



BERGEN
**CARBON
SOLUTIONS**

Finn Blydt-Svendsen

Interim CEO and co-founder

Fearnley Securities

Annual Renewables & Clean-Tech Conference

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Where we are today?

- Bergen Carbon Solutions aims to pioneer a new industry for ground-breaking, environmentally friendly material-technology
- We use CO₂ to create a wide range of carbon products. including nanofibers, nanotubes and graphite
- Our core-technology is proven; our next step is industrial adoption
- We started our journey with Carbon Nano Fibers (CNF) but have proven that we are also able to:
 - 1) Control the physical structure of our carbon production, with the introduction of Multi walled carbon nano tubes (MWCNT)
 - 2) Produce graphite, which can be used as anode material

BCS at a glance



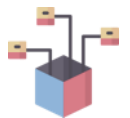
Founded i 2016

40 competent
professionals



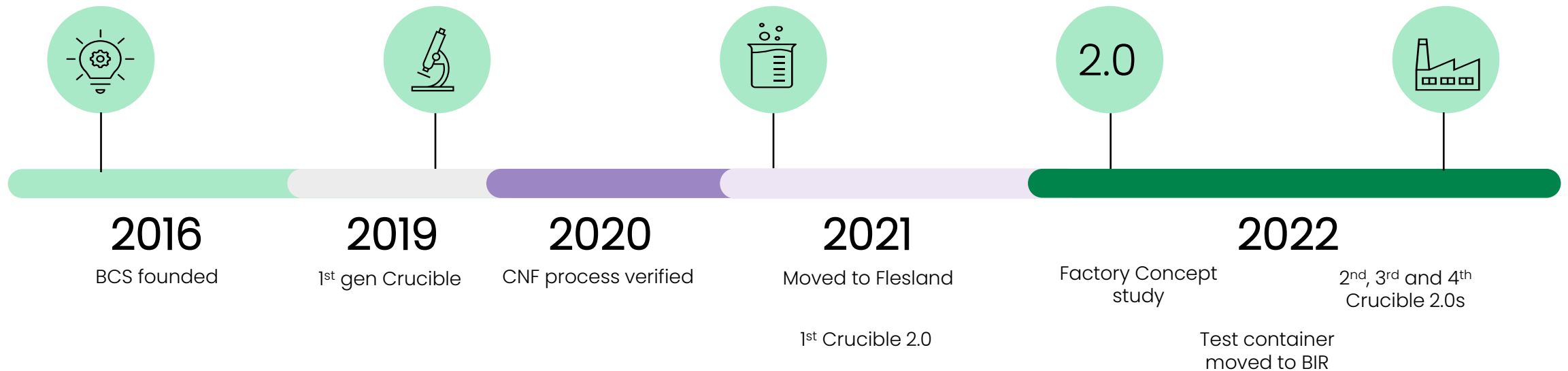
Unique and proven core-
technology

Growing product
portfolio



Listed on Euronext Growth Oslo
(Ticker: BCS)

