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Cleantech by the Swedish Energy Agency

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Welcome to our world of cleantech business development

The Swedish Energy Agency identifies business ideas and companies, which contribute to a more sustainable energy system and economic growth.

We provide support for these business ideas to grow and succeed through different types of loans. We also contribute with technical expertise, market knowledge and active business financing.

In this publication we give you insight to our step-by-step financing process and a quick overview of the companies we strongly believe in. Each company represents a different business idea in a different phase of development and has different financing needs. All of them are selected and supported by us; the Swedish Energy Agency.

If you are interested in being a part of any of these exciting developments – as an investor, partner or even customer – read this publication and contact us or the contact person for each company. We look forward to speaking to you.

Financing

To be selected by us the business idea, firstly, has to have market potential and be backed by a team of skilled implementers. Following that, the business idea has to include a unique and innovative product or service, where one of the primary benefits is to contribute to a more sustainable energy system.

Every year we review and evaluate many business ideas and companies. To make the evaluation process efficient, both for the applicants and for us, the process is divided into different phases.

During the early phases our agency does most of the work, gathering and processing existing information. After a first screening we select the companies that meet our basic criteria. If we consider the business idea to be in a different phase from the one which we focus on, or out of our line of business, we will help the applicant to find the right contact person within the agency.

Our focus is to make sure that the applying company has enough potential to contribute to a significant increase of renewable energy and a more efficient use of energy. In the next phase we ask the applying company to contribute with detailed business documents.

All in all, the time-taken for our financing process depends on the co-financing, the development stage of each company and their ability to provide us with correct and adequate information.

CONDITIONAL LOANS	GROWTH LOANS
Non-commercial phase	Commercial phase
Development of new, improved/modified product, process or service	Investment to achieve growth and expansion
No maximum support amount	Up to 1 million euro
Private co-funding	Private co-funding
Interest rate: 6% above the prevailing Riksbank reference rate	Interest rate: 6% above the prevailing Riksbank reference rate
Repayment obligation arises when the project generates its first commercial revenues. Thereafter yearly amortisation as a percentage of net sales	Loan amortisation starts after a 5-year grace period. Then 5 years straight-line amortisation
The loan is interest free until the first amortisation is made	Interest is charged from the loan date and is paid quarterly in arrears
	Companies applying may not be older than six years

Complying with EU state aid regulations, the company is obliged to report to the Swedish Energy Agency as long as debt remains.

Our financing process

COMPANY & MARKET
Submits business plan

TECHNICAL
Submits technical description

FINANCES AND FUNDING
Submits annual reports, budget, financing plan, three-year forecast of income statement, balance sheet and cash flow/liquidity

LEGAL
Compiles agreements and company documents

EXECUTION PLAN
Defines an execution plan and submit a formal application

Available for futher questions

3 DETAILED ANALYSIS

COMPANY & MARKET
Evaluates company, business model, teams and market

TECHNICAL
Technical evaluation

FINANCES AND FUNDING
Economic and financial analysis

LEGAL
Day visit with Agency's lawyer
Focus: IP rights and corporate governance

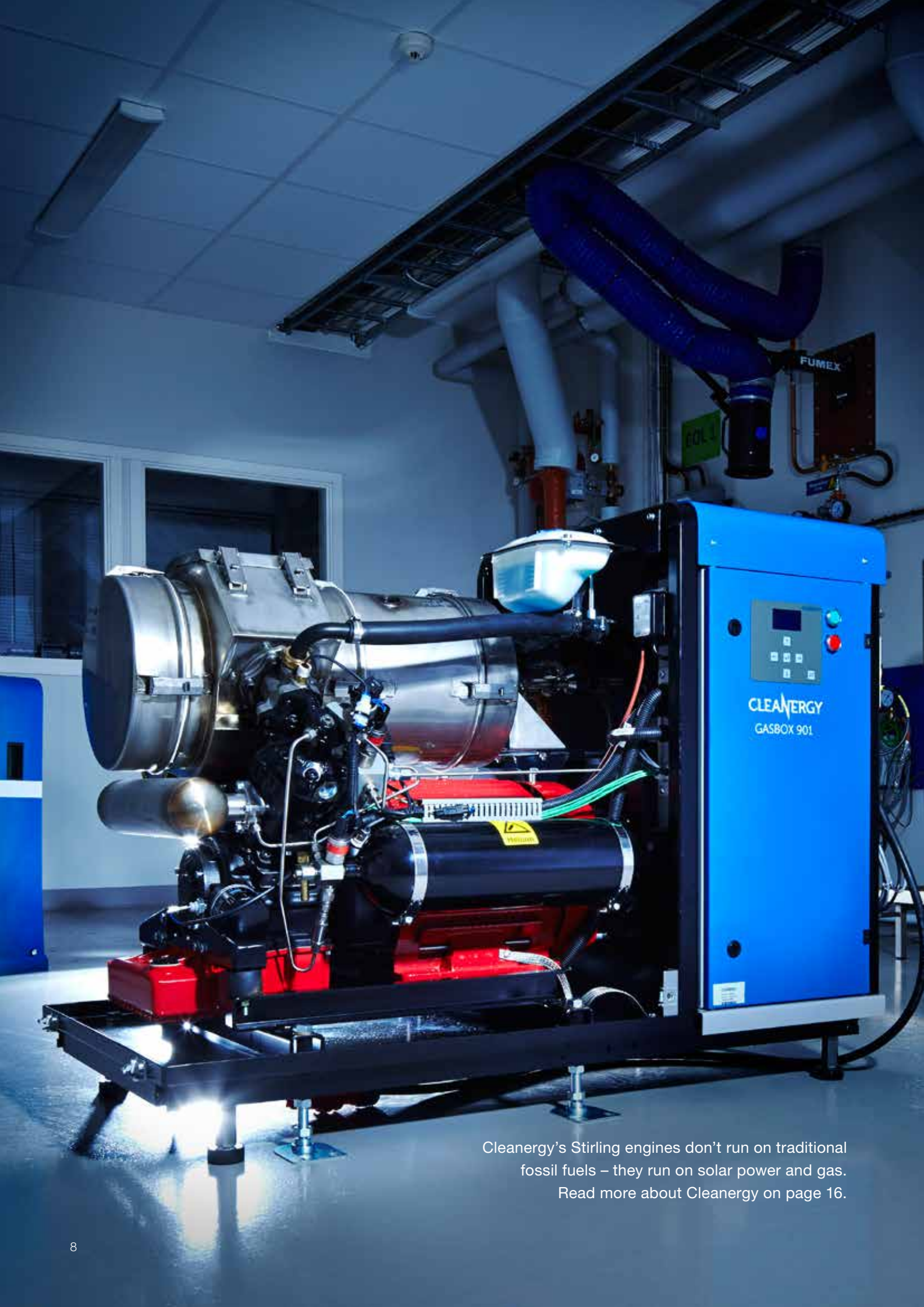
EXECUTION PLAN
Evaluates execution plan and application

4 DECISION

Decision is made at different levels in the organisation depending on amount and type of project:
Unit Manager
Department Manager
Director General
Energy Development Board

WHAT HAPPENS NEXT?

The Swedish Energy Agency is actively working to refer the appropriate contacts to the companies we have supported. We also initiate and implement initiatives on international markets.



Cleanergy's Stirling engines don't run on traditional fossil fuels – they run on solar power and gas. Read more about Cleanergy on page 16.

Our funded companies

The Swedish Energy Agency's financial support is designed to help developing and commercializing cleantech business ideas. The companies on the following pages have received soft loans and other measures of support from the Swedish Energy Agency.

These companies represent many different lines of business, and they have reached different stages of development and growth. The common denominator is that their innovations help to reduce energy consumption or to find new ways of producing renewable energy.

