**Company Summaries – Cleanergi**

**251 words, 1,743 chs including spaces, Exec Summary for Investors, 4/9/24**

**Cleanergi Ltd** is developing large-scale long-duration energy storage of electricity and hydrogen, and its integration with renewables, electrolysis, electricity / hydrogen off-takers and electricity / hydrogen grids. It operates only at grid and infrastructure scale, for countries, regions and cities. These have the potential to benefit the energy transition greatly, around the world, a multi-$trillion market opportunity, are probably the biggest single steps towards making the energy transition affordable, reliable and resilient for all. In increasing value:

* **CleanCAES™:** The world’s most efficient, cost-effective, flexible and capable electricity storage, widely implementable globally. An innovative form of adiabatic Compressed Air Energy Storage (CAES), zero-emissions, buildable with standard technology, and validated by numerous multinational engineering firms. The market for this alone is over $1trn capex, $10trn p.a. opex, with huge benefits for grids and major users.
* **Hydrogen Storage:** The same or adjacent salt caverns used for the electricity storage are the only way to store massive amounts of hydrogen cost-effectively.
* **Integration with Electricity Grids:** Each new GW offshore wind requires (in the UK) over £3bn / $4bn investment in grid upgrades +10% p.a., growing fast. Integrating CleanCAES, renewables and grids offers more than twice the benefits of stand-alone storage.
* **RE-Balance™ Energy Parks:** patent pending integration of CleanCAES with large users (especially the H2 economy) and/or the grid can double these benefits again, and even take renewables and industry entirely off-grid. This reduces costs and increases efficiency & plant life, while removing the greatest regulatory and commercial risks.

**127 words, 948 chs including spaces, Federated Innovation Mind (Italy) application 7/11/24**

**Cleanergi Ltd** offers the biggest advances towards an affordable, reliable and resilient energy transition globally, solving many of the biggest outstanding challenges:

* **CleanCAES™:** The world’s most efficient, cost-effective, flexible and capable electricity storage, widely implementable world-wide.
* **CleanStart™:** The world’s only capability for synchronous Black Start from storage without having to reserve normal trading / operating capacity.
* **Hydrogen Storage:** The only cost-effective way to store massive amounts of hydrogen.
* **Integration with Electricity Grids:** Each new GW offshore wind requires >£3bn/$4bn grid upgrades +10% p.a., growing fast; solar costs double. Huge savings possible.
* **RE-Balance™ Integrated Energy Parks:** integrating CleanCAES with renewables and grids, hydrogen economy and other major Cleantech/Deeptech greatly reduce or eliminate their costs, regulatory and commercial risks while increasing efficiency and returns.

**100 words, 741 chs including spaces, The Mayor of London's Better Futures Innovation Challenge 2024, 4/9/24**

**Cleanergi Ltd** offers the biggest advances towards an affordable, reliable and resilient energy transition globally:

* **CleanCAES™:** The world’s most efficient, cost-effective, flexible and capable electricity storage, widely implementable world-wide.
* **Hydrogen Storage:** The only cost-effective way to store massive amounts of hydrogen.
* **Integration with Electricity Grids:** Each new GW offshore wind requires >£3bn/$4bn grid upgrades +10% p.a., growing fast; solar costs double. Huge savings possible.
* **RE-Balance™ Energy Parks:** integrating CleanCAES with renewables and grids, hydrogen economy and other major Cleantech/Deeptech greatly reduce or eliminate their costs, regulatory and commercial risks while increasing efficiency and returns.

**31 words, 234 chs including spaces, 4/9/24**

The world's most efficient and cost-effective large-scale long-duration electricity storage, and patent-pending integration with renewable generation and one or more of grids, the hydrogen economy and other major Cleantech / Deeptech.

**Profiles**

**Connectd, 15/12/23**

***Bio***

A serial innovator of physical technologies and services in diverse industries.

An entrepreneur on my second start-up, having created new businesses and capabilities within previous companies too.

An innovative thinker and problem-solver, identifying the best markets and strategies for products and services, and how best to develop them to address those strategies and markets.

A corporate strategist and management consultant.

An internationally recognised expert in the large-scale energy transition, its technologies, regulation, markets and politics.

***What can I bring to the table?***

The ability to challenge conventional thinking and come up with new approaches and ideas on strategy, markets, products, services, organisation etc. in a wide variety of industries, rapidly understanding the key drivers of each and devising solutions that benefit all the principal stakeholders.

Expertise in developing new initiatives in various industries, markets, technologies, systems and processes.

Experience in funding and intellectual property.

***What am I looking for?***

Roles: board advisor, NED and/or consultant.

Fields: corporate / divisional / product strategies and markets; troubleshooting and problem solving; assessing new technologies, their potential markets and how best to address them; general remit.

Engagements: retainer, one-off projects, a combination of the two.

Paid or blended pay/equity roles considered.

**Biographies – Mark Howitt**

**542 words, 3,913 chs inc. spaces, Talkagreen 13/4/22**

Mark Howitt is Chief Technical Officer, a founding director of Cleanergi (www.Cleanergi.com). He is also a United Nations expert advisor in energy transition technologies, economics, regulation and politics. Additionally he advises the UK representatives to the International Energy Authority, the UK’s Renewable Energy association and is a regular consultee for Britain’s energy ministry (currently DESNZ – the Department for Energy Security and Net Zero, though its name changes regularly), regulator (Ofgem) and National Grid. He also works as an independent consultant trading as Business Lift (www.business-lift.co.uk).

A graduate in Physics with Electronics, he has 12 years’ management and innovation consultancy experience world-wide. In a rail multinational, Mark transformed processes and developed 3 profitable and successful businesses: in commercialising a non-destructive technology he had innovated, in logistics (innovating services) and in equipment overhaul. In electronics manufacturing, he developed and introduced to the markets 5 product ranges and helped 2 businesses expand into new markets.

"An exceptional strategist, technologist and public speaker" – Nick Dimmock, 350PPM

**CLEANERGI Ltd**

Enabling renewables to power the world affordably, reliably and resiliently,

CTO and Co-Founder. The world's most advanced Compressed Air Energy Storage, patent pending; also patented hydrogen technology. The world's best, most cost-effective storage technologies, large scale, long duration and naturally inertial, delivering grid stability and enabling the energy transition in all industries. Validated by Siemens, Mitsubishi Power, Arup, Costain, Fortum, Oswald Consultancy and Mott MacDonald etc.; all we need now is to build the first. Once the first is built, we already have interest in funding follow-on plants world-wide. My full-time role.

**UNECE - United Nations Economic Commission for Europe**

Appointed advisor due to my broad expertise in energy storage, clean energy and the energy transition in general, and energy system regulation. A letter of invitation is available.

**Advisor and Frequent Consultee; Expert Speaker**

An advisor and frequent consultee to:

* IEA (International Energy Agency);
* The UK energy ministry;
* The UK regulator;
* The British National Grid System Operator and Transmission Operator;
* The European Union and ENTSO-E (European National Transmission Service Operator – Electricity;
* Various others from time to time.

An exert speaker on all manner of subjects around the energy transition, Net Zero, government and industry strategy, the various technologies involved, regulation, technical and operational challenges with many invited speaking engagements internationally, with a particular skill in explaining difficult concepts in layman’s language.

**BUSINESS LIFT**

A dynamic and experienced business manager with a proven track record of success within many market sectors and functions. Both commercially and technically innovative; results orientated, highly ethical, financially savvy & results-focused with strong skills and experience in strategic planning, operational leadership, business improvement, R&D, marketing, all activities relating to manufacturing, procurement and supply chain and projects including publicly / ERDF funded.

Specialties:

* Setting up new businesses and launching new customer-focused services within a company.
* Initiating and running product development programmes, qualifying product and commercialising.
* Work flows, process improvement, productivity and efficiency improvements.
* Capital investment.
* IT systems definition and selection.
* Intellectual property.
* Supporting and improving all operational and support functions in many industries.
* Understanding a wide variety of industries.
* Marketing.
* Sales.

Author of Handbook of Good Business Practice.

A published poet: To the Heart of Things, available on Amazon.

**369 words, 2,600 chs inc. spaces, LinkedIn profile 23/8/21**

"An exceptional strategist, technologist and public speaker" – Nick Dimmock, 350PPM

CLEANERGI Ltd

Enabling renewables to power the world affordably, reliably and resiliently,

CTO and Co-Founder. The world's most advanced Compressed Air Energy Storage, patent pending; also patented hydrogen technology. The world's best, most cost-effective storage technologies, large scale, long duration and naturally inertial, delivering grid stability and enabling the energy transition in all industries. Validated by Siemens, Mitsubishi Power, Arup, Costain, Fortum, Oswald Consultancy and Mott MacDonald etc.; all we need now is to build the first. Once the first is built, we already have interest in funding follow-on plants world-wide. My full-time role.

UNECE - United Nations Economic Commission for Europe

Appointed advisor due to my broad expertise in energy storage, clean energy and the energy transition in general, and energy system regulation. A letter of invitation is available.

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* Capital investment
* IT systems definition and selection
* Intellectual property
* Supporting and improving all operational and support functions in many industries
* Understanding a wide variety of industries
* Marketing
* Sales

ALIVE TO THE WORLD

The autonomous UK arm of a global charity developing a course for teaching children Personal, Social and Health Education, and also Sex Education. While compliant with national educational standards and secular in approach, it also supports both traditional morality and the morality of the world's major religions. These are balanced courses that have been shown to transform lives and communities for the better, even in some of the most challenging and gang-ridden environments.

Author of Handbook of Good Business Practice

A published poet: To the Heart of Things, available on Amazon

**289 words, 2,087 chs inc spaces, 4Ward 21/8/24**

Mark Howitt is Founder of 2 Cleantech companies, initiator in 3 other new business subsidiaries, and helped transform many more businesses. He has a track record of innovating strategies (corporate, business, markets, technical, product / service, IP etc.), technologies, commercial solutions and novel ways forward in diverse industries. He can rapidly assess the quality, potential and markets for innovative technologies, services and businesses, and guide them to maximising their potential and returns.

In this advisory capacity, Mark works under the trade name Business Lift. He develops technical and commercial solutions, minimising technological risk, maximising efficiency and environmental friendliness, and speed to market.

He has also founded Cleanergi Ltd to promote and develop his inventions in energy storage and its integration with renewable generation, the hydrogen economy, large-scale Cleantech, and grids.

Chief Technical Officer and co-founder of. His innovative whole-project concepts optimise the whole energy system of storage, renewable generation, electrolysis and other applications, focusing on technologically simple solutions using proven

He is also an internationally recognised expert on renewable energy, the energy transition, energy storage, regulation and policy; as such, he advises in a technology-agnostic manner:

* United Nations (UNECE) expert in energy transition strategy, technologies, economics, regulation and politics;
* Member of the Advisory Board of the Solar Media Green Hydrogen UK Summit;
* Regular consultee to the British energy ministry, regulator, National Grid, Renewable Energy Association, International Energy Agency and others.

His degree was in Physics with Electronics. He has 12 years’ management and innovation consultancy experience world-wide. As an innovation consultant he helped over 100 companies with strategies, marketing, structure and technological challenges. He was SME Project Manager of an EU financed R&D and commercialisation programme, and an advisor on retaining intellectual property for renewable energy.

**260 words, 1,969chs, Postcode Lottery Green Challenge 5/3/16, edited 6/1/17**

BSc (Hons) Physics with Electronics at UMIST, now merged into the University of Manchester. Member of the Chartered Management Institute.

Founding director of Cleanergi Ltd, developing clean electricity storage to provide grid-scale back-up to intermittent renewables and interconnectors, profitable without subsidy in today’s markets. An authoritative and increasingly influential expert in renewable energy and energy storage, advocating the use of all kinds of renewables and storage to deliver all the energy requirements of the country and continent both sustainably and affordably, without subsidy.

Previously a dynamic and experienced business, marketing, management and innovation consultant and senior manager with a proven track record of success within renewable energy, manufacturing, transportation, electrical products and chemicals; previously operated in diverse other markets. Both commercially and technically innovative and results orientated. Strong skills and well balanced track record of success in strategic planning, operational leadership, business improvement, R&D, marketing, manufacturing, procurement and supply chain, sales and capital investment.

Set up three business units for Bombardier Transportation, in non-destructive testing (including initiating and managing the R&D), workshop engineering and logistics (innovating service offerings which captured one-third of the market within two years). Undertook major capital investment projects for Bombardier in which he created new capabilities and transformed operational methods, creating capabilities that formed the core offerings of the businesses. Innovated and took to market five new electrical wiring technologies. Immense number and range of contacts in diverse industries. Was SME Project Manager of an EU financed R&D and commercialisation programme, setting up and operating the SME-delivered side of the programme successfully. Managed multi-site, multi-functional teams.

**246 words, 1,686 chs inc spaces, CEF Funding Application 30/4/20**

**Mark Howitt**

*Chief Technical Officer and Co-Founder*

Mark leads the technical side of the business, and the thermal storage technology, along with other roles. With colleagues, he identified the essential role of large-scale electricity storage in enabling renewables to power the grid, to achieve emissions reduction targets cost-effectively. Having identified CAES (Compressed Air Energy Storage) with a colleague as the most suitable technology for large scale operations and widespread roll-out, he then innovated CleanCAES TM with improvements to simplify the process, increase round trip efficiency and eliminate emissions, all using existing standard equipment.

Mark graduated in Physics with Electronics at UMIST, and is a member of the Chartered Management Institute. Before Cleanergi he was a business consultant and senior manager with a proven track record of success within many market sectors and functions. Previously he set up three successful business units for Bombardier Transportation, in non-destructive testing (for which he initiated and managed the R&D), workshop engineering (turning a small cost centre into a significant profitable business) and logistics (innovating a suite of services that captured 1/3 of the market in 2 years). In the electronics industry he innovated and brought to market 5 product ranges in cabling and harnessing, and took two companies into new markets. As an innovation consultant he helped over 100 companies with their strategies, marketing, structure and technological challenges. He was SME Project Manager of an EU financed R&D and commercialisation programme, and an advisor on retaining intellectual property for renewable energy.

**250 words, 1,846 chs inc spaces, REA 29/4/22**

Mark Howitt is Chief Technical Officer and co-founder of Cleanergi. He develops technical and commercial solutions, minimising technological risk, maximising efficiency and environmental friendliness, and speed to market. His innovative whole-project concepts optimise the whole energy system of storage, renewable generation, electrolysis and other applications, focusing on technologically simple solutions using proven technologies wherever possible. He has also developed innovative project/plant configurations that will minimise the affordability, complexity, reliability and resilience of the energy transition in general and grids in particular.

He is an internationally recognised expert on renewable energy, the energy transition, energy storage, regulation and policy; as such, he advises in a technology-agnostic manner:

* The United Nations Economic Council of Europe,
* The International Energy Agency (UK Working Group),
* The Renewable Energy Association,
* DESNZ (the British energy ministry),
* National Grid and others,
* And regularly gives expert talks and lectures.

His degree was in Physics with Electronics. He has 12 years’ management and innovation consultancy experience world-wide. Additionally, in a rail multinational, Mark developed 3 profitable and successful businesses: in commercialising a non-destructive technology he’d innovated, in logistics and in equipment overhaul. In electronics manufacturing, he developed and introduced to market 5 product ranges and a number of innovative services, helping two businesses grow strategically. As an innovation consultant he helped over 100 companies with strategies, marketing, structure and technological challenges. He was SME Project Manager of an EU financed R&D and commercialisation programme, and an advisor on retaining intellectual property for renewable energy.

**200 words, 1,505 chs inc spaces, ChangeNOW 19/4/22**

Mark Howitt is Chief Technical Officer and co-founder of Cleanergi. He develops technical and commercial solutions, minimising technological risk, maximising efficiency and environmental friendliness, and speed to market. His innovative whole-project concepts optimise the whole energy system of storage, renewable generation, electrolysis and other applications, and the grid, focusing on technologically simple solutions using proven technologies wherever possible. He also advises the United Nations Economic Council of Europe, the International Energy Agency, the Renewable Energy Association, the British energy ministry and others on matters relating to renewable energy, the energy transition, energy storage, regulation and policy.

His degree was in Physics with Electronics. He has 12 years’ management and innovation consultancy experience world-wide. Additionally, in a rail multinational, Mark developed 3 profitable and successful businesses: in commercialising a non-destructive technology he’d innovated, in logistics and in equipment overhaul. In electronics manufacturing, he developed and introduced to market 5 product ranges and a number of innovative services, helping two businesses grow strategically. As an innovation consultant he helped over 100 companies with strategies, marketing, structure and technological challenges. He was SME Project Manager of an EU financed R&D and commercialisation programme, and an advisor on retaining intellectual property for renewable energy.

**200 words, 1,388 chs inc spaces, Wind & Solar Energy Storage Advancements 19/5/17**

Mark Howitt is a founding director and principal shareholder of Cleanergi. He leads the technical side of the business, and the thermal storage technology, along with other roles. With colleagues, he identified the essential role of large scale electricity storage in enabling renewables to power the grid, to achieve emissions reduction targets cost-effectively. Having identified CAES (Compressed Air Energy Storage) as the most suitable technology for large scale operations and widespread roll-out, he then innovated improvements to increase round trip efficiency and eliminate emissions. A colleague developed another CAES technology that can be retro-fitted to gas-fired power stations to halve emissions and add storage capabilities and revenues; together they promote both technologies.

Mark graduated in Physics with Electronics at UMIST, and is a member of the Chartered Management Institute. Before Cleanergi he was a business consultant and senior manager with a proven track record of success within many market sectors and functions. Previously he set up three business units for Bombardier Transportation, in non-destructive testing (for which he initiated and managed the R&D), workshop engineering and logistics. He was SME Project Manager of an EU financed R&D and commercialisation programme, and an advisor on retaining intellectual property for renewable energy.

**177 words, 1,320 chs inc spaces, Website 2016**

Mark Howitt, Joint Chief Executive Officer, Co-founder and principal shareholder

Mark is leading the technical and operations side of the business, and the thermal storage technology.

BSc (Hons) Physics with Electronics at UMIST. Member of the Chartered Management Institute, and Institute for Enterprise & Entrepreneurship. A dynamic and experienced business consultant and senior manager with a proven track record of success within many market sectors and functions. Both commercially and technically innovative and results orientated. Strong skills and well balanced track record of success in strategic planning, operational leadership, business improvement, R&D, marketing, manufacturing, procurement and supply chain, sales and capital investment.

Set up three business units for Bombardier Transportation, in non-destructive testing (for which he initiated and managed the R&D), workshop engineering and logistics. Immense number and range of contacts in diverse industries. Currently working as an innovation, marketing and management consultant primarily in renewable energy, energy storage, electrical products and chemicals. Was SME Project Manager of an EU financed R&D and commercialisation programme. Advisor on retaining intellectual property for renewable energy. Managed multi-site, multi-functional teams

**173 words, 1,269 chs inc spaces, B2Match 26/6/25**

Mark Howitt is founder and owner of Cleanergi Ltd, having invented its technologies. An entrepreneurial and experienced company director with a proven international track record of both advising and managing success within many market sectors and functions. A serial entrepreneur and inventor, he is both commercially and technically innovative, with an unorthodox and whole-systems approach. He is results orientated, highly ethical, financially savvy with well-balanced track record in strategic planning, marketing, operational management, business improvement, R&D, manufacturing, procurement and supply chain, sales and capital investment. Many contacts in diverse industries. Politically aware (not partisan), familiar with the main drivers of a wide variety of markets.

Mark has launched and advised 2 independent businesses and 3 new subsidiaries, all growing strongly and becoming influential in their sectors; took 2 businesses into new markets while re-positioning and marketing them as major premium suppliers; supported development and implementation of numerous successful business and marketing strategies; and helped many businesses become more efficient and effective in their ordinary work by making their structures, systems and processes world-class.

**162 words, 1,219 chs inc spaces, World Utilities Congress 25/2/22**

Mark Howitt is Chief Technical Officer of Cleanergi, a founding director. He leads Cleanergi’s technical and operations, minimising technological risk, maximising efficiency and environmental friendliness, and speed to market. He develops innovative whole-project concepts to optimise the whole system of storage, renewable generation, electrolysis and other applications, and the grid. He focuses on technologically simple solutions using proven technologies wherever possible. He also advises the United Nations Economic Council of Europe, the International Energy Agency and the Renewable Energy Association on matters relating to renewable energy, the energy transition, energy storage, regulation and policy.

His degree was in Physics with Electronics. He has 12 years’ management and innovation consultancy experience world-wide. Additionally, in a rail multinational, Mark developed 3 profitable and successful businesses: in commercialising a non-destructive technology he’d innovated, in logistics and in equipment overhaul. In electronics manufacturing, he developed and introduced to the markets 5 product ranges and a number of innovative services, and helped two further businesses grow strategically.

**149 words, 1,127 chs inc spaces, Coach Foundation Skool 4/9/24**

**Mark Howitt**

An entrepreneurial and experienced company director with a proven international track record of both advising and managing success within many market sectors and functions. Both commercially and technically innovative, with an unorthodox and whole-systems approach; results orientated, highly ethical, financially savvy with well-balanced track record in strategic planning, marketing, operational management, business improvement, R&D, manufacturing, procurement and supply chain, sales and capital investment. Many contacts in diverse industries. Politically aware (not partisan), familiar with the main drivers of a wide variety of markets.

Launched and advised 2 independent businesses and 3 new subsidiaries, all growing strongly and becoming influential in their sectors; took 2 businesses into new markets while re-positioning and marketing them as major premium suppliers; supported development and implementation of numerous successful business and marketing strategies; and helped many businesses become more efficient and effective in their ordinary work by making their structures, systems and processes world-class.

**142 words, 993 chs inc spaces, personal blog articles 26/5/22, with links**

**(Disclaimer adds 15 words, 94 chs inc spaces to this total)**

[Mark Howitt](http://www.business-lift.co.uk) is Chief Technical Officer, a founding director of Cleanergi. He is also a United Nations ([UNECE](https://unece.org/sustainable-energy)) expert advisor in energy transition technologies, economics, regulation and politics – [invitation here](https://storelectric.us18.list-manage.com/track/click?u=09b97ea586d116df9148d9e95&id=29ab2b3bad&e=2d36518cd8). He is also a member of the UK advisory team to the [IEA](https://www.iea.org/) (International Energy Agency), member of the Energy Storage Steering Group of the [Renewable Energy Association](https://www.r-e-a.net/), frequent consultee to the British energy ministry, regulator and National Grid, and expert speaker at many conferences.

A graduate in Physics with Electronics, he has 12 years’ management and innovation consultancy experience world-wide. In a rail multinational, Mark transformed processes and developed 3 profitable and successful businesses: in commercialising a non-destructive technology he had innovated, in logistics (innovating services) and in equipment overhaul. In electronics manufacturing, he developed and introduced to the markets 5 product ranges and helped 2 businesses expand into new markets.

***Disclaimer.*** *This document represents the personal views of Mark Howitt at the time of writing.*

**137 words, 933 chs inc spaces, CEF funding application 30/4/20**

**Mark Howitt**

*Chief Technical Officer and Co-Founder, Cleanergi Ltd*

Graduated in Physics with Electronics, and is a member of the Chartered Management Institute. Set up three successful business units for Bombardier Transportation, in non-destructive testing (for which he initiated and managed the R&D), workshop engineering (turning a small cost centre into a significant profitable business) and logistics (innovating a suite of services that captured 1/3 of the market in 2 years). He innovated and brought to market 5 product ranges in cabling and harnessing taking two companies into new markets. As an innovation consultant he helped over 100 companies with their strategies, marketing, structure and technological challenges. He was SME Project Manager of an EU financed R&D and commercialisation programme, and an advisor on retaining intellectual property for renewable energy. A strong pedigree in technology and execution.

**133 words, 996 chs inc spaces, Tech Tour 3/9/15**

Director of Cleanergi, leading the technical and operations side of the business.

BSc (Hons) Physics with Electronics at UMIST. Member of the Chartered Management Institute, and Institute for Enterprise & Entrepreneurship. A dynamic and experienced business consultant and senior manager with a proven track record of success within many market sectors and functions. Both commercially and technically innovative and results orientated. Strong skills and well balanced track record of success in strategic planning, operational leadership, business improvement, R&D, marketing, manufacturing, procurement and supply chain, sales and capital investment.

Set up three business units for Bombardier Transportation, in non-destructive testing (including R&D initiation and mgt), workshop engineering and logistics. Developed 5 product ranges for an electrical cable assembler. Was SME Project Manager of an EU financed R&D and commercialisation programme. Managed multi-site, multi-functional teams.

**107 words, 840 chs inc spaces, CB Insights 18/10/22**

Enabling renewables to power grids, electrolysis and other industries affordably, reliably and resiliently. Takes out intermittency of renewables before it affects them: intermittency reduces plant efficiency and life while requiring much greater investment in plant capacity per unit output. Also provides stability, operability, resilience and re-start capability for grids. Larger-scale, longer-duration, longer-lived (by 5x), cheaper and more efficient (grid-to-grid, lifetime average) than batteries, and less affected by hot climates. 50MW to multi-GW scale, 4-hour to multi-week duration. Increasing the scale of integration of the projects (e.g. with renewable generation, electrolysis, fuel/chemical synthesis, end-use industries, outputs to electricity grids etc.) improves the cost-effectiveness and other outcomes still further.

**100 words, 774 chs inc spaces, Energy Storage & Connected Systems Conf 7/2/17**

Founding director of Cleanergi. Physics with Electronics at UMIST (now Manchester University), 12 years management and innovation consultancy in diverse industries world-wide. SME Project Manager of an EU financed R&D, commercialisation programme. In Bombardier Transportation, Mark developed three profitable and successful businesses: one commercialising technology he’d developed, one in logistics and one in equipment overhaul. In electronics manufacturing, developed 5 product ranges and helped 2 businesses grow strategically assembler. Mark teamed up with Jeff Draper to develop their innovative Compressed Air Energy Storage system and business, focusing on minimising technological risk, maximising efficiency and environmental friendliness, and speed to market.

**100 words, 763 chs inc spaces, blog articles 4/4/19**

Mark Howitt is Chief Technical Officer of Cleanergi, a founding director. He leads Cleanergi’s technical and operations, minimising technological risk, maximising efficiency and environmental friendliness, and speed to market. He focuses on technologically simple solutions using proven technologies wherever possible.

His degree was in Physics with Electronics. He has 12 years’ management and innovation consultancy experience world-wide. In a rail multinational, Mark developed 3 profitable and successful businesses: in commercialising a non-destructive technology he’d innovated, in logistics and in equipment overhaul. In electronics manufacturing, he developed and introduced to the markets 5 product ranges and helped 2 businesses grow strategically.

**100 words, 756 chs inc spaces, Powering Net Zero 11/9/23**

Mark Howitt is Chief Technical Officer, a founding director of Cleanergi. He is also a United Nations (UNECE) expert advisor in energy transition technologies, economics, regulation and politics. Also a member of the IEA (International Energy Agency) UK advisory team, the Renewable Energy Association Energy Storage Steering Group, frequent consultee to the British energy ministry, regulator and National Grid, and expert speaker at many conferences.

A graduate in Physics with Electronics, he has innovated products, processes and business models world-wide, in diverse industries including energy, rail, electronics, non-destructive testing, warehousing and distribution, process industries, property management, investment banking, insurance claims.

**100 words, 750 chs inc spaces, RenewableUK 15/3/21**

Mark Howitt is Chief Technical Officer and co-founder of Cleanergi, focusing on technologically simple solutions using proven technologies wherever possible. A United Nations ([UNECE](https://unece.org/sustainable-energy)) expert in energy transition technologies, economics, regulation and politics – [invitation here](https://storelectric.us18.list-manage.com/track/click?u=09b97ea586d116df9148d9e95&id=29ab2b3bad&e=2d36518cd8). Member of the UK advisory team to the [IEA (International Energy Agency)](https://www.iea.org/). Member of the Energy Storage Steering Group of the [Renewable Energy Association](https://www.r-e-a.net/).

A Physicist with 12 years’ management and innovation consultancy experience world-wide, Mark developed 3 profitable and successful subsidiaries based on his innovative technology and services. In electronics manufacturing, he developed and commercialised 5 product ranges and helped 2 businesses grow strategically.

**100 words, 750 chs inc spaces, as RenewableUK 15/3/21 no links**

Mark Howitt is Chief Technical Officer and co-founder of Cleanergi, focusing on technologically simple solutions using proven technologies wherever possible. A United Nations (UNECE) expert in energy transition technologies, economics, regulation and politics. Member of UK advisory team to IEA (International Energy Agency) and Energy Storage Steering Group of Renewable Energy Association. Frequent consultee for government, grid and regulators.

A Physicist with 12 years’ management and innovation consultancy experience world-wide, Mark developed 3 profitable and successful subsidiaries based on his innovative technology and services. In electronics manufacturing, he developed and commercialised 5 product ranges and helped 2 businesses grow strategically.

**100 words, 730 chs inc spaces, BL and Cleanergi, IET conference 26/10/23**

Mark Howitt is an internationally recognised expert and speaker in the energy transition, its technologies, regulation and market designs, advising the UNECE, IEA and others as well as businesses, to make the transition affordable, reliable and resilient.

Mark also founded Storelectric and Cleanergi, inventing its innovative energy storage technology and its integration with renewables, the hydrogen economy, major users and grids, potentially saving over a trillion pounds by 2050 in the UK energy transition alone, applicable globally.

A physicist, management and innovation consultancy world-wide for four decades. Innovated and developed profitable and successful businesses, technologies and services in various industries.

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An internationally recognised expert and speaker in the energy transition, its technologies, regulation and market designs, advising the UNECE, IEA and others as well as businesses, to make the transition affordable, reliable and resilient.

Mark also founded Storelectric and Cleanergi, inventing its innovative energy storage technology and its integration with renewables, the hydrogen economy, major users and grids, potentially saving over a trillion pounds by 2050 in the UK energy transition alone, applicable globally.

A physicist, management and innovation consultancy world-wide for four decades. Innovated and developed profitable and successful businesses, technologies and services in various industries.

**99 words, 757 chs inc spaces, Clean and Cool, 19/6/14**

Director of Cleanergi, leading the technical and operations side of the business. Graduated from UMIST (now Manchester University) in Physics with Electronics, 12 years management and innovation consultancy in diverse industries world-wide. In Bombardier Transportation, Mark developed three profitable and successful businesses: one commercialising technology he’d developed, one in logistics and one in equipment overhaul. In electronics manufacturing, developed 5 product ranges and helped 2 businesses grow strategically. Mark teamed up with Jeff Draper to develop their innovative Compressed Air Energy Storage system and business, focusing on minimising technological risk, maximising efficiency and environmental friendliness, and speed to market.

**90 words, 714 chs inc spaces, Global Entrepreneurship Summit 2019**

Director of Cleanergi, leading the technical and operations side of the business. Graduated in Physics with Electronics, management and innovation consultancy world-wide. Experience in business (12 years consultancy, 15 years senior management), innovation (diverse industries, technologies and services), strategy (diverse industries) and marketing (setting and carrying through stretegies). In the rail industry, Mark developed three profitable businesses, one commercialising technology he’d developed, and another commercialising services he’d developed that became the foundation of a new global division. In electronics manufacturing, developed 5 product ranges and helped 2 businesses grow strategically.

**92 words, 663 chs inc spaces, JustInvesting (Greenbackers Online), 5/2/15**

Leading the technical and operations side of the business.

* BSc (Hons) Physics with Electronics at UMIST.
* Member of the Chartered Management Institute, and Institute for Enterprise & Entrepreneurship.

A dynamic and experienced business consultant and senior manager with a proven track record of success within many market sectors and functions. Set up three business units for Bombardier Transportation, in non-destructive testing (initiating and managing the R&D), workshop engineering and logistics. Developed and marketed 5 product ranges in electrics / electronics. Managed multi-site, multi-functional teams including technical experts in diverse fields.

**57 words, 448 chs inc spaces, Bond Issue Outline 10/12/24**

Mark Howitt, Founder and inventor of Cleanergi’s technologies. Graduated in Physics with Electronics, 12 years’ experience in the renewable energy, electricity and Cleantech sectors. 12 years management and innovation consultancy world-wide. Set up three profitable businesses within a multinational, one commercializing technology he’d developed. In electronics manufacturing, developed 5 product ranges and helped 2 businesses grow strategically.

**54 words, 401 chs inc spaces, ETIP SNET 5/6/19**

Chief Technical Officer and Co-Founder of Cleanergi Ltd, influential advisor on the technologies and challenges of the Energy Transition. A physicist and member of the Chartered Management Institute. Before Cleanergi, set up three successful businesses within a multinational, inventing developing and taking to market various products and services for different companies in diverse industries.

**51 words, 370 chs inc spaces, Executive Summary 9/12/15**

**Mark Howitt**, Executive Director and significant shareholder and co-founder is a physicist (Physics and Electronics Joint Honours at Manchester University) and a member of the Chartered Management Institute. He worked in various industries internationally setting up 3 subsidiaries and innovating both products and services, and as a management and innovation consultant.

**50 words, 404 chs inc spaces, Clean and Cool, 19/6/14**

Director of Cleanergi, leading the technical and operations side of the business. Graduated in Physics with Electronics, 12 years management and innovation consultancy world-wide. In Bombardier Transportation, Mark developed three profitable businesses, one commercialising technology he’d developed. In electronics manufacturing, developed 5 product ranges and helped 2 businesses grow strategically.

**50 words, 366 chs, Postcode Lottery Green Challenge 5/3/16**

Mark Howitt, CTO, founding director, focusing on technical design and liaison with grid, government and public bodies. A physicist (Physics with Electronics at Manchester University), member of the Chartered Management Institute. Set up three successful businesses within a group, inventing / developing various products and services for diverse companies.

**44 words, 355 chs inc spaces, Business Plan 19/4/16**

Graduated in Physics with Electronics, 12 years management and innovation consultancy world-wide. Developed three profitable businesses within a multinational, one commercialising technology he’d developed. In electronics manufacturing, developed 5 product ranges and helped 2 businesses grow strategically. Mark focuses largely on the Thermal technology.

**43 words, 356 chs inc spaces, Cleantech Innovate 22/7/14**

Mark Howitt, Director, technical and operations. Graduated in Physics with Electronics, 12 years management and innovation consultancy world-wide. Developed three profitable businesses within a multinational, one commercialising technology he’d developed. In electronics manufacturing, developed 5 product ranges and helped 2 businesses grow strategically.

**39 words, 268 chs inc spaces, Business Plan 19/8/14**

Mark Howitt is a physicist (Physics with Electronics Honours at Manchester University) and a member of the Chartered Management Institute. He has experience in setting up three successful businesses within a group, inventing / developing various products and services.

**36 words, 272 chs, Cleantech Innovate 6/1/17**

Mark Howitt, co-founder and CTO, physicist (Physics with Electronics Honours at Manchester University), member of the Chartered Management Institute. Experience in setting up three successful businesses within a group, inventing / developing various products and services.

**26 words, 253 chs inc spaces, Sacyr Generate Challenge 2021 6/7/21**

Mark Howitt, CTO & co-founder, physicist, set up 3 successful businesses within a group, inventing/developing various products/services, helping many other businesses grow strategically and operationally. https://www.linkedin.com/in/mark-howitt-57053a3/

**20 words, 191 chs inc spaces, Global Entrepreneurship Summit 15/4/19**

CTO & co-founder, physicist, set up 3 successful businesses within a group, inventing/developing various products/services, helping many other businesses grow strategically and operationally.

**22 words, 149 chs inc spaces, Coach Foundation Skool 4/9/24**

Entrepreneur and innovator of diverse products & services, initiated 2 startups and 3 subsidiaries, helped many grow strategically and operationally.

**19 words, 140 chs inc spaces, Global Entrepreneurship Summit 31/1/20**

Entrepreneur and innovator of diverse products & services, set up 3 successful businesses, helped many grow strategically and operationally.

**Key Words / Tags**

**Both Technologies**

CAES

compressed air

energy storage

electricity storage

Net Zero

renewable

cleantech

electricity system

grid connected

grid scale

megawatt

megawatt-hour

MWh

gigawatt

gigawatt-hour

GWh

off the shelf

existing technology

high efficiency

round trip efficiency

grid to grid

Business Lift

Cleanergi

Store electric

Storeelectric

**CleanCAES**

adiabatic

zero emissions

emissions free

**The Ask**

**Both Technologies:**

First-of-a-kind in the UK will have double-digit whole-project ROI

When trading, can re-finance ~75% to low-cost project finance, increasing equity ROI well above 30%

Invest in either asset (sale in 4-5 years at >3x premium, asset-based) or Cleanergi (huge ongoing growth potential)

We have productive uses for any amount of funding; our optimum is £70m ($100m) which would also enable us to take our second-technology plant and other projects to construction ready, grow our existing project pipeline and expand faster globally

**CleanCAES TM:**

£3m to construction-ready, £50m construction

**Hydrogen CAES TM**

£3m to construction-ready, £40m construction

**Commercial Opportunities Sought**

New projects world-wide, with funding and consortium partners (some or all of which we can bring), above salt basins (in future we will develop porous rock geologies too).

**Covering Letter**

Dear sir/madam,

Scores of companies have expressed interest in financing follow-on plants in four continents; we need support (especially financial) to build our first of each technology. Unlike almost any other first-of-a-kind plant, these:

* are low technical risk, using existing off-the-shelf technologies, validated by engineering multinationals including a manufacturer of the equipment;
* will (at least in the UK, possibly elsewhere) deliver double-digit returns on capital in today's markets, and that's before the cost-downs of future plants and project financing.

Investment can be in either

* Cleanergi (for patient capital and enormous growth potential in a mostly un-tapped multi-trillion-dollar market currently without viable competitor) or
* a plant SPV (for 4-5 year sale at >3x investment cost, and/or re-financing of 70-80% with low-cost long-term debt).

We already have a pipeline of opportunities at different stages of identification / development, and with potential consortia to deliver the projects.

Yours,

Mark Howitt

CTO and Co-Founder, Cleanergi Ltd

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mhowitt@Cleanergi.com

**Hashtags**

#energytransition #netzero #renewables #grid #energystorage #energysecurity #electricity #electricitystorage #hydrogen #hydrogeneconomy #CAES #Cleanergi #BusinessLift