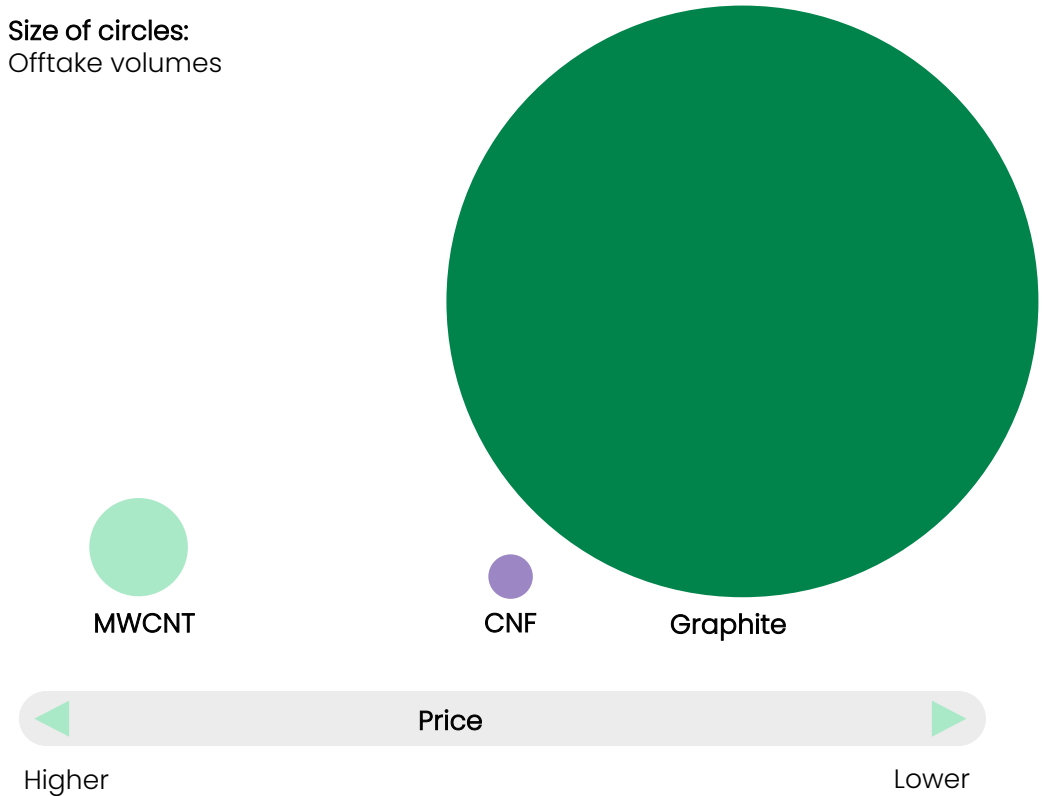
Technology driven company development



Graphite enables significant offtake opportunities

- In June we announced MWCNT, two months later we announced the potential of graphite production using our core technology
- The recent R&D breakthroughs enables significant larger offtake volumes than initially expected, especially within the graphite sector
- Simultaneously, MWCNT is priced higher than both CNF and graphite. This provides BCS with a versatile product mix facing future demands from the industry

Size of circles:
Offtake volumes



What is graphite and why is it important?

- Graphite is a widely used allotrope of carbon
- Its an essential technological material that is part of many different applications
- Important to secure enough Graphite to produce enough anode materials lying ahead
- Europe will need at least ten times more than what is announced for now, our technology can solve this problem