3eflow

In many modern water distribution systems the hot water is circulated to ensure it is delivered the moment the tap is opened. Unfortunately this is an enormous waste of energy. As a result the California energy commission set the challenge to solve the problem.

This challenge led Erik Abbing, a technology entrepreneur to found 3eflow. This was a natural decision as his provenance in plumbing goes back 50 years, his father and grandfather were plumbers. Today 3eflow has patented its' water delivery system.

3eflow offers the world's first intelligent water distribution system that instantly fills the pipe when you turn on the tap. The pipes are empty 98 % of the time. The result is significantly lower consumption of energy. Which is a pressing problem considering consumption of hot water in new buildings has risen from 15 % to 50 %. The system also saves water and implements a safer design that offers higher levels of comfort.

3eflow`s customers are HVAC-manufacturers who can add value to their product range. Swedish HVAC-manufacturers estimate that 30% of their customers will install 3eflow. The Swedish market size is estimated to be 70,000 households per year the majority being multi-occupancy buildings.

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AccessGate

AccessGate develops products, services and systems that combines broadband networks with measurement systems for consumed media, i.e. hot water, heating and cooling in buildings and apartments. AccessGate has developed a cost effective water meter that easily can be installed in every home. The water meter, designed as a clamp-on type, do not require any pipe cutting, has a built in long term battery, has a wMBus interface and is intended for use in apartments in MDU's.

In relation to the directives from EU, followed by national legislations as well as general trends towards reduction of the climate footprint, leads to services that can offer immediate online feedback of consumption. One of the key drivers for introducing metering systems is the water meter. The end-users awareness of water consumption leads to less consumption and related expenses.

Calculations indicate that the return of investment for water meter-systems are attractive for many of the major housing companies in Sweden. However, this is conditional that the installation cost in each apartment is sufficiently low. AccessGate is made to match these requirements.

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Acosense

Acosense uses acoustics to offer intelligent fluid analysis solutions to save energy and resources for a more sustainable future. Acosense develops and sells Acospector, a non-invasive clamp on-instrument that measures fluids in the process industry, delivering an analysis previously thought as difficult or impossible to obtain.

Everything began in 2007 when Chalmers School of Entrepreneurship got the task of commercializing the innovation and patented method active acoustic spectroscopy. Acosense is now one of the world leading providers and developers of non-invasive on-line analysis in real time.

Within chemical pulp manufacturing where you get a by-product called black liquor. Using Acospector you can correctly assess levels of dry solids for the black liqour which enables more green energy which saves money for the mill in decreased energy costs. Other markets for great savings using active acoustic spectroscopy are in the food and dairy sector.

There is a need for new and more intelligent fluid analysis solutions. During 2013 several ideas regarding this subject have formed at Acosense together with Fraunhofer-Chalmers Research Centre for Industrial Mathematics. The company is now in the process of introducing these solutions to its customers.

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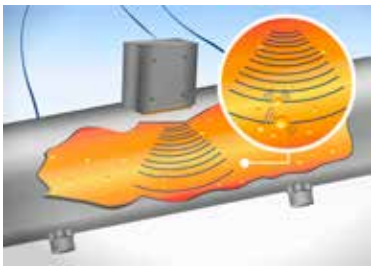

Airec

The integrated heat exchanger is the most essential component regarding function, performance, energy saving and emission reduction.

Airec focuses on completely new types of brazed plate heat exchangers, (mainly based upon joint development projects with leading global companies), with the motto: Innovative heat exchangers that make a difference.

Airec is already successful with a rapidly increased turnover in applications as:
- Airec superior gas coolers delivered 2013 only clean 82 million Nm^3 biogas/year.
- More than 50 % of the German mini CHP-machines have Airec high temperature exhaust gas heat exchangers to produce emission free heating.
- For super conductors are Airec heat exchangers cooling high pressure helium gas to – 268°C. The system is now planned to be installed by several test institutes, including ESS in Lund.

During 2010–2012 has Airec successfully, with part financing from the Swedish Energy Agency, developed AirLight as a pre-market project. AirLight is a new plate design in aluminum for Air/Liquid applications. The superior function for AirLight has been proven in tests by leading test institutes. The performance means that AirLight reduces energy consumption and emissions with up to 40 % in applications as ventilation and AC, food cooling/freezers and process- and electronic cooling and energy free AC in vehicles.

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Airglass

Airglass® is a porous quartz foam glass, an aerogel with certain unique qualities. It is lightweight, transparent, cold- and heat insulating, recyclable and non-toxic which makes it very useable in many contexts.

Airglass® was developed in connection to the development work of the accelerator centre CERN in Switzerland. A number of subsequent EU projects have further improved the material, the production process and different applications. One example is transparent vacuum insulated panels.

Right now the focus is on building relations with manufacturing companies. More specific builders of solar collectors, hybrid solar cells, roof windows, fireproof doors, glazed courtyards, green houses and energy effective transparent/translucent insulation for new buildings and retro fittings.

Airglass® is also developing a new nanocellulose-silicaaerogel composite. The properties of this material depend not only on the properties of their individual constituents but also on their morphology and interfacial characteristics and leads to new and improved properties when compared to their macrocomposites counterparts.

In 2014/2015 Airglass® will be expanding the production plant to meet the accelerating demands of the market. According to US and EU prognosis Airglass® has a great future potential.

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Alent Drying

The founders of Alent Drying have been in the timber drying business for 30 years and has introduced several new ideas for better drying. Their new product Alentpumpen is a system for timber drying. The product is built on their patent protected method.

Using Alentpumpen the timber dries faster and better while electricity consumtion is reduced with 50 %. At present the developers are adding more functions to the control system. For example an online-sensor measuring wood moisture.

Alentpumpen is energy efficient and can be used for all kinds of timber. Naturally Alent Drying is looking forward to cooperate with kiln producers and companies all over the world.

A sales company Alent Drying GmbH will be started in Germany 2014. Sales activities are on the way in Norway, Finland and Canada.

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Applied Nano Surfaces

Applied Nano Surfaces (ANS) offers innovative and cost efficient solutions for friction and wear reduction. The core offerings, ANS Triboconditioning and ANS Tricolit can reduce the frictional losses in a wide range of mechanical applications.

ANS is a spin-out from the Ångström Laboratory in Uppsala. The eureka moment was when researchers at the university saw that a low friction tribofilm could be created on a steel surface using a tool and a specially blended process liquid. The solution was patented and ANS was born.

ANS customer base spans several application areas, e.g. engine components, compressors, pumps, drivetrains, chains, etcetera. The technology can be applied to a wide range of materials and for many different purposes. The most common purpose is to reduce the frictional losses and by doing so – improve the energy efficiency.

The ANS technology is already today sold on a license basis on the global market. The focus right now is to build an even larger customer base and license revenue, but the company is also continuously developing new processes that are demanded by existing and new customers.

Applied Nano Surfaces

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Arc Aroma Pure

Arc Aroma Pure's product CEPT® enhances biogas production. Depending on the substrate composition in the substrate this pre-treatment improves the methane production yield by 15–50 %.

The process is an electroporation which ruptures the membranes in the cells revealing and exposing intracellular nutrition to the fermenting bacteria. Additionally the fermentation rate is increased allowing for the higher yield to be produced in shorter time than without a CEPT pre-treatment. This fact allows for the hold time in the reactor to be reduced allowing the plant to convert larger amounts of raw material to gas in the same timeframe.

The target markets are biogas producers, technical consulting companies, wastewater treatment plants, universities and scientists plus a host of applications for other target markets. In 2014 there will be a global launch of the CEPT starting in the Nordics. Right now the company is looking for partners in distribution.

