

Innovation Company Showcase 2



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MODERATOR MAGNUS REHN Business Coach - Sustainability, Sting





Investor Reviewers



DAVID AITKEN Associate Director, Carbon Trust



OLIVIER BORDELANNE Partner, Demeter Ventures ANDREW SYMES Associate, BP Ventures





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PAUL DOWMAN-TUCKER CEO, Bowman Power





BOWMAN POWER OVERVIEW

Paul Dowman-Tucker, CEO, Bowman Power Cleantech Europe, May 2019

WWW.BOWMANPOWER.COM

CLEANER FOSSIL FUEL USE IS KEY TO ACHIEVING CLIMATE GOALS

THE INDUSTRY IS ELECTRIFYING

THE TIME HAS COME FOR ELECTRIFIED TURBOMACHINERY

- 415,000 stationary gensets (0.5 2.0 MW)¹
- 4.2 million heavy duty trucks sold in 2018 alone ²
- 100,000+ locomotives ³
- 1.12 million transport ships ⁴

REFERENCES

1 - Frost & Sullivan | 2 - OICA Statistics | 3 - UIC Railway statistics | 4 - UNCTAD Review of Maritime Transport

OUR TECHNOLOGIES



USE CASES



BENEFITS

POWER GENERATION

- Reduced emissions
- Reduced fuel use
- Improved power density
- Faster response

TRANSPORT

- Reduced real drive emissions (RDE)
- Reduced extra urban fuel consumption
- Increased maximum torque and power
- Better user experience

ETC ACHIEVEMENTS

- 15+ years of R&D
- 800+ systems sold and in operation
- 22+ million field hours of operation
- 700+ GWh of free energy generated
- >300,000 tonnes of CO_2 avoided

KEY PROJECTS

- Collaborating on fourth generation ETC technology with global Tier 1 supplier
- Partnering with major US OEM on e-turbochargers and e-compressors

WE ARE LOOKING FOR INVESTORS TO PARTNER WITH US ON OUR JOURNEY WITH THE ENGINE OEMS

BOWMAN POWER

Thank you, any questions?

Paul Dowman-Tucker CEO

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WWW.BOWMANPOWER.COM





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FABIAN LEMKE Co-Founder & Managing Director, Nuventura



nuventura



100.000.000 p.a.

SEZ







SF₆ use

Global market for GIS, EUR Billion p.a.



GIS simplify at the cost of sustainability and innovation





We replace SF₆ with air

Regulation will create a EUR 26 Billion vacuum

Global market for GIS, EUR Billion p.a.



22 nuventura

How does nuventura operate?



Where our partners can currently deliver



Where is nuventura used?



Join us on our journey





Get in touch!

Fabian Lemke fl@nuventura.com



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NICLAS DAVIDSSON CEO, Meva Energy



RENEWABLE and **CLEAN GAS FOR THE FUTURE**

2019 Cleantech Forum Europe, Stockholm



24% of the worlds primary energy consumption is industrial heat



MANUFACTURING REQUIRES HIGH QUALITY PROCESS HEAT ONLY 8,4% OF TOTAL HEAT GENERATION IS MODERN RENEWABLE



Source: REN21 Advancing the global renewable energy transition 2018

Meva Energy in short

- Industrial scale gasification of biomass waste
- Two applications:
 - Renewable gas replacing LPG/NG in industries
 - Renewable CHP
- Unique technology for utilizing fine fraction feedstocks- the lowest priced biomass on the market.
- Patent portfolio of five patent families.
- 12 employees, office in Göteborg
- Investors: Molindo Energy, Urus AB, Girindus AB, InnoEnergy







t InnoEnergy Knowledge Innovation Community

ENERGY

Meva Energy industrial-scale modularized gas plant

Decentralised gasification of biomass residue replacing fossil gas



Huge market: industrial use of LPG and NG

- Only counting Europe: annual European consumption of industrial LPG is **5 billion** MWh.
- Equals annual gas production by over 150 000 Meva plants
- Meva current focus: tissue industry and wood manufacturing industry
- Pre-agreement with leading tissue manufacturer commercial targeting break-through deal in 2019









Building Materials

Ferrous Metals

Food



Paint Finishing







Alternative Fuels

Textiles









Pharma





Glass



Business case fundamentals: heat vs gas quality

How can really low-cost renewable gas be produced?

- 1. Optimize combustion heat quality/stability!
- Complete combustion/ no flame out
- Meet clean emission requirements
- 2. Do not optimize the gas quality!
- No upgrade to reach the NG heating value
- Minimize gas cleaning
- Every EUR spent on gas cleaning or gas upgrading means
 cost increase and a loss of efficiency



Just as blue and stable as natural gas or LPG!



WWF: Implementation of Meva Energy technology has the impact potential to cut over **75 million tons** of fossil CO_2 emissions per year

MEVA

Voices and views about Meva Energy

- March 2018: Finalist "Low Carbon Energy production" in SET Awards (German Energy Agency)
- May 2018: Solar Impulse efficiency label
- November 2018: **First prize winner EU-China Cleantech** Competition at CleanConnect in Nanjing/Shanghai.
- Evaluated and eligible for project financing by European Investment Bank, EIB.
- Dr Christoph Frei, Secretary General of the World Energy Council:

"Meva Energy 's ability to valorize biomass waste streams and to produce a renewable gas which substitutes fossil gas in industries is an excellent example of how an abundant residue resource can be used to reduce carbon emissions."