“Project C” and our focus area:
the battery industry

Demand in 2030

Today

Announced

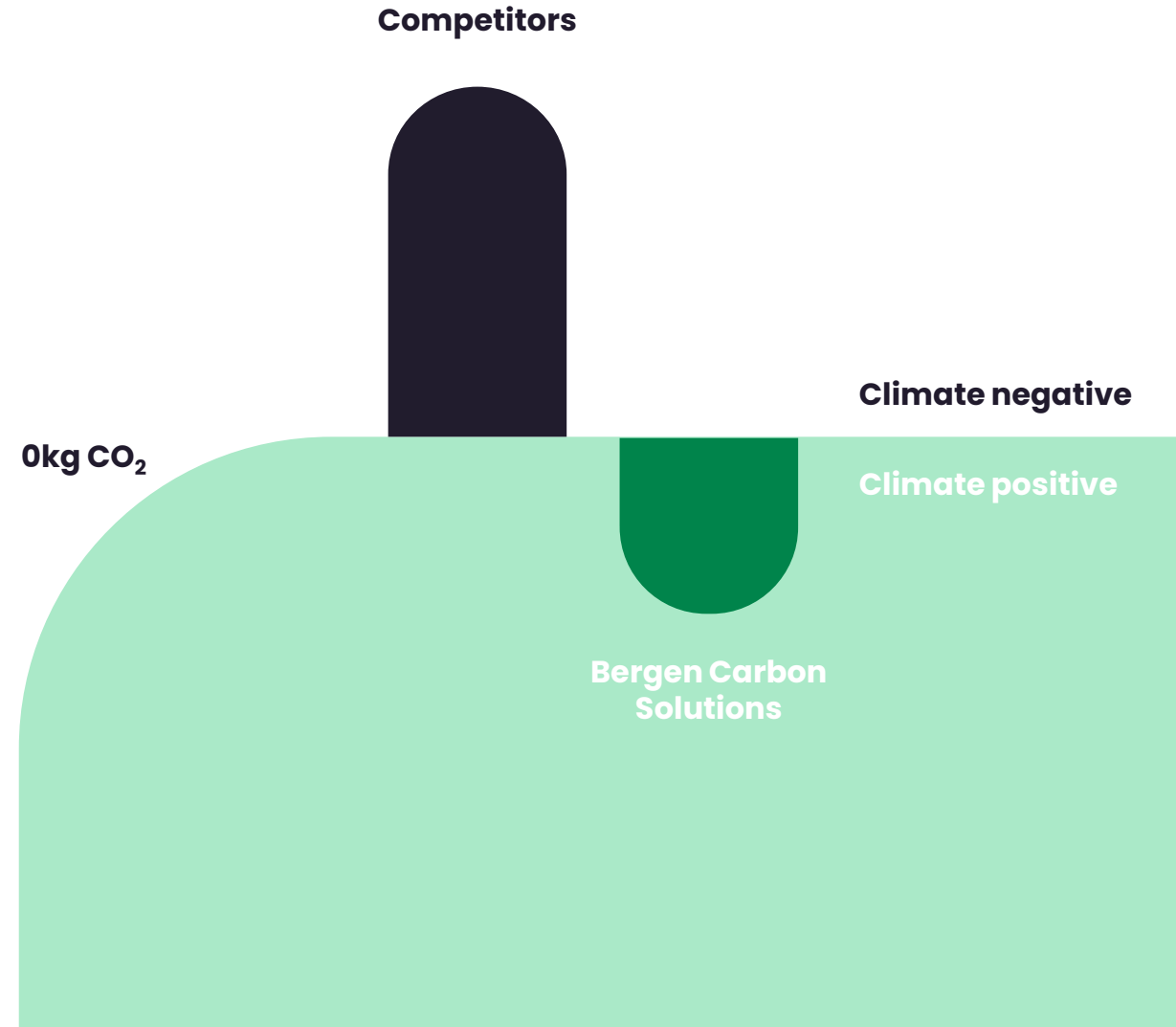
Demand

x10



Profitable and climate positive technology

- Our technology is fundamentally climate positive. During our work towards industrialization, we have discovered three possibilities that we are now able to capture:
- **Improve separation technology**
We are launching a new separation technology that will significantly reduce cost
- **Optimizing our core technology**
We are optimizing our core technology and energy efficiency even further
- **Expand the product portfolio**
We are expanding our portfolio with MWCNT and graphite



Strategic partnerships

Building a new industrial adventure with groundbreaking technology is a demanding exercise. Hence, it is of the greatest importance to team up with strategic partners.