ARC AROMA PURE

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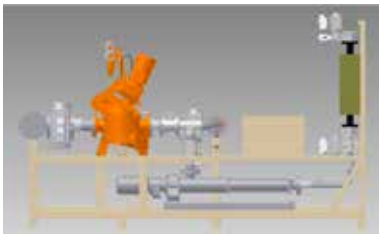

ATC Industrial Group

Scypho is a heating control system that provides perfect indoor climate. With intelligent control homeowners can save up to 30 % energy. The system adapts to the thermodynamics of the specific house, the heating system's capacity and the homeowner's preferences. The result is a more precise control of heating and higher energy savings.

The system consists of a central unit with a patented retrofit technology that easily can be mounted to any existing system. It collects temperature values using wireless sensors deployed throughout the house and communicates with its cloud service.

Scypho targets the one-family house segment where the solution has the largest competitive advantages, in terms of retrofit technology, pricing and uniqueness. Scypho also work closely with channel partners such as utilities and telecom operators to reach mass market.

The future prospects for Connected Homes are very optimistic. Navigant Research recently released a report which predicts that 87 million home energy management systems will be installed worldwide in 2022. Scypho intends to provide a platform for the connected home with upcoming services such as burglar alarms, home automation and online health services.

scypho
comfort on demand

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Bestwood

Bestwood is a leading provider of systems for real-time moisture measurement for solid fuels. Among the products are systems for on-line analysis of forest residue. The purpose is to optimize the combustion process in large scale producers of heat and power. A second product line is a real-time system for analysis of bulk proporties of solid biofuel in truck shipments.

Bestwood was founded in 1996 at the Royal Institute of Technology in Stockholm and was initially focused on the analysis of wood pulp and paper but was gradually redirected towards forest residue and solid fuels due to the large market potential. Today Bestwood has developed several measurement systems that are used by the industry.

The target market consists of larger heat and power plants which use e.g. forest residue, peat or household waste for energy production. Despite world-wide interest, Bestwood focuses primarily on the Nordics. However, Bestwood has business activities in Russia.

The next step is to further develop an industry system into platforms which include both measurement and utilization of the measurement data for optimization of the customers' plants. A system for the analysis of coal, and subsequent optimization of the combustion process will be initiated in the late 2014.

BESTWOOD

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Chromafora

Chromafora is a chemical company that works with cleantech applications. The company believes that they will have a great impact on economy and environment. At present they possess an innovative phosphine technology that can be used to perform efficient chemical manufacturing. The technology can also be used for selective heavy metal separation, which is difficult to achieve.

The initial target is ash-producing industry. For example when waste is incinerated it produces a heavy metal contaminated ash that today is deposited. Chromafora's goal is to approach all markets that produces heavy metal contaminated waste material.

Today the company is developing a complete process that will purify fly ash and sludge material from waste incineration. The aim is to produce three purified materials with a value: heavy metals, pure salts, and cleaned ash. A second market to approach is the mining industry and especially a project for REE*-extraction. Even small percentage increases in efficiency will have great impact on this industry, which consumes great amounts of energy and resources.

*Rare Earth Elements

CHROMAFORA

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ChromoGenics

ChromoGenics is a global leader in smart window-technologies that save energy and increase comfort levels by controlling shading with small electrical currents.

ChromoGenics is the only company working with electrochromic plastic film, rather than flat glass solutions. This has great advantages for manufacturing and distribution solutions, and also reduces the carbon footprint greatly.

The company's proprietary technology, ConverLight™, is an electrochromic plastic foil produced in a highly efficient roll-to-roll process. Electrochromic smart windows are able to block 80–90 % of solar heat radiation and decrease cooling energy needed by 20–40 %.

The applications include building windows and facades, aircraft, motor vehicles and boats.

ChromoGenics

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Cleanergy

Cleanergy is the world's leading supplier of sustainable stirling energy solutions. The engines that turn solar power and gas into electricity and heat are made in Sweden

Historically, stirling engines have powered everything from submarines to cryo-coolers. But previous issues with leakage and short service intervals stopped the technology from developing into large scale industrialisation. Until now.

Cleanergy has reinvented the stirling engine for the 21st century and beyond. The results are nothing short of revolutionary.

Cleanergy provides complete energy solutions for biogas, landfills and solar parks. The CSP (Concentrated Solar Power) Systems for solar parks can produce electricity at grid-parity cost levels – providing the most energy efficient approach to converting solar power into electricity.

Landfills using Cleanergy's CHP (Combined Heat & Power) Systems can produce electricity and heat from low grade methane gas, eliminating the need for flaring once and for all. Indeed, the Cleanergy CHP systems turns biohazards into sustainable and profitable power sources with fast return on investment.

The Gasbox and the Sunbox are, at the heart, stirling engines that provide unmatched reliability and long service intervals.

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Clean Motion

Clean Motion has developed Zbee – the next generation of clean vehicles. The Zbee is a three-wheeled electric vehicle for short distance transportation of up to three people and smaller goods. Through its energy efficiency and zero emissions the vehicle has the potential to make a big global difference

The Zbee is the perfect solution for many urban transportation needs. It could be taxi services as well as goods deliveries. Service vehicles is also a possible area. The Energy efficiency not only lowers environmental impact but it also minimizes the requirement on the charging infrastructure. Charging a Zbee uses less power than a vacuum cleaner. Clean Motion believes that the Zbee will find its users dense urban areas, small cities and suburban municipalities. There is also a very special niche market in areas – for example small islands – where traditional cars are not allowed.

The company has started up its production in Indonesia and has just established a subsidiary in India with an Indian management team. The first fleet of Zbees will roll out in Delhi in June 2014.

The company is now expanding production and continues to refine the product. The company is already the leader in energy efficiency and working on implementing solar cells on the vehicle to extend the range. The long term goal is to make Zbee energy autonomous.

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ClimateWell

ClimateWell develops and sells components that increase the energy efficiency in three applications: Air conditioning for trucks and heavy duty vehicles; Solar air conditioning and energy storage for homes, hotels and hospitals; Water heaters and boilers for domestic use.

The components are based on a proprietary sorption technology. The basic principle is a chemical heat-pump technology with integrated energy storage in a dry salt. The main advantages are no crystallization issues, no need for control of temperatures and flow rates, integrated energy storage and no moving parts in the sorption core.

The company was founded in 2001 by Göran Bolin and Ray Olsson and was awarded Technology Pioneer by World Economic Forum in Davos in 2007. In 2010 the company won General Electric's global cleantech competition Ecomagination.

The target markets are: Air conditioning for US trucks and heavy duty vehicles where the vehicle size and type of operation fits very well with ClimateWell can offer; Solar air conditioning and energy storage in the global market; Water heaters and boilers in the US and South America. The business model is to cooperate with leading product companies (OEM's) to whom ClimateWell deliver components.

ClimateWell

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Climeon

Climeon's product Ocean generates electricity in a safe and efficient way from cold heat sources (80–120°C). The business idea originates from the understanding that cold heat is an enormous untapped energy source for electricity production.

The company originates from the founders business perspective. The approach has been to combine chemistry, thermodynamics and smart engineering in a novel way where strong IP protection is achieved.

Climeon's product Ocean is adaptable to any heat source in the temperature range 80–120°C and accepting a rather warm cooling side.

Climeon's primary markets are found among large combustion engines, both land based and marine vessels, low temperature geothermal wells, industrial excess heat and solar thermal heat enabling electricity 7/24 through hot water storage.

Currently Climeon is building a full-scale modular pilot system, aiming at 1 MW heat per module. In the next two years a full functional reference system will be installed within three different market segments. The company is currently exploring reference site opportunities and is open for a dialogue with potential partner.

CLIMEON

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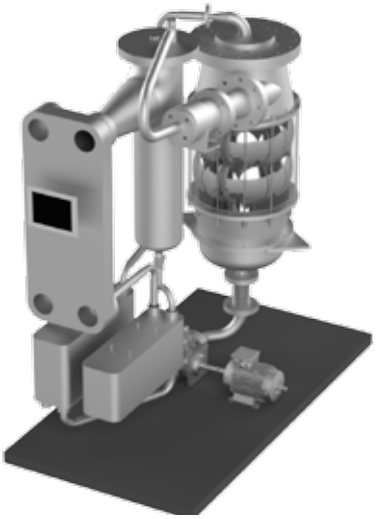

Ecofective

Ecofective supplies energy- and cost saving solutions for large buildings. The product monitors analysis and automatic influence on existing heating control systems which reduces the need for purchased energy. The payback time for customers is within two heating seasons.

In 2009 Thomas Wildig and Björn Thelin conducted a project based on thermodynamic research from KTH (Swedish Royal Institute of Technology). In 2012 the company was restructured from consulting to an international product company under the name of Ecofective.

The target market is real estate owners and facility management companies with existing multi tennant-, office-, school- and elderly care buildings in the Nordics and the DACH (Germany, Austria and Switzerland) area.

The product development currently focus on scalability, easiness to install, uptime quality and reduction of component costs. The next development step will add new features and big-data mining possibilities to increase customer value. The market development is focused on establishment of strong reference installations in the Nordics and Germany, large rollouts to established customers and to build a strong distribution. In 2015 Ecofective will expand into the neighbouring countries UK, Netherlands and Poland.

ECOFECTIVE

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Elforest Technologies

In 2006 Elforest was founded to develop the world's first forest machine with an electric hybrid drive train. Since then, interest in electric hybrid technology has greatly increased.

Today Elforest Technologies focuses on offering customer-specific electric hybrid drive trains to manufacturers of industrial vehicles and marine vessels. The electric hybrid market for heavy vehicles has been developed and the electric hybrid technology has become an important brand management for manufacturers, due to increased performance and fuel reduction. Manufacturers of industrial vehicles and marine vessels will offer electric or battery electric powered machines within two to three years. The market for construction machinery in total increases by 5 to 10 percent per year.

Elforest Technologies objective is to expand by offering it's specialized expertise in electric hybrid drive trains to customers for development of new modern industrial vehicles and marine vessels. Elforest Technologies participates primarily in the feasibility study and construction phase of the development, as well as in the development of a prototype. Elforest Technologies licenses the technology for the customers serial production.

Elforest Technologies is actively looking for partners.

ELFOREST
TECHNOLOGIES

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Enrad

Enrad AB develops, produces and sells modulating chillers, heating pumps and support units for the commercial market. Every unit is equipped with the patented Enrad control system. As an example Enrad's system has helped Willy's to save 32 % energy in their cooling system in one supermarket. Enrad's compact solution can be integrated with all existing cooling systems and is therefore of great interest to all the grocery stores around the world who want to cut down on their electric bill and subsequent negative effects on the environment.

Enrad is founded by the two brothers Tomas Larsson (who worked with engineering of cooling systems) and Mikael Larsson (who worked with pipe installations). They were not satisfied with the existing products and started develop a high quality unit with an intelligent control system that could save more energy than conventional technique.

Enrad's target markets are new installing and refurbishment of food stores, hospitals, office buildings, apartment buildings, hotels, etcetera. Enrad sell to contractors in HVAC business.

Enrad aims to be an established supplier on the Swedish market within two years and have also started to cooperate with agents and companies throughout Scandinavia, the Baltic states and northern Europe.

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Ensy

Ensy has developed a product named Multibox for dewatering of manure and AD-slurry. Nutriments are recovered and concentrated into a NPK-fertilizer. The intention is to develop a small scale unit for anaerobic digestion of the organic substrate in the manure. With such a unit the potential of nutriments and energy from manure can be utilized.

The company started late 2011. After development works one prototype handling various types of manure was installed during 2013. The first commercial unit has been delivered in the beginning of 2014.

The target market is farmers who want to treat manure from primarily cows and pigs and convert that into dry NPK-fertilizer and substrate for AD-digestion. Another potential customer group is AD-plants for dewatering of AD-slurry.

Ensy plans to place around ten dewatering units on the domestic market in the next two years. Besides an AD-unit Ensy is also running development works regarding horse and chicken manure.

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Entrans

Entrans develops and sells FlexiGen, a product that recovers waste heat and coverts it into electricity or valuable heat/steam. A FlexiGen unit costs between 1.5 and 4 million SEK, and gives customers very short payback period of 1.5 to 6 years depending on application. The patented technology was developed over 10 years and is a combination of ORC (Organic Rankine Cycle) and heat pump technology.

Entrans started 2003 as a hobby project of the founders who then worked at Fortum. Entrans first system was tested at Fortum Heat as a pilot 2009. End of 2010 Innovationsbron invested into the company and the FlexiGen concept was further developed and productified.

Addressable market is 6 billion SEK in Sweden only. Initial focus is energy companies with hot water boilers with district heating and smaller industries in the Nordic region. Energy companies are the primary customers and in phase two also industry and shipping companies.

Today Entrans has orders for two systems, one with 100kW electric output for Neova AB at their plant in Kramfors, Sweden and one with 70kW in Åtvidaberg, Sweden. The next two years Entrans will put emphasis on electricity generation in combination with high temperature heat pump applications.

ENTRANS

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Exeger Sweden

Exeger is the world leader in developing and commercializing the revolutionary silicon-free dye-sensitized solar cell. The company is currently building the world's largest 3rd generation solar cell production plant in the city center of Stockholm. The cells are affordable, fully flexible, lightweight and applicable to any surface.

Exeger's lightweight product can drastically reduce dependency on traditional charging methods by reducing how often devices need to be charged through prolonged battery life. With its affordability the product is also in a unique position help any of the 1.2 billion people lacking access to electricity.

Consumer electronics manufacturers demand aesthetics while developing countries demand light weight and affordability. Exeger's aesthetic, lightweight solar cell can therefore be a product for at least two very different markets.

2014 is the year Exeger plan to choose development-partner. In 2015 Exeger will launch the first prototype, which later will be their first consumer electronics product, specifically in wearable electronics. Parallell to this, when the new 20 MW production plant in Stockholm is running at capacity, Exeger will be looking to ramp up to large scale production. For this Exeger will need a partner with local contacts and influence in the chosen markets.

EXEGER

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Flexiwaggon

Flexiwaggon offers a new and unique solution for intermodal freight transports on the railway and roads. The system makes it possible for both the railway operator and haulage operator (who may be one and the same company) to reduce costs and improve profitability. In short Flexiwaggon enables more environmentally friendly, financially viable and rational transports, in a system constructed to be compatible to most of the existing railway systems.

The company is presently in a phase of establishing a position. The Swedish supermarket chain ICA AB is a shareholder. The benefit of having one major customer with an expressed policy of transferring part of their transport from road to railway also as a shareholder will make the introduction in the Swedish and other markets easier. Markets that have demonstrated serious interest are India, China, Switzerland and Ghana. In India and China, Flexiwaggon has signed sales and manufacturing agreements with the leading waggon producers. In Switzerland negotiations are under way and in Ghana there are discussions how to implement the flexiwaggon-system on their railway.

Flexiwaggon AB main current objective is to expand and start to commercialize the technology. Today is the company actively looking for partners.

FLEXI WAGGON

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Flispac

Flispac is a new patented wood chipping and packaging system. The technology makes it possible to utilize the trees entire value above root while significantly reducing transportation costs. Through a unique compression and wrapping technology, the forest owner is offered high density airtight woodchip ”logs” as an add-on product during normal harvesting. Each log is 3m in length and weighs about 300 kg.

The technology is the brain child of Gösta Bruun, an inventor who has spent most of his career in the forest industry. Bruun came up with the idea while working as Machine Manager at Iggesunds Bruk in Sweden, where he saw great challenges during traditional thinning and clearing.

The target market is manufacturers of forest machinery. The end-clients are forest entrepreneurs, forest landowners, and industries within paper, cellulose and energy.

A first prototype has been developed in co-operation with Sveaskog, Ponsse and Trioplast. A second prototype is now being developed that aims to automate the wrapping process via a computer-driven process and to increase the number of woodchip logs that can be produced per hour. Following this important milestone, Flispac aims to conduct extensive field testing of the woodchip logs to test density, storage and energy values.

FLISPAC

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Greenbyte

Greenbyte is a software company in the renewable energy sector. The company's products Breeze Production and Breeze Development are made for wind power data management. This data is needed by wind power developers, owners and operators for asset management.

The company was founded in 2010 based on a market need to increase data quality from wind resource assessments to decrease risk in wind power investments. The product Breeze Development was quickly adopted and embraced by the market. By popular market demand the product capabilities were then extended to manage data from wind farms.

Greenbyte works on a global market. The customers are spread out around the world. The main market segment is owners of wind farms with a portfolio of different turbines consisting of around 50-500 MW of capacity.

Greenbyte aims to have enough wind power turbines installed to provide valuable benchmarking data to our customers. Being able to benchmark will make owners of wind turbines more knowledgable and will generate innovation from turbine manufacturers to further reduce investment cost/MWH to make clean energy more abundant.

GREENBYTE

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Heatcore

Heatcore is an ultra compact and efficient gas-to-water heat exchanger product that can be designed to operate with zero emissions. The design is based on a unique catalytic technology, which makes it possible to build a primary heat exchanger that is significantly smaller and lighter than its conventional alternatives.

The product's effect density is very high, which gives a large geometric volume advantage and low material consumption compared to competing alternatives. The thermal efficiency is high, allowing for cost-effective operation and low environmental impact. The module weighs only about 30 percent of corresponding units on the market, which results in significant energy savings – all the way from raw materials to the installed product.

Heatcore is a spin off from Catator, part of the Catex Group. The company was established in 1990 by two scientists with cutting-edge expertise in the area. The target market is the global OEM industry within the HVAC sector that produces various applicances for gas driven heating product systems.

The product and manufacturing concept is under refinement work and presented to market. Selected manufacturers on market will conduct various duration tests.

HeatCore

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Heliospectra

Heliospectra's mission is to develop and sell efficient lighting systems that provide control of plant growth and quality. The patented technology can reduce energy consumption by up to 50 % in greenhouses while at the same time producing a crop that looks and tastes better, and also has a longer shelf-life. The technology is protected by a series of patents.

Heliospectra was started by plant experts who understood that existing lighting systems in greenhouses were wasting energy and producing inferior products. Development was done in close cooperation with greenhouse growers.

The target markets are: Greenhouse growers of ornamentals and vegetables. Researchers at Agrotech companies and Universities/Institutes. Pharmaceutical companies creating plant based medicines. Consumers and retailers.

Heliospectra currently has satisfied customers all over the world. At first Heliospectra has sold a high end system to leading companies. Currently they are launching a high volume systems aimed at large scale greenhouse growers. In the future the company will launch add on-technology such as sensors and management systems.

heliospectra

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I-Tech

I-Tech is developing a marine biocide; Selektope to be used in marine paint prohibiting growth on ship and boat hulls. The substance is effective against barnacles and some other shell builders while having a minimal effect on the marine surroundings.

Even slight fouling of a ship's hull increases water friction and drag, resulting in higher fuel consumption. In addition, all too frequent foul removal brings about substantial dry-docking expenditures and unwanted operational delays. Finding a sustainable and cost-efficient solution to the problem of marine biofouling is on the top of every ship owner's agenda. Marine paint companies put large efforts on the development of new technologies, making new research discoveries in the field highly sought after.

Marine paint manufacturers are our prime target. 80 % of the market is controlled by five major paint makers. All ship categories are benefiting from the techology, most importantly when idling in aggressive waters.

The product developement activities are mainly about improving the inter-action with the paint chemistry but also to enhance the regulatory and the industrial aspects. Apart from antifouling coatings, several adjacent market areas are under research and development for potential future expansion.

i-tech
marine paint

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Insplorion

Insplorion is giving research departments around the world a valuable tool in developing new nano-tech based solutions for the world's energy challenges. Insplorion provide them with instrument systems, by which they can optimize their nanotech-based materials for their specific application.

Nanotech-based solutions will revolutionize the energy-sector, but before that is a fact sensitive measurement techniques are needed. The researchers at Chalmers University of Technology came up with nanoplasmonic sensing which the company Insplorion built its product portfolio around. The Swedish Energy Agency has supported the project all the way from research to a commercial product.

Insplorion markets the products towards both academic and industrial R&D-departments, developing new nanotech-based solutions for energy problems. Primarily Insplorion's products are used for the development of a new generation of low-cost solar cells.

At the heart of Insplorion is a simple and robust measurement technique with extreme sensitivity. This technique will in the future be implemented in more mass-market applications, as low-cost sensors. These sensors will be used for e.g. indicating remaining battery lifetime, measuring very small amounts of particles in urban air and pollution.

Insplorion

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Knycer

Drying laundry and clothing is one of the major energy drains in pre-schools, laundry rooms and in our homes. Knycer provides sustainable drying solutions. The products build on nature's way of drying laundry. With creative use of technology Knycer are pioneers in mimicking nature's summer breeze and at the same time making it more efficient and less energy consuming. Knycer was awarded the prize "Future Company of the Year, 2012" by EFF (the Swedish Association for Energy Effectiveness)

Experience from the international market led to the idea of expanding outside Sweden. Market research and a team of product designers and engineers developed the first prototype and the first product was sold in 2010.

The target customers are to be found in all the places where clothes are being dried: pre-schools, homes, care homes, laundry rooms, clinics and so forth.

The product has been the market since 2010. Knycer's drying cabinets can now be found in some of Sweden's most prestigious residential areas. Important steps forward will be to cut costs, increasing sales in Sweden and finding business partners to help Knycer reach international markets.

KNYCER
the nicer way to dry

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Kyab Sweden

The name of the product is Saber. The company's mission is to help property owners reduce their energy consumption by combining measurement, visualization and user participation. They do this by delivering measuring equipment and perform installations for various businesses, municipalities, and government agencies.

KYAB was founded in 2006 and have nine employees in two locations, Luleå and Stockholm. The company has five years experience of working with user-oriented development and services. It is therefore natural for them to work with user participation in energy savings and help companies and government agencies to save energy.

KYAB is a spin-off from Luleå Tekniska Universitetet. The research on which the products were based was conducted 2003-2008 funded by the Swedish District Heating Association. In 2008, KYAB became one of the Swedish Energy Agency's portfolio companies as the agency funded the development of the first version of Saber. KYAB has also participated in several projects with Luleå Tekniska Universitetet and CDT, amongst others developed and tested new generations of Saber on a large scale.

KYAB continues to cooperate with Luleå Tekniska Universitetet, other universities, companies and authorities.

KYAB

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Lamera

Lamera AB develops, manufactures and sells the lightweight sandwich metal Hybrix. The product is based on a unique and patented micro sandwich technology. With low CO_2 emission and use of alloy materials it reduces environmental harm. By replacing solid steel with Hybrix a weight reduction of ~ 50 % can be obtained with intact bending stiffness.

Hybrix™ was originally invented by Volvo. Their primary objective was to lower the weight within the vehicle sector but a number of potential applications was detected. Via the entrepreneur school of Chalmers Technical University, Lamera was founded in 2005.

Weight reduction is highly prioritized and a strategically important area. With Hybrix™ many industries can save valuable weight and hence cost and simultaneously increase the performance in existing as well as new products. Other advantageous functions to be achieved by Hybrix™ are sound damping properties and good thermal conductivity – qualities that can be highly valued in certain environments.

In close interaction with potential customers Hybrix developes the product for different application areas. In parallel the aim is to raise capital to develop production capacity to meet the future demand of volume production.

Lamera

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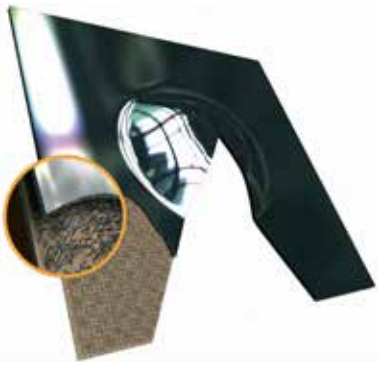

MagComp

The MagComp induction heating systems address the metal working industry. The company's business idea is to replace traditional solutions with modern and efficient induction heating, offering benefits as lowered energy consumption, shorter cycle times and improved process quality. The product offering for induction heating systems has been developed with modularity in mind and is today supplying 14 kW, 50 kW and 1 MW modules.

MagComp was started in 2005. The company has its background in research at Lunds Technical University initiated 1988. The company acts in two different markets: induction heating systems and inductors in OEM applications.

The MagComp inductors can be used in areas such as UPS, windmill, sun energy as well as electrical filter solutions in general inverter applications. The product is moulded and energyefficient, offering benefits as lower energy waste, less waste heat and improved robustness. The component typically reduces the energy losses in UPS systems with 10–15 % and facilitates an over-all lower system cost.

Being active in markets with a long product life cycle, MagComp has to be considered to be in an early stage of the market introduction. The performance has been verified by global actors in respective areas and a fast international expansion is expected in the next three to five years.

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Mantex

Mantex' products use a proprietary X-Ray technology to analyze large flows of organic material (biomass) used in industrial processes. The ability to accurately measure the moisture level, energy content and density, allows the customers to optimize their processes operations, thus saving money and delivering higher quality products. Mantex is unique in the way the analyze 100 % of the material flow and can deliver the results in real-time to a plant control system.

Mantex' primary market is the pulp and paper industry that uses wood chips to manufacture pulp. This is then used to create a wide range of paper and other products. Wood is a raw material with large variations depending on season, type of tree, location, and storage procedures. Another market is Bioenergy where organic material is incinerated to create energy. The CO^2-neutrality of the process has made it an interesting alternative to fossil fuels.

Mantex is now in a product industrialization phase together with several large pulp mills and bioenergy plants in Europe and expect their products to be ready for large rollout by the end of this year. With their products' capability and extensive feature set, the company hopes to set a new de-facto standard for organic material analysis to the benefit of customers world-wide.

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Metasphere

Cutting tools, drill bits and surfaces are constantly worn in the heavy industry. To mitigate these negative factors tungsten carbide is the most widely used hard metal. Metasphere has developed a process that refines tungsten carbide to META-X and unseen hardness and strength. META-X can tenfold the lifetime of equipment and save billions of Euros for the industry. The Metasphere process is also capable of binding different phases of metals and ceramics, in short all electrically conductive materials, that have so far not been possible.

The Metasphere process is the result of decades of research. A production pilot has been built and the process is now verified and validated in terms of product quality and production capacity. META-X is today extensively field tested and orders are coming faster than the production capacity.

The target customers are companies that provide cutting tools, drill bits and hardfacing technologies to the heavy industry. The global market for metal powder is a million ton per year. The top segment, where tungsten carbide is found, is over 10 000 ton.

In the coming five years Metasphere plan to build four production lines. R&D will now be production capacity, reliability and development of products based on META-X. The first production line has a budget of 10 M€ and the company is looking for investors that can contribute with more than just money.

metasphere
structures of the future®

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Meva Energy

Meva Energy has developed a small scale combined heat and power process based on gasification of biofuel. The process includes a fuel handling system, a cyclone gasifier, a gas cleaning system based on bio oil scrubbing, a wet electric precipitator and a gas engine with generator. The output is typically 1,2 MWe and 2,4 MWth from 920 kg of dry wood powder per hour.

The entrained flow gasifier was originally developed by Luleå Technical University and handed over to be commercialized by Meva in 2006.

There is a growing need for fossil free power. The market includes includes energy companies, large real estate companies and most industries, all in need of electricity to be used locally or distributed through the grid as well as heat or cold for their own need.

Meva Energy plans to initiate the commercialization phase by June 2014. The company hopes to sell their next plant within the next 6 months and increasing from 2 to 4 plants by the end of this next two-year period. The organisation, having been heavily focused on R&D, will be expanded with project leaders, business developers and administration. Meva Energy has a cooperation with Cummins, one the world's largest manufacturers of industrial engines, and expect to benefit from their extensive and efficient sales and marketing network throughout the world.

MEVA
ENERGY AB

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Midsummer

Midsummer's product portfolio is divided into three sections:

- Production equipment for flexible, thin film CIGS (Copper, Indium, Gallium, and Selenium) solar cells.
- Flexible, light weight solar modules.
- R&D systems for thin film deposition.

The company's turnkey manufacturing line has a small footprint, is perfectly scalable and allows for small-scale production – from 5 MW/year – of solar cells and modules from raw material to a finished product.

In a wide sense Midsummer's target market is anyone who wants to start manufacturing of light weight, flexible solar modules. The cost to start manufacture of our CIGS solar cells is the lowest in the world. This enables any country to start a cost effective local manufacturing. In a business sense Midsummer markets their products to builders and contractors working with membrane roofing or other roofing or applications where regular heavy silicon modules cannot be used. Universities and research institutions working with thin-film are also their target market customers. Midsummer recently launched the UNO R&D platform that can be used by universities to develop CIGS or CZTS processes or any other type of thin-film processes. They have also started a small manufacturing of light weight flexible panels to promote the technology and open new markets.

midsummer

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Mindconnect

Mindconnect's real-time traffic service helps company fleets save time every day. The service calculates how the traffic flows in cities and enables informed decisions based on the current traffic situation.

The service CityFlow Navigation is a real-time system, providing city-specific routing and easy to use interfaces adapted to the need of professionals in city traffic. The routes are calculated on all available driving alternatives, not just the major roads and highways. Local traffic conditions are monitored by service-staff, making sure that factors such as accidents, jams, closed streets, events, are taken into consideration.

Mindconnect will be marketed and integrated as a 3rd party application in target customers' enterprise systems with a monthly per vehicle license fee. The key customer segments are commercial vehicle fleets, such as couriers, passenger transport and mobile work forces. Mindconnect is running a pilot in Stockholm and the goal is to be ready for international expansion in 2015.

MINDCONNECT

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Nimbell

Nimbell's vision is to create sustainable cities by providing light and medium-duty electric utility vehicles. The company's first product – Nimbell Trigo – is a professional and sturdy electric transport vehicle for postal delivery, maintenance services and other transports of goods and persons. Its uniqueness derives from the latest lithium battery technology in combination with an advanced, feature packed construction which delivers high performance and extreme agility.

A market need for light and medium sized electric utility vehicles at the business incubator Encubator at Chalmers University of Technology in Sweden. Nimbell was started 2009 to develop the next generation electric utility vehicle.

The current status is that a number of customers placed orders on vehicles, the next version of Nimbell Trigo is developed, and a production partner is in place to secure both short term production and long term scale up to bigger volumes. The next step is to secure the needed financial resources to start production and deliver to customers.

