Meeting environmental challenges

The Danfoss company of Denmark began life in an attic, the brainchild of inventor Mads Clausen. Today, the company produces around 250,000 items a day – including many energy-saving products – at 70 factories in 25 countries. The company's products and businesses focus on reducing energy consumption as well as renewable energy. Danfoss Solar Inverters is one of Danfoss' renewable energy businesses and here, Managing Director Henrik Raunkjær gives an overview of the company and focuses on the solar inverter business in particular.

Henrik Raunkjær, Managing Director of Danfoss Solar Inverters

PES: Danfoss as a Group is celebrating its 75th anniversary this year. Could you share a short history of the company with us, and bring us up to date about the company's activities now?

Henrik Raunkjær: Danfoss has a long tradition of developing products that meet the environmental challenges of reducing energy consumption in heating, cooling and the regulation of process speeds. Technological perfection and constant innovation have made Danfoss one of the leading manufacturers of energy saving products that make modern living possible, while contributing to a safer and cleaner environment. Our Mission Statement concludes: "Making Modern Living Possible".

The strategy is based on the Danfoss Vision: "Danfoss will be a global leader within our core businesses, as a highly respected company, which improves quality of life by mastering advanced technologies in customer applications while creating value for all stakeholders."

We strive to reach our goals with a minimum consumption of raw materials and energy, the least possible impact on the environment and an efficient use of resources. Danfoss has a long-standing tradition for social responsibility towards employees and the external environment.

PES: Solar Inverters are one of your areas of speciality – can you tell us a little more about this area of your business?

HR: Danfoss Solar Inverters offers a comprehensive range of advanced grid-connected inverters for both residential and commercial solar energy applications. The range also includes monitoring solutions that help owners supervise their plants and thus achieve optimal yield and return on investment

We focus on the fast-growing European PV market – the main markets being Germany, Spain, Italy and France. We have set up a dedicated solar market service network in these locations – based on the experience of Danfoss service partners in the frequency converter field. It is a huge advantage for us that we can develop our service network faster because of this competence and experience.

Danfoss Solar Inverters began life as a venture project in 2001 within Danfoss Drives which has manufactured frequency converters for 40 years. Danfoss Drives is a leading global player in this field.

Due to its rapid growth, the venture became an independent company in 2002, partly owned by Danfoss, and named PowerLynx. The company succeeded in building a strong position in the solar inverter private label market by offering a unique product and support concept. In the spring of 2007 PowerLynx became a fully integrated part of the Danfoss Group. By combining PowerLynx's solar energy know-how with Danfoss' scale and long experience in power electronics, the perfect match was created to develop.

Having 40 years of experience in power electronics technology and an annual production of more than 600,000 frequency converters, Danfoss has the sourcing scale needed. Frequency converters and PV inverters are technologically closely related, sharing 80-90 per cent of their components

Alongside maintaining and further strengthening the private label business, Danfoss introduced a complete Danfoss inverter range for the solar energy market in the summer of 2007.

PES: How was the market reaction to the introduction of the Danfoss brand in the PV industry?

HR: We have been almost overwhelmed by how positively the Danfoss brand has been welcomed in the PV industry. I think it means a lot for our customers that Danfoss is a widely respected company with a long tradition for supplying quality products and providing good service. The fact that Danfoss is a big and well-established industrial company with more than 22,000 employees gives a lot of confidence, and the power electronics

experience is an excellent basis for developing competitive inverter products. The pace of the PV industry requires huge investments, and we have the resources and experience needed to invest in the business.

PES: How does your company benefit the commercial solar sector specifically?

HR: Danfoss Solar Inverters is very focused on contributing to the goal of the PV industry to rapidly reaching grid parity, i.e. making PV energy competitive to energy generated from conventional sources. It is about driving down system costs and assuring standardised and reliable solutions. The industry needs to reach the cost efficiency and dependability of more mature industries fast.

Danfoss has the well-proven technological platforms and the innovative environment to be one of the leading players in reaching this goal.

An excellent example is the introduction of our string inverter range for the commercial PV market. The TripleLynx inverter range is available from September 2008 and ranges from 10-15 kW. The market interest in this new range is huge due to the specifications which are second-to-none in this inverter class. The inverter range has been developed to satisfy the growing market need for efficient and high quality string inverters for commercial and industrial PV systems. These fast-growing market segments at the same time require high energy output and easy-to-install inverters. TripleLynx matches these needs by providing high yield through a unique combination of 3-string input, 3 phase output, high voltage and high efficiency, and easy installation with a weight of only 35 kg and 3-phase grid connection.
Due to the fact that TripleLynx inverters are all equipped with an integrated communication board, owners have the option to connect external sources, such as sensors and alarms, directly to the inverter. By connecting a weblogger, the system can be monitored from any location in the world.

Furthermore the growing market share of thin film applications calls for transformