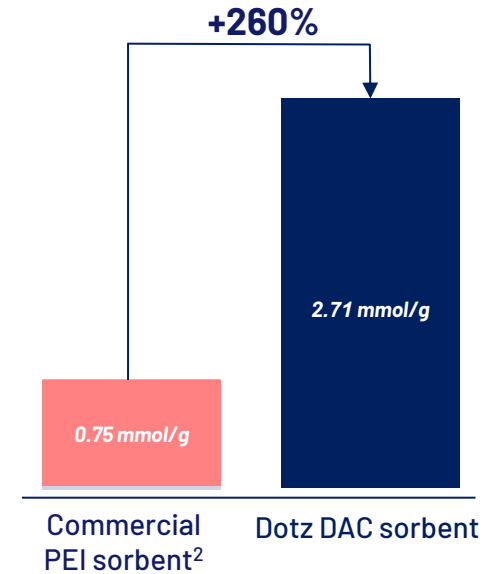
Regenerable and reusable

Dotz's DAC sorbent demonstrate superior adsorption capacity.

2X higher CO₂ adsorption capacity with dry air (at 400 ppm, 25°C)



Very high CO₂ adsorption capacity with wet air (at 400 ppm, 30 °C , 20% RH)



¹Lewatit VPOC 1065; Source: [low-et-al-2023-measurement-of-physicochemical-properties-and-co2-n2-ar-o2-and-h2o-unary-adsorption-isotherms-of.pdf](#)

²Lewatit VP OC 1065 (amine-grafted resin) at 35 RH; source: <https://doi.org/10.1038/s41467-024-53961-4>

Process modeling of DAC application validate higher productivity and lower energy.

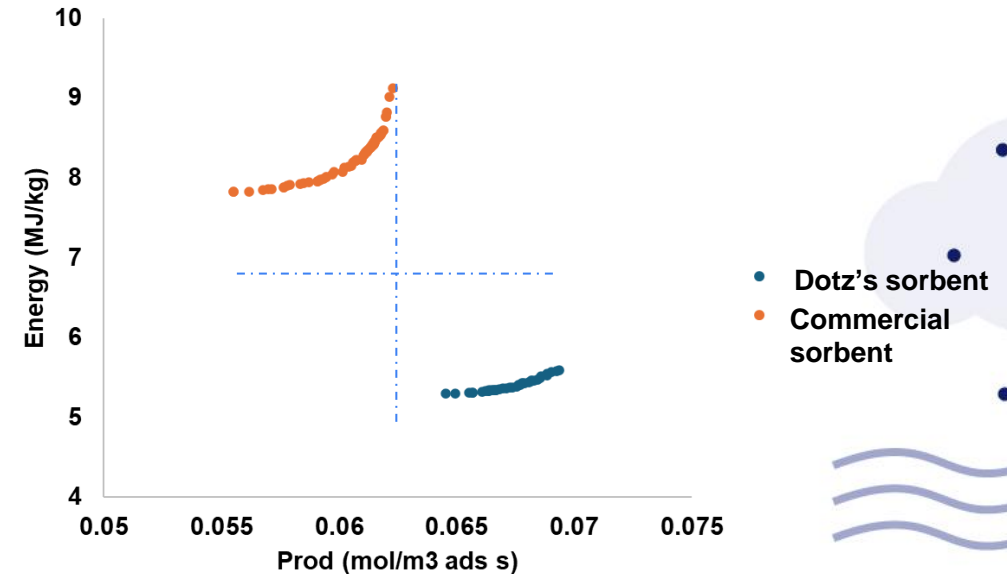
- Dotz's modified sorbent was tested via DAC process modelling by 3rd parties and by SINTEF¹

Summary of results:

- **Very high CO₂ uptake** at 400 ppm CO₂ / 30°C / 20% RH
- Sorbent is **inert to N₂** and showed **high water affinity**
- Breakthrough analysis (kinetic) indicated **reproducibility**
- Stability cycling tests indicated high retained CO₂ uptake after 2,500 adsorption/desorption cycles
- **Higher productivity of CO₂ adsorption** relative to commercial PEI-sorbents
- **Low energy** usage compared to commercial PEI-sorbents

- Lab-scale pilot demonstration is ongoing

Superior productivity & lower energy usage



SINTEF DAC model to benchmark Commercial sorbent performance in a fixed bed VTSA process of DAC application in Norway²



¹SINTEF, one of Europe's largest independent research organizations for energy and climate technology

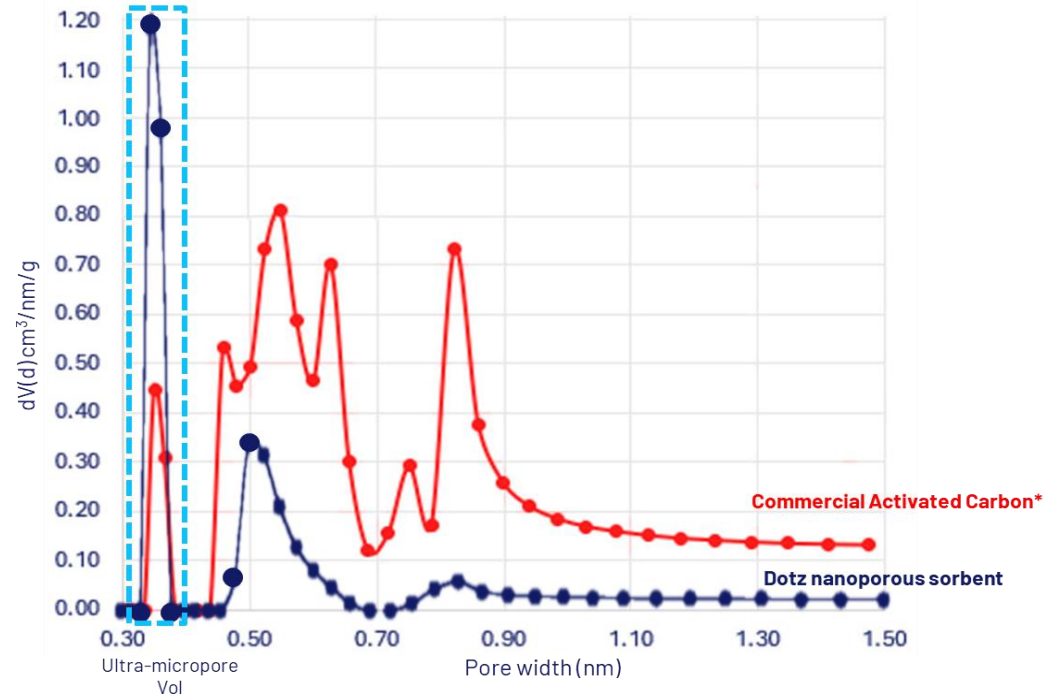
²Modelling conditions: 400 ppm vol, 80% relative humidity at 5°C

Superior technology

Engineered pore volume & distribution, ideal for CO₂ capture from flue gases.

Dotz's innovative nanoporous sorbents have very high volume of ultra-micropores that are responsible for the physical adsorption of CO₂ (CO₂ molecule 0.33nm diameter)

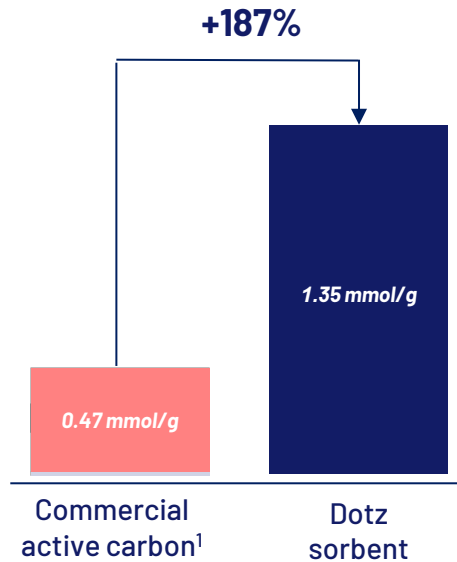
Pore volume and distribution



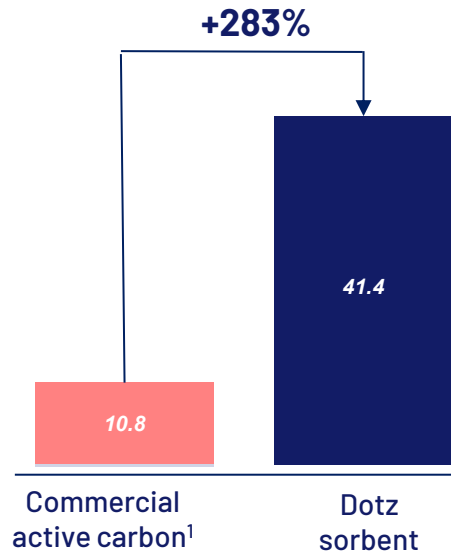
*Provided by Blücher (Germany)

Dotz's nanoporous sorbents demonstrate superior properties.