Once the first series has been delivered to customers, the focus will be on industrialization. Some activities are: optimization of the product to increase quality and lower production cost; scale up of sales and marketing; and preparation for international expansion.

NIMBELL

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NODA Intelligent Systems

Knowledge, automation and business software will provide the best options for the actors in the modern smart energy world. NODA's technology platform works with almost all heating control systems available on the market.

NODA develops smart systems for energy optimization and system surveillance for both energy companies as well as building companies. Started in 2005, the company is a result of several years of multidisciplinary research.

The customers are among utilities, building companies and energy service providers. Today NODA has systems installed at private and municipal building owners and energy companies throughout Sweden and NODA has active collaborations in both France and Poland.

Almost half of all energy generated in Europe is used for heating. Enormous amounts of energy are used to heat buildings and industrial processes. As we enter the age of auto-analytics, data analysis will be a key factor. NODA's vision is to take a leading role by providing the market with intelligent energy systems.

NODA Intelligent Systems

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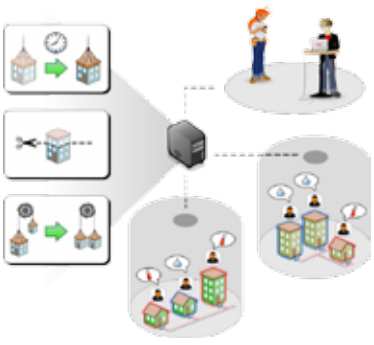

Pastair

Pastair AB has developed a cold/gentle pasteurizing process which achieves the required product safety as well as maintaining nutritional values and flavour. The process not only increases the quality of food production but also saves up to 70 % of energy use.

Since the Pastair can replace traditional heat pasteurization the market is potentially very large. Only in the dairy industry in the EU the sales of pasteurization systems is estimated to equal a value of 12 billion SEK, If including other products, such as juices, proteins, and drinks, the potential market is even larger.

Pastair presented the system at Anuga Food Tech 2012. A field test in Ireland for whey products and a very successful cheese production test in Sweden was done. A process module is soon to be tested by one of the largest dairy companies in the world for further evaluation. An additional benefit with Pastair is the possibility to use the system for disinfection of other food processing lines and thereby making substantial energy and cost savings.

The founders and initial investors have managed to bring Pastair to the initial commercial face. However, it is believed today that Pastair lack the muscles and organization to bring the system to the market globally. Therefore, the technology/patent is for sale.

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PowerCell Sweden

PowerCell is a leading energy technology company with a unique and patented technology for generating electricity from fuel cells in an efficient and environmentally friendly way. The company's fuel cell and fuel reformer technology is suitable for both existing and future fuel infrastructures.

The objective is to develop and produce environmentally friendly power systems based on fuel cell and fuel reformer technology that matches existing fuel infrastructures. Over the years extensive research has resulted in an innovative, unique and patented technology for converting low sulphur diesel into clean, environmentally friendly electricity.

At present Power Cell develops and distributes advanced fuel cell systems for the telecommunication industry, stationary generators, the military sector and the transport industry. The company also offers fuel cell stacks to the market as well as engineering support to existing customers on fuel cell system engineering, both for pure hydrogen as well as reformate gas such as natural gas, bio-gas and LPG.

The next step is to deploy a small amount of diesel fuelled fuel cell systems in the field, to get market and field experience. In parallel, PowerCell will continue to further develop the unit for commercial launch.

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RecondOil

RecondOil develops and sells system solutions for in-situ cleaning of lubrication oil that dramatically extends the lifetime of the oil and thus, reduces the oil consumption by 90 % or more. This is made possible by RecondOil's unique chemical booster technology which removes impurities down to nano size.

The technology is derived from the medical field and the development of surface chemical separation methods. By combining surface chemical process technology with various mechanical separation techniques (high speed separators, filters or sedimentation) the limits of cleaning are dramatically expanded. It also opens up new markets and applications. The main markets are industrial applications such as rolling mills with large volumes of lubrication oil, marine 4-stroke engines, oil recycling plants and large diesel powered generators to mention a few.

The strategy is to work with partners in the various market segments to jointly develop and commercialize the technology on a larger scale. Currently the company is working with partners to develop systems for marine engines and oil recovery plants. RecondOil is also actively looking for partners to target other applications in the manufacturing industry and within wind energy. RecondOils main objective for the coming two years is to build capacity and capability to reach USD 20 million in sales.

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ReformTech Heating Technologies

ReformTech develops, manufactures and sells the world´s cleanest heaters for automotive applications. The technology platform is based on clean and catalytic fuel processing which enables superior heating performance, reduced power vs. weight/size as well as reduced emissions.

The development of ReformTech´s environmentally friendly heater began in 2009. ReformTech is today a growing cleantech company with about 20 employees. The product is built on research from KTH (Royal Institute of Technology in Stockholm) and MIT (Massachusetts Institute of Technology).

ReformTech's primary market is vehicle OEM´s and large system integrators throughout the world. Customers are also to be found in the retrofit and aftermarket applications. Right now ReformTech are focusing on developing heaters for sale in niche/retrofit markets as well as the automotive aftermarket.

Their vision is to create a new global industrial player in environmental technologies focusing primarily on the vehicle industry.

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SenSiC

SenSiC develops and supplies gas sensors for direct detection of emissions in combustion gases where other sensors cannot meet cost and performance demands. The sensors are specifically suited for extreme temperatures and harsh environments.

SenSiC was founded in 2007 based on 15 years of research within Linkoping University on silicon carbide (SiC) based MOSFET sensor chips and Ascatron's (ACREO) ability to process semiconductors from SiC wafers.

The sensors detect CO/O_2, NH_3, O_2 and NOx gases to manage combustion control and reduction of emissions in SCR and SNCR systems. Addressed markets are woody bio fuelled domestic heaters/boilers and district heating plants as well as diesel engines (primarily trucks, off-road vehicles and industrial applications).

In 2014 the company will finalize evaluations with Nordic key customers and launch the sensors in other parts of Europe. A production line will be developed early 2015 and in September commercial series supplies will start.

NO_x and O_2 sensors for the automotive industry are being developed in collaboration with two major, international truck producers and are expected to be verified in 2016.

SENSIC
Clean air sensors

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SOL Voltaics

Sol Voltaics develops advanced nanomaterials for the energy sector. Their product Solink allows existing solar PV module manufacturers to improve, at a low cost, solar cell conversion efficiency by over 25 %.

Solink integrates with silicon manufacturing processes and fits within known thin-film production methods. Further, the vertically aligned nanowires need only cover a small portion of the surface area of a silicon or thin film solar cell to achieve substantially all of the benefits of traditional semiconductor materials.

The company started in 2008 as a spin-off from the world leading nano-technology research at Lund University. Today the company is a focused development company with about 25 full-time employees led by a world class management team.

Sol Voltaics has developed a strong technology and patent platform in the areas. A single, relatively small, manufacturing facility operated by Sol Voltaics will be able to provide megawatts worth of materials to module makers worldwide. The company is now focused on starting pilot production of their nanowires on an industrial scale. The goal is to produce and sell Solink to solar cell and module manufacturers.

sol™
voltaics

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Solarus

Solarus develops and produces hybrid solar energy systems. The systems are capturing at least 70 % of the solar energy. With this high energy yield they are outperforming all other traditional panels in the market. Academics, business people and public officials qualify Solarus as a game changer.

Solarus' technology is originally a spin-off from Vattenfall. After demonstrating the viability of the system in some of toughest tests by TÜV in Arizona (USA), the Chinese academia and Nobel Laureates Solarus was considered as the top performing solar system in the world. The system functions in any geography, from the north of Sweden down to the equator. The use of the system ranges from domestic use up to full commercial use for offices, production facilities or city heating.