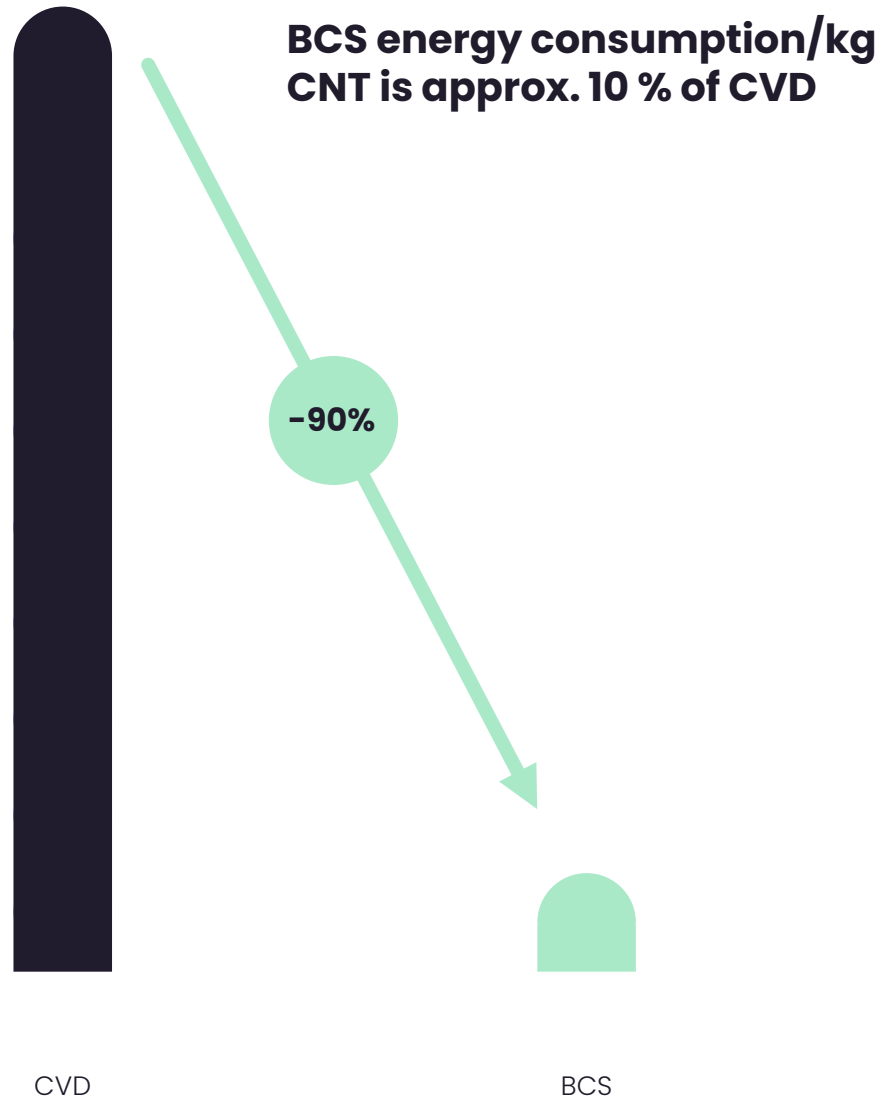
- **Industrial partnerships**

BCS seek partners and investors with industrial know-how and potential to help us excel our development

- **Technological awareness**

We are actively working towards material suppliers, industry leading companies and national authorities, to place Bergen Carbon Solutions AS on the industrial map and secure political attention





Unique technology

- The energy consumption for BCS' technology is about 10% of CVD
- BCS is still maturing the electrochemical- and separation process which will significantly reduce the already low energy consumption
- We expect the energy consumption for BCS' technology to be less than 5% of CVD after our new improvements to technology
- Improvement to technology will also affect CO₂ emissions significantly compared to CVD

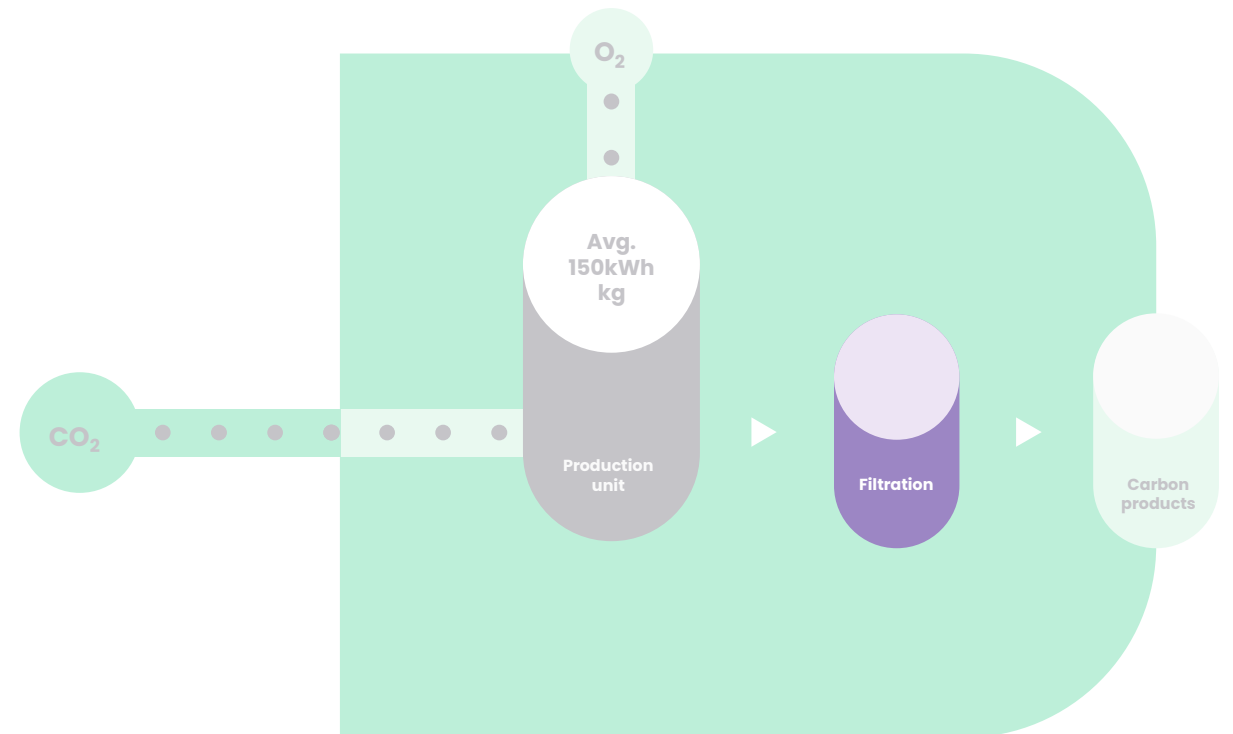
Groundbreaking filtration

- Until now our focus has been to optimize the process of building carbon - our core technology
- Our engineers are currently working on a new and groundbreaking separation technology that is using CO₂ to separate the carbon from our electrolyte