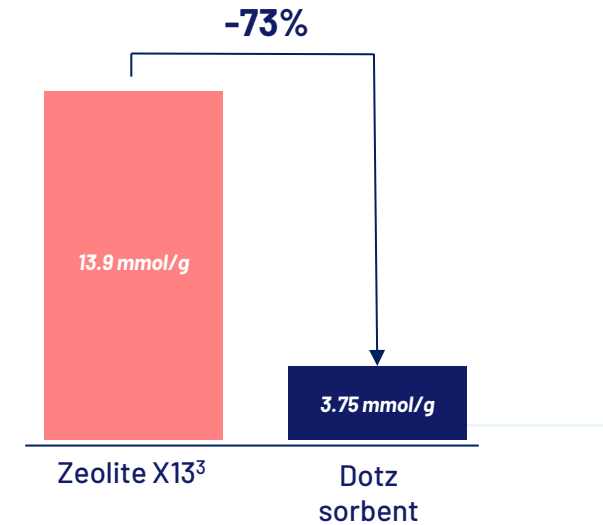
3X higher CO₂ adsorption capacity
(at 25°C, 15 kPa)



4X higher selectivity²
(at 25°C, 10 kPa)



~75% lower H₂O adsorption
(at 30°C, 1 kPa)



¹ Provided by Blücher (Germany)

² CO₂/N₂ adsorption capacity

³ Source: [low-et-al-2023-measurement-of-physicochemical-properties-and-co2-n2-ar-o2-and-h2o-unary-adsorption-isotherms-of.pdf](#)

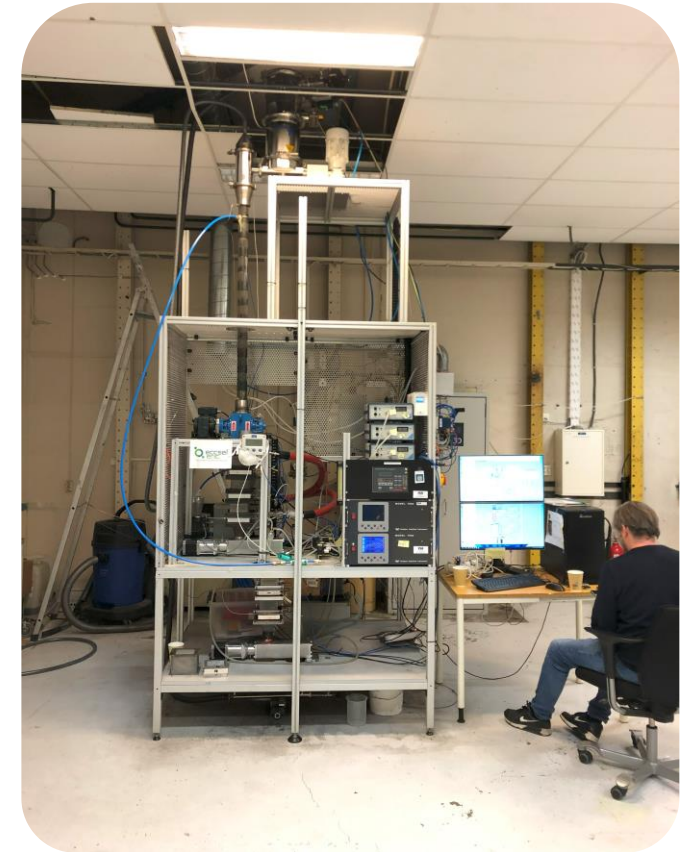
Lab-scale piloting demonstrates superior adsorption capacity, low energy use and improved cyclability.

VSA¹ process simulations resulted in ultra-low energy requirements

- Process simulation resulted in 97% purity CO₂ at **an energy consumption of <1 GJ/ton CO₂**, from post combustion flue gases
- Dotz's AC can also handle humid flue gases