Solarus is now preparing its breakthrough entry in the international market with implementing 30 so called 'flagship projects'. These are located in Sweden, Europe, South-Africa, China and Central-America. In March 2014 Solarus was selected to provide its systems to the Wescape (Cape Town, SAF) urban development plan (200,000 houses) in an integrated program to deliver cheap and clean energy, hot and cleaner water and a jobs program with the foundation of a local Solarus factory.

SOLARUS
Unlocking Solar Energy

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SoletAer

SoletAer is a wall mounted solar heat pump, connected to the existing boiler. The cost and energy needed to produce domestic hot water can be reduced by two thirds annually by combining solar and heat pump technology.

Domestic hot water represents 20 % of the average Swedish households total energy consumption. In Europe there are approximately 51 360 000 electrical boilers for domestic water. The founder of SoletAer, Adam Fjaestad, recognized the need for an energy and cost efficient solution for producing domestic hot water in households with direct electricity. A product development project started in 2012.

SoletAer is about to start a process of analyzing and optimizing the pilots installed for field testing, and will have the product evaluated by SP – Technical Research Institute of Sweden. Preparations for production and sales are other important steps. The average payback period for the average household will be four years, which makes SoletAer a competitive product in many markets all over Europe.

SoletAer

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SootTech

SootTech develops and sells equipment that improves power boiler efficiency through a patented technology for a more efficient cleaning of the boilers heat surfaces within the boiler furnaces.

The company is based upon an innovation of Erik Dahlén, who has long experience within boiler optimization and boiler cleaning. The company was started together with Chalmers Innovation to commercialize the technology. Today the company has installed the technology in four recover boilers and four power boilers.

The main markets are power boilers (CHP-plants) above 20 MW and recovery boilers within the pulp industry. SootTech's patented sootblowing technology enables power boilers to be kept cleaner and produce more energy. This technology also enables, in existing power plant, use of alternative fuels, such as vegetal residues and construction waste.

SootTechs main current objective is expand and start to commercialize the technology. SootTechs main current objective is expand and start to commercialize the technology. The company is currently looking for business-partners.

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Smart Innovation Sweden

The SmartPole is an environmental friendly replacement for the wooden creosote impregnated poles. The uniqueness is the low energy consumption when produced compared with other materials such as ordinary concrete steel reinforced poles, composite poles, steel poles, etcetera. Further more the leakage of dangerous materials into the nature is much lower.

The project started with the knowledge that the market in the developing countries needed a durable, cheap and environmental friendly pole for electricity. Smart Innovation Sweden concentrated their development on a new combination of high performance concrete and basalt fibre reinforcement. Both materials have outstanding environmental characteristics and long lifetime expectancy. Further more the energy use to produce the poles are significantly lower than the other materials and material combinations.

The target market is construction companies that are building or owning electrical grids. The Swedish market is the pilot market. The second step is the North European market.

The development of the SmartPole has begun and the product will soon be presented to the market together with selected cooperation partners. The goal is to have a large scale production plant in Sweden up and running in 2016.

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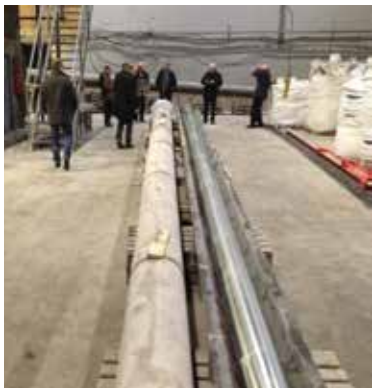

Svenska Aerogel

Svenska Aerogel develops, designs and produces Quartzene, which is a silica based porous material with aerogel properties. The structure of the Quartzene makes it a very good insulation material, both for thermal and acoustic purpose. Its large internal surface also works as excellent filter material for both liquids and gases.

The company started in year 2000 as a university project at Swedish Royal Institute of Technology (KTH) and Gävle University with the aim to create a material for molecular filtration. The goal was to get the properties of a silica aerogel by using a different production method.

One of the target markets is the insulation market. The company is working in several different segments, with integrating Quartzene in different insulation, paint and filter applications. The incorporation of the company's materials into other other materials and processes requires testing and optimization. Therefore the sales process is quite long. Svenska Aerogel has positive results and is planning a full scale production.

The company is now in an expansion phase and a production pilot plant supplies their partners and customers with larger material quantities. Next step will be to take the investment decision for the semi-large "proof of concept" production unit. This is planned to happen in the end of 2014.

AEROGEL

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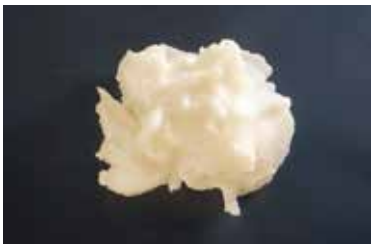

Tomologic

Tomologic offers a unique optimisation system for maximum efficiency and minimal environmental impact in industrial sheet metal cutting. The optimisation service reduces the customer's material waste up to 50 %. Thereby the customers maintain a more efficient use of raw material, resulting in reduced cost of material and distribution.

Tomologic was founded in 2009 by Magnus Norberg Ohlsson. Knowledge of market drivers and expertise within cutting technology has been obtained through years of hands on work within the manufacturing industry. He has built the core team with specific competences including advanced algorithm design, with the main objective to realise the vision.

The target market is naturally the global steel industry. The total steel market is worth thousands of millions of dollars. The manufacturing industry faces well-defined cost end energy problems in mass production of metal parts. With global competition and price pressure, the demand of a reduced cost per produced part increases.

The Swedish Energy Agency has been backing the company since 2009. At present the financing comes from several sources, Tomologic is aiming for a global market launch in 2014.

TOMOlogic

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Wattguard

Wattguard's lighting technology sets new standards with a 40% saving on electricity, maintaining the quality of light. Wattguard also increases the lifetime of light units and thus lowers the maintenance costs significantly. The technology is based on fluorescent light. The performance of this light is enhanced to a level that competes and exceeds newer technologies like electronic ballast and LED.

The base of Wattguard's clients comprises logistics and transportation companies, manufacturing plants, sports arenas, shopping centres, retail stores and parking houses. Wattguard's lighting technology also applies to clients at new construction sites and renovation projects. The system is offered on a rental basis, which enables the clients to kick-start their electricity saving efforts. Installation is quick and easy since the system uses existing fixtures.

The company was established in 2010 and has its head office in Malmö, Sweden. It has more than 350 installations completed.

Watt guard
Pure savings

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Vasasensor

The paper industry is constantly trying to cut costs and save energy by optimizing their production processes and maximizing the uptime of the paper machine. The press section is an important part as an uneven press will affect both the paper quality and the energy consumption.

Vasasensor has developed a patented wireless sensor system for characterization of the press section during normal operating conditions, with or without pulp. The system is portable and only installed during measurements and will therefore not interfere with the paper machine during regular production.

The product is a one-stop solution for press optimization. The target market is pulp and paper mills.

Vasasensor started in 2004 as a cooperation between Chalmers School of Entrepreneurship and Acreo Swedish ICT. A number of paper mills, paper machine manufacturers, machine clothing suppliers and other parties in the paper industry helped us with research and development. The product is at an early development stage. The next step is to develop the business model to fit a larger market and to continuously develop the system to enable more flexible measurements and a more user-friendly handling.

vasasensor

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SUCCESS
PROFIT
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The Swedish Energy Agency is the national authority for energy policy in Sweden. We work for the use of renewable energy, improved technologies, a smarter end-use of energy and mitigation of climate change.

The Swedish Energy Agency finances research and development of new energy technology and actively supports business ventures can result in increased growth in the Swedish market. We also support the development of existing products and functions so that they become more energy efficient.

Swedish Energy Agency

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