Implications:

- The new separation technology has the potential to drastically reduce our filtration costs, which accounts for a large proportion of costs with today's production process
- Enabling BCS to further reduce CO₂ footprint and strengthen our cost position

New separation pilot ready next year (2023)

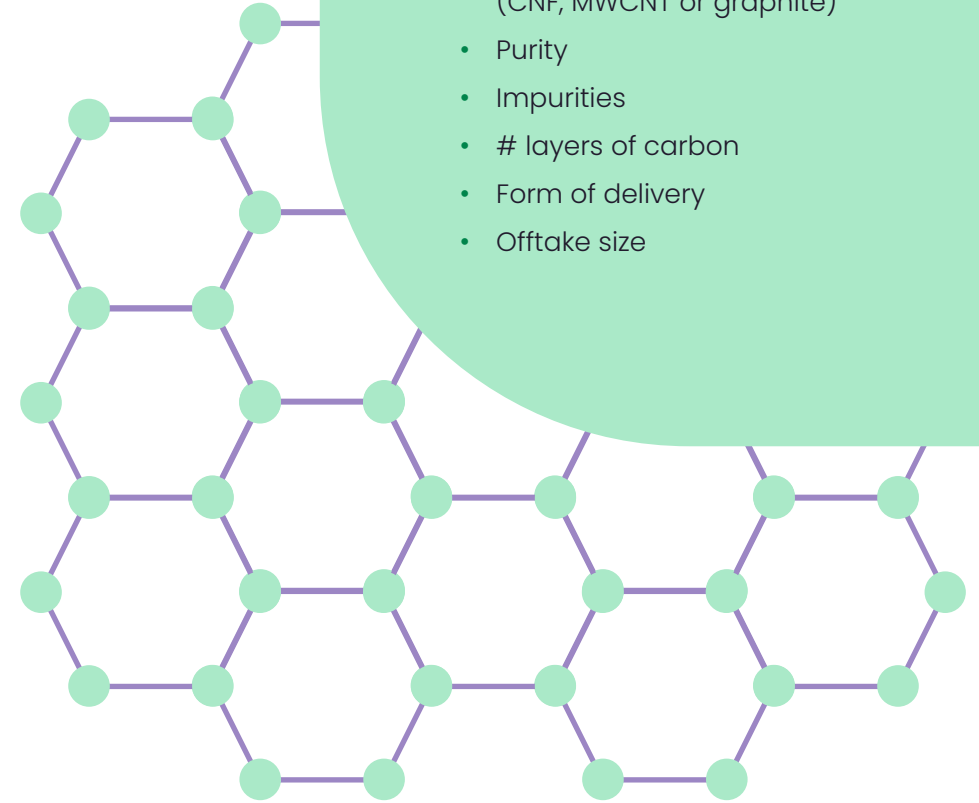


Market assumptions

- The value of our product is in the end dependent on which improvements it can bring to the customer. This effect is determined by complete control of several parameters including physical properties, dispersion technology, preparation methods and more
- Industrialized materials needs to be tested and verified into individual applications before large scale industrial adoption takes place
- Our expanded product portfolio enables us to target new markets and product segments

Value drivers

- Product category (CNF, MWCNT or graphite)
- Purity
- Impurities
- # layers of carbon
- Form of delivery
- Offtake size