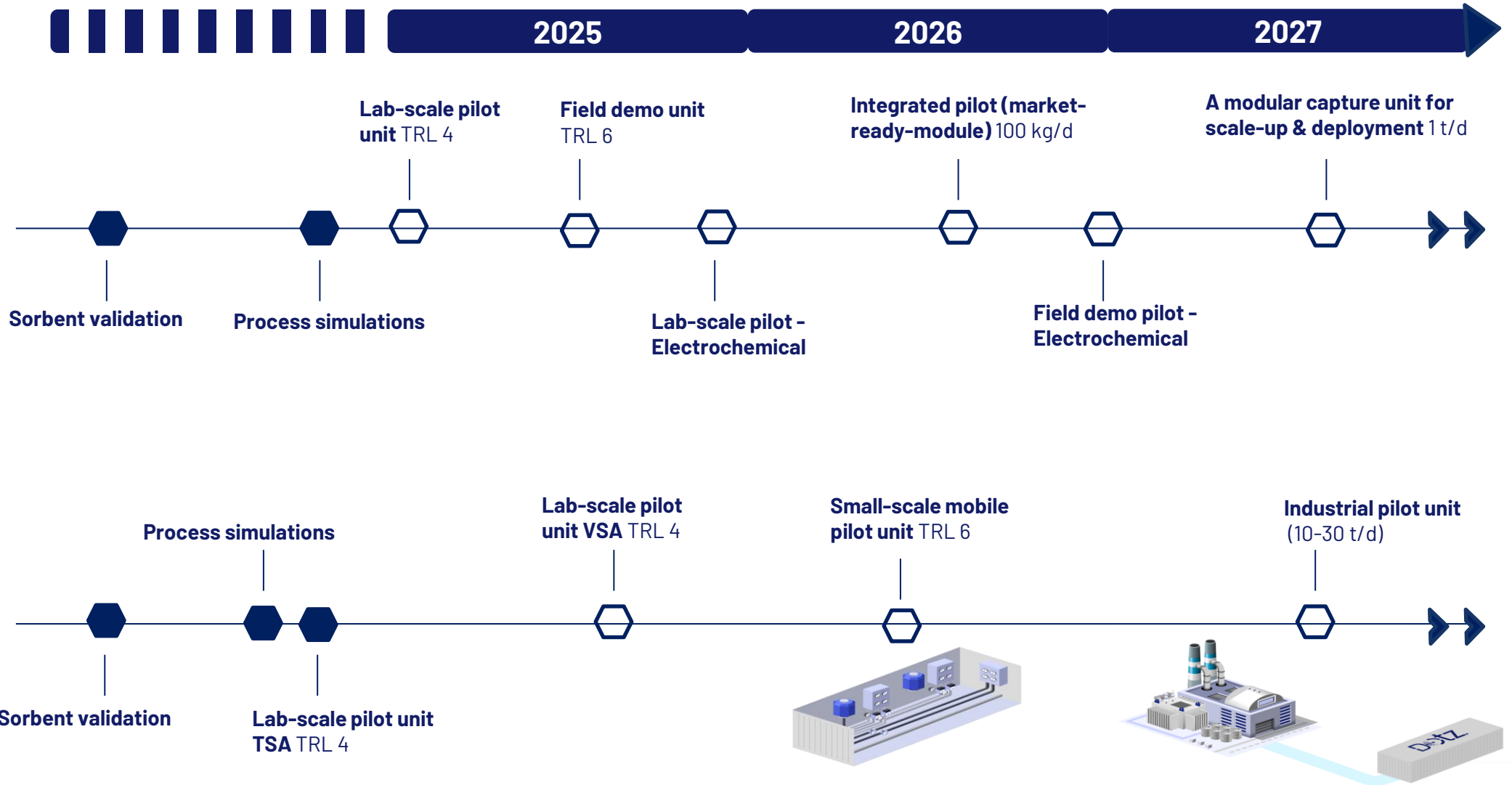
TSA² lab-scale pilot demonstration resulted in superior adsorption capacity and cyclability

- **Higher effective adsorption capacity** relative to a commercial reference
- **Higher in situ CO₂ purity** (based on its higher selectivity of CO₂ over N₂) compared with a commercial reference)
- Demonstrated **thermal stability** following approximately 140 adsorption/desorption cycles



🕒 Built for growth

Piloting towards commercial viability.

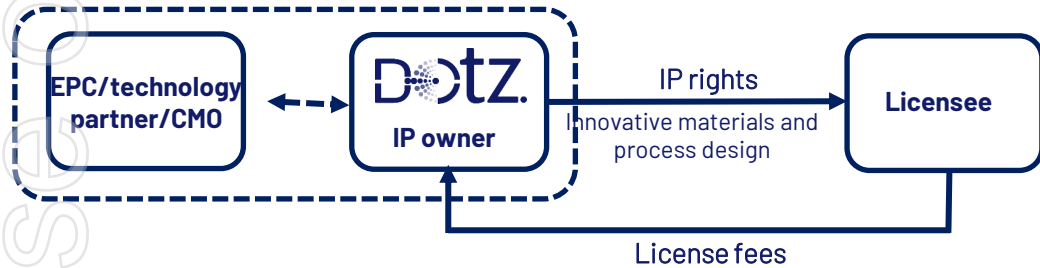


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🕒 Built for growth

Monetizing innovation through strategic licensing with multiple revenue streams.

IP licensing model



- Highly scalable model
- Lower risk
- Multiple revenue streams

Multiple revenue opportunities

- **Product sales:** generate initial revenue during the development stages
 - Sorbent supply
 - CO₂ utilization
 - Testing mobile unit
- **Carbon credits:** Generate revenue through the sale of future carbon removal credits
- **Technology licensing:** license the use of the technology to scaling partners
 - Upfront license fee
 - Milestone payments
 - Ongoing royalty payments

🕒 Built for growth

Partnership opportunities for global scaling across various sectors.