WORLD ENERGY COUNCIL





Thanks for your attention!

niclas.davidsson@mevaenergy.com



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OTTO LUNDMAN CEO, Modvion AB





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ALEXANDER HANRATH CFO, utonomy





SMART GRID SOLUTIONS FOR GAS DISTRIBUTION NETWORKS

May 2019

Digitalisation of gas grid. Why now?





Drive for decarbonisation of heat creates new demands on gas networks:

- Methane leakage (25x GHG effect of CO2)
- Change from mono-gas to multi-gas system
- Increasing interaction with electricity grids
- Distributed gas generation transforming the grid from uni-directional to bi-directional

Existing networks are manual

al a

- Demand for gas varies widely with weather and time of day
- Networks currently manage pressure by manually adjusting governor stations 2-4 x a year
- 50+ stations in a town labour intensive and suboptimal
- In order to accommodate spikes in demand (100X higher on a winter morning than on a summer evening) governors are set at too high pressure 99% of the time
- The excess pressure leads to excess leakage and excess cost



Utonomy's proprietary solution



PRESSURES IN THE NETWORK CONTINUOUSLY AND AUTOMATICALLY OPTIMISED



Pressure management allows greater feed-in of low-carbon gases





Output limited to prevent overpressure

Utonomy Feed-in Management





Accommodates biomethane production during low demand

And ultimately allows for a full Smart Grid



Live monitoring of pressure, flow and quality allows faster, more efficient response and maintenance



Worldwide Addressable market

EUR 4.3 BILLION – 700,000 STATIONS



C^U

Pilot project completed with SGN in the UK







Functionality and performance: "Everything SGN had hoped for"

Strong Executive Team





ADAM KINGDON – CEO

Previously founder and CEO of i2O Water – the leader in pressure management for water. Grew i2O Water to \pounds 6m in annual bookings, 66 water utility customers in 20 countries

STEVE LEWIS – CTO

Previously Product Development Director OSS (network monitoring and control) Division of Amdocs - leading telecom software supplier with revenue of \$3.6Bn





CLAIRE-ELISE ORLÉACH – Head of Business Development Previously Manager Global Accounts and Partnerships with Veolia and prior to that Manager Industrial Marketing at Veolia.

Summary

Attractive Market

Differentiated technology

Attractive business model



- Digitalisation of gas grids is needed to meet decarbonisation goals
- Large global market with very little competition
- Proprietary solution with excellent customer ROI (< 3 years)
- Recurring software revenue from enterprise
 customers
- Utonomy hardware approved to operate in hazardous environments

UTONOONS FOR SMART GRID SOLUTIONS FOR GAS DISTRIBUTION NETWORKS

University of Southampton Science Park Southampton SO16 7NS United Kingdom

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CHARLOTTA HOLMQUIST CFO, Blixt







DISRUPTING A 150 YEAR OLD TECHNOLOGY.



Melting fuses

Mechanical Miniature Circuit Breakers BL!XT Solid State Breaker

EXPLORING THE BLXTbreaker







FULLY SOFTWARE PROGRAMMABLE



REAL TIME METERING (MEGA SAMPLING)



REMOTE ON/OFF (MODULATING 0-100%)



x1000 FASTER

+ patents covering core Technologies!

BL+XI





Swedish Environmental Research Institute

PARTICIPATING REFERENCE GROUP:

BayWa r.e.

Eneco

IN <u>FOUR</u> INVESTIGATED EU COUNTRIES:



-24 Moon Carbon

REDUCED

carbon emissions





https://blixt.tech/

BLIXI



CIRCUIT BREAKER MARKET WORTH \$31BN.

Not including disruptive innovations

The an and



Global market for circuit breakers and fuses, 2014-2020 (USD Billion)

TOP PLAYERS WORLDWIDE

- Hager
- Schneider Electric
- Siemens AG
- Alstom S.A
- Bel Fuse Inc.
- ABB
- Eaton Corporation
- General Electric Company
- Hitachi Ltd.
 - Mitsubishi Electric Corporation

Source: Zion Research Analysis 2016



LICENSING BUSINESS MODEL.

R&D & PILOTS (1-2 YEARS)



- Pilot revenue
- Dev Kit sales

PRODUCT DEVELOPMENT (1-2 YEARS)

- Upfront Licensing Fees
- Royalty fee (per shipped unit)

MULTIPLE CHIP FAMILIES ACROSS A Range of Industries (Maturity)



- Royalty fee (per shipped unit)
- Software Tools
- Technical Support



TFOUNDERS.



Trued has over 20 years of experience from large scale digitalization projects, including founding CEO of BankID, a world leading e-ID solution used by more than 90% of the Swedish population.



Jens is passionated IOT guru and BL!XT Senior Software Developer. His background is from big data systems and machine learning. MSc in Complex Adaptive Systems.



Charlotta is a seasoned entrepreneur and co-founder of six companies, with several exits. Experienced business leader and Board Director. MBA from Stock-holm School of Economics.



Jan has a life long experience from R&D, power electronics and innovation. Previously one of Ericsson's top innovators and working with Swedish Defense development.

BL!XT



BLIXT

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