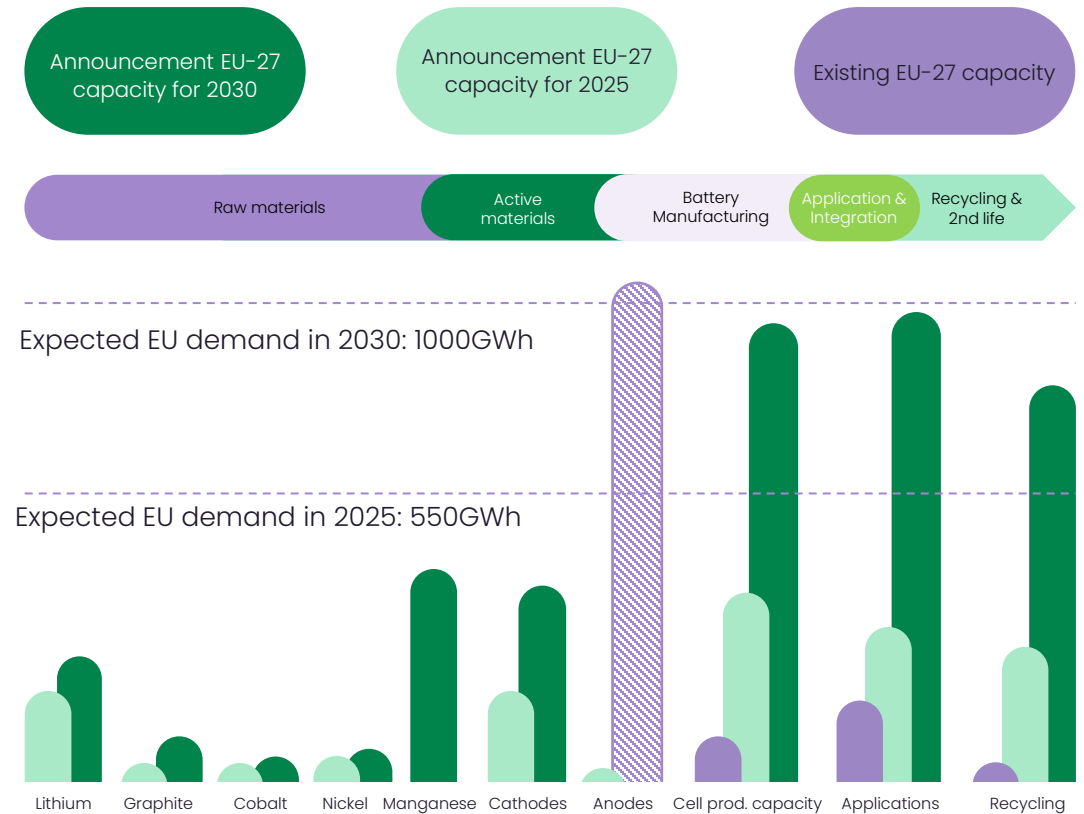
Our commercial focus area

- MWCNT are well suited for use as additive in the battery sector.
- Nano Carbons can increase the following properties of a battery cell:
 1. Energy storage capability.
 2. Charging speed
 3. Decreased deterioration rate.

Implications:

- The world, and Europe in particular, is experiencing scarcity on raw materials
- China is currently dominating in cell production capacity and raw material supply
- Our materials can improve the situation on raw materials for both anode and cathodes.

Significant graphite shortfall in Europe towards 2030



Project C

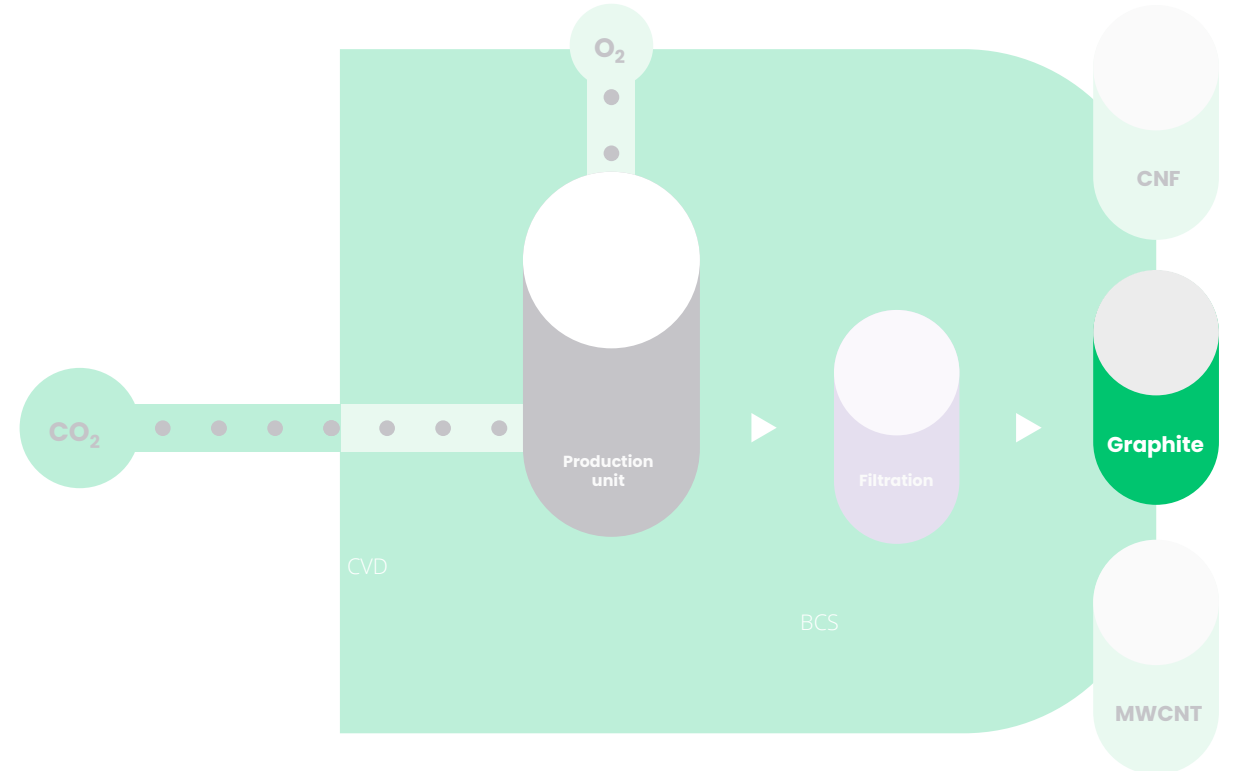
- BCS technology can be well suited to produce anode material directly from CO₂
- Currently investigating the achievable grade of efficiency
- Due to higher material demand, our utilization of CO₂ by producing anode graphite is much higher than from nanocarbon. This is mainly driven by increased volumes

Keys to succeeding:

- High production efficiency
- Quality of the finished product
- Price

Thought example for a significant emitter:

BCS have the potential to produce approx. 50,000 tonnes of anode materials from 250,000 tonnes CO₂ annually.



Odd Strømsnes appointed CEO

- More than 12 years of CEO experience
- Previous Managing Director of TechnipFMC and CEO of Havfram
- Extensive experience from senior management positions in REC and TIOS
- Strømsnes will assume the management position in BCS in Q1 2023
- Interim CEO Finn Blydt-Svendsen will return full-time as COO



Development at the right pace

- We continue to increase our market- and technological understanding at a high pace
- During the last months, we have seen significant possibilities of optimizing:
 - Energy efficiency
 - Separation technology
 - Overall technical development
- Our expanded product portfolio enables us to target new markets and product segments



Strategic implications

- Thorough piloting is essential before the technology is put into use on a larger scale
- Our increased market opportunities in combination with technological progress has given us improved basis for decision-making

Implications:

- We have decided to implement recent findings and detail engineering further
- We therefore need to extend the timeline of our factory in Høyanger
- To clarify: We are still committed to build the factory in Høyanger after the improvements to our design has been implemented

Key success factors:

- Deeper market understanding of CNF, MWCNT and graphite.
- Optimize and further develop technology
- Verify technology in pilot
- Implement a new, enhanced and optimized factory design with reduced risk and improved cost position

Overall benefits:

- Lower CAPEX
- Lower OPEX
- Better utilization of our technology

Short-term goals

Market adoption:

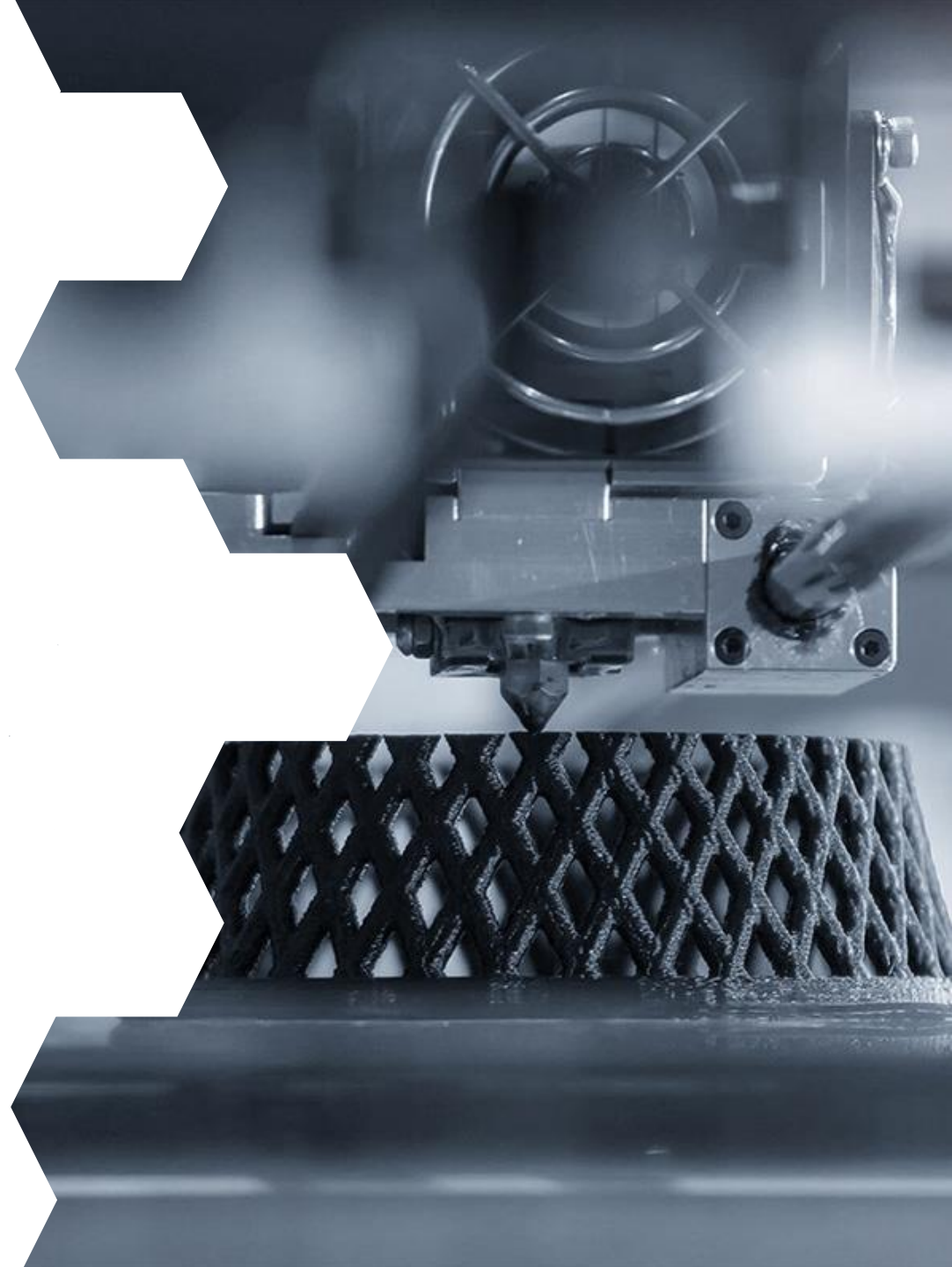
- BCS will accelerate the work towards potential offtakes and business developments to acquire further market knowledge

Soft funding:

- Extended factory timeline opens the possibility of applying for soft funding through various initiatives and organizations, such as EU, EksFin, Innovation Norway, RFF and Enova

Technology:

- Complete testing at BIR in December 2022
- New CO₂ based separation pilot in 2023
- Continue optimization of core technology







**Supplementary
slides**

Competing fossil method

Chemical Vapor Deposition (CVD)

- The CVD Method diffuses gas on to the surface of the substrate inside the CVD reactor
- The gas then adsorbs on to the surface
- A chemical reaction occurs on the surface of the substrate and the carbon turns solid

Pros:

- Easier to structure carbon in gas than liquid
- Less comprehensive filtration after raw production

Cons:

- High deposition temperature, between 1000-1500°
- High temperature equals high power consumption
- High CO₂ emissions
- Maintaining vacuum demands energy

Green method

BCS technology

- Our technology is producing CNF, MWCNT and Graphite from CO₂
- An electrolysis process break the chemical bonding. Carbon (C) can then be taken out of the production module and further transferred to the filtration module
- The carbon is then separated and filtrated to commercial grade sellable product
- Oxygen (O₂) is the only bi-product from the reaction

Pros:

- Energy efficient (Moderate temperatures)
- Area effective production
- Flexibility in process
- Still significant improvement potential
- Positive CO₂ footprint

Cons:

- Needs a more complex separation step
- Recycling of electrolyte is crucial for profitability

How will we achieve our ambitions?

- During the last year, we have shown that our technology can be used to produce multiple carbon structures
- We started our journey with Carbon Nano Fibers (CNF) but have proven that we are also able to:
 - 1) Control the physical structure of our carbon production, with the introduction of Multi walled carbon nano tubes (MWCNT)
 - 2) Produce graphite, which can be used as anode material
- We are now working towards industrial adoption. New potential partnerships is being considered each week

“We will strive to becoming the world leading material company by utilizing the strengths of our core-technology and ability to consume CO₂”

Long-term goals

- Success for BCS is ensuring that an optimal version of our technology is used when we establish our first factory
- Secured long-term profitable offtakes of our products
- Connect with ambitious industrial players all over the world, to ensure a deeper industrial footing

Success factors

- Lower risk
- Profitable and optimized technology
- Facilitation for industry