Targeting industrial processes, power generation, and direct air capture

Target Segments of point source capture



Iron & Steel

Share in global emissions¹: 12%
Annual CO₂ emissions (2020)¹: 2.6GT



Cement

Share in global emissions¹: 8%
Annual CO₂ emissions (2022)¹: 1.6GT



Power Generation

Share in global emissions¹: 40%
Annual CO₂ emissions (2022)¹: 36.8GT



Chemicals

Share in global emissions²: 5%
Annual CO₂ emissions (2022)¹: 1.3GT

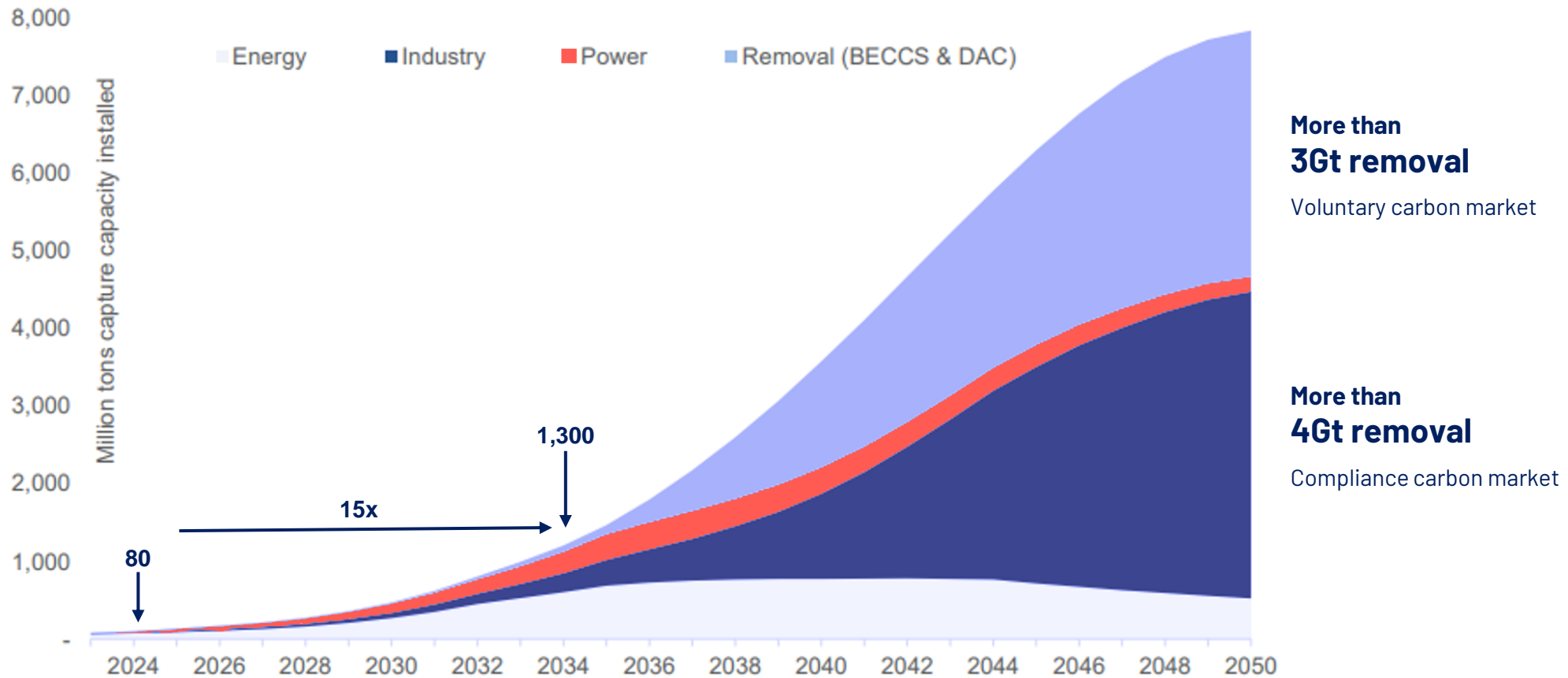
Direct Air Capture



Over 200 million tonnes of CO₂ every year needs to be captured from the atmosphere utilizing direct air

Early phase of a rapidly expanding market.

Carbon capture capacity estimated to grow by more than 15x within 10 years



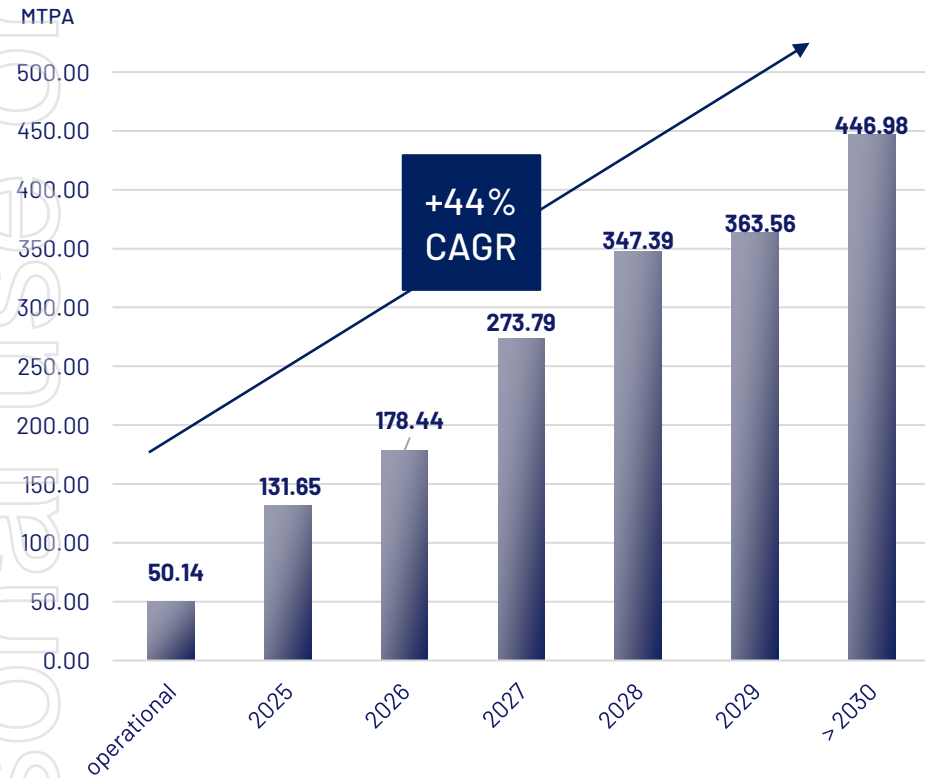
Source: Rystad Energy 1.6dg Scenario/SpareBank 1 Markets

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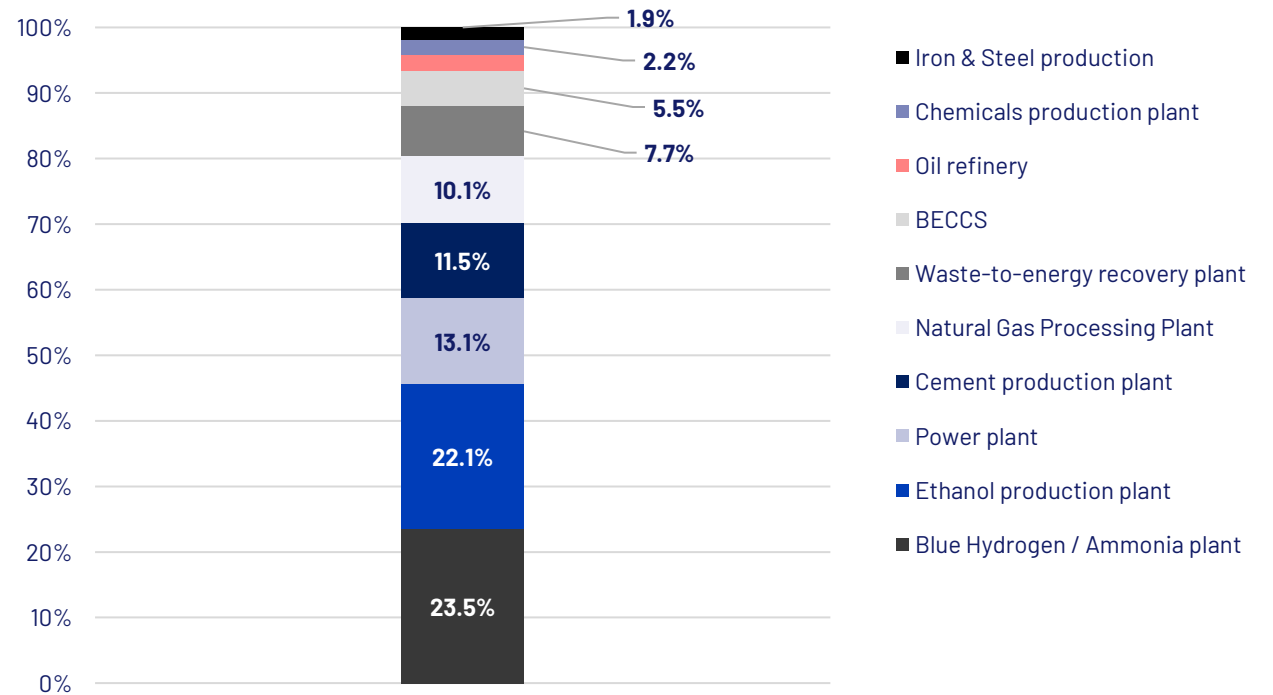
Planned projects point to strong growth.

Nearly 600 MTPA have been announced and more to come

Global operational & planned captured capacity¹



Global Capacity by application¹ (% of total)



CCS Market Poised for Growth Amid Favorable Market Drivers.

Regulatory pressure, corporate commitments and government support & incentives



Pricing

40% of global emissions presently covered by pricing mechanism



Storage

Transportation and storage availability is accelerating



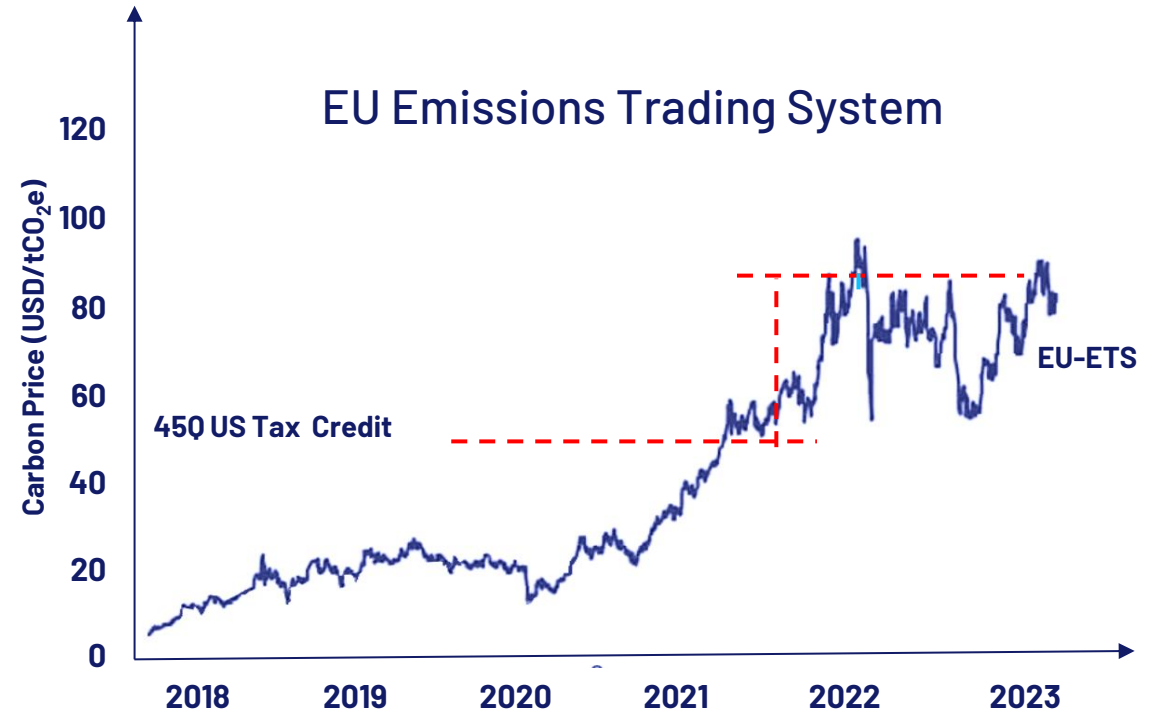
Incentives

CCS incentives are increasing globally



Lower costs

Costs are decreasing as technologies and projects mature

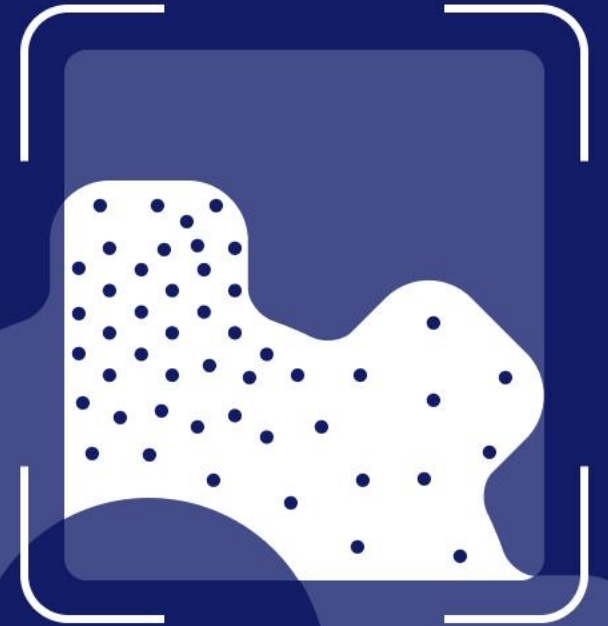


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In-product

Authentication



 Superior technology

Advanced and validated authentication solutions for anti-counterfeiting and monitoring.



VALIDOTZ™

- Dozens of optical taggants
- Embedded in the product
- Compatible with a range of hosting materials



INSPEC™

- Hand-held devices
- Easy-to-operate
- Real-time, on-site, information reading

Dotz solution benefits:

In-field real-time
Detection & measurement

Compatible with a range of
hosting materials

Simple, **easy-to-use** solution

Validated solution – various
successful field trials

Multiple applications across range of industries

Anti-counterfeiting &
anti-alteration

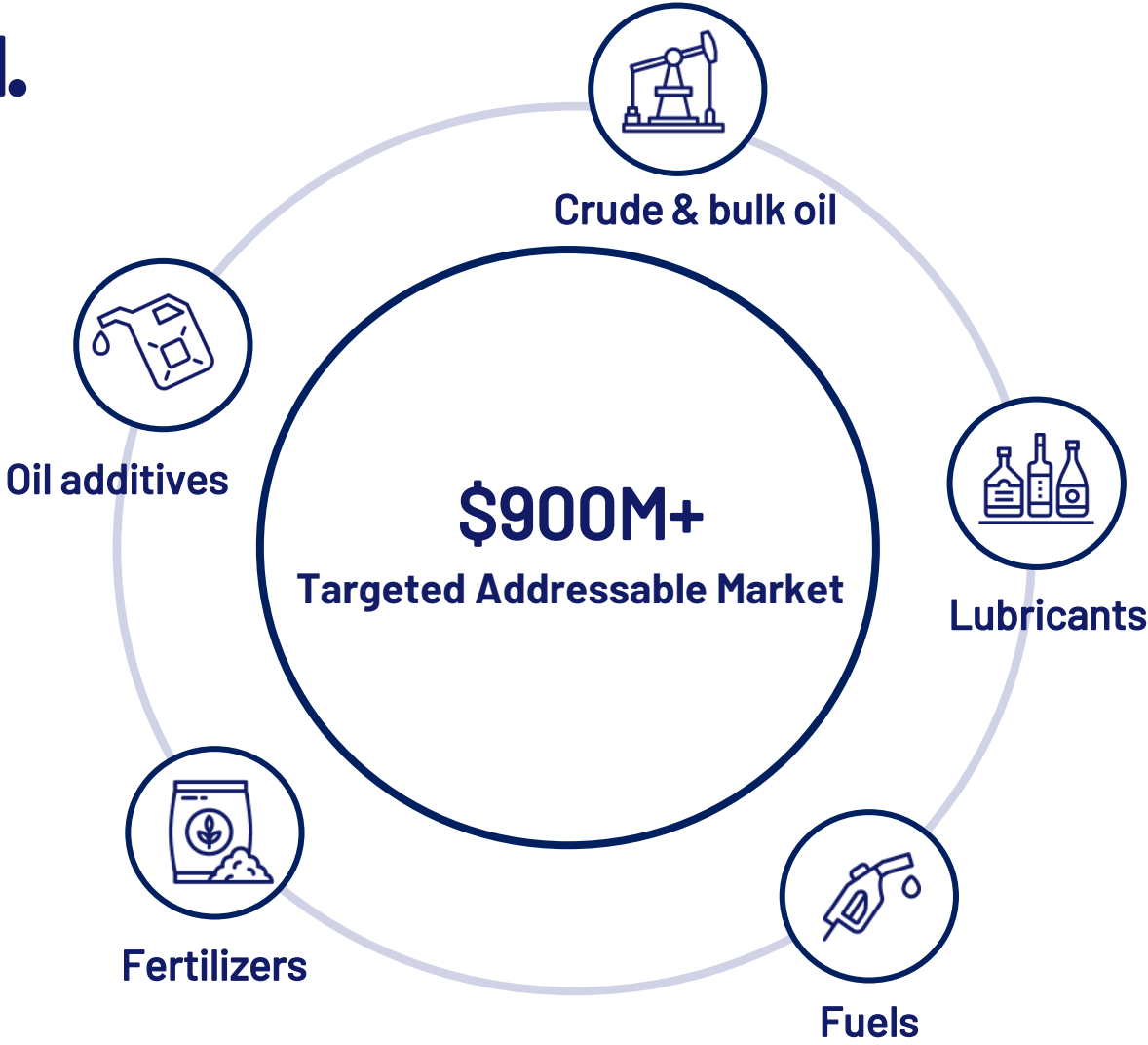
Product liability & anti-
dilution

Quality Assurance
(QA)

ESG validation &
circular economy

Attractive and focused industrial markets¹ with unmet need.

- Achieved **first commercial sale** to the oil & gas industry
- Increased losses due to counterfeiting and parallel markets
- Product ownership validation becomes common practice
- The need to connect physical goods to the digital world



¹Source: McKinsey's market research, 2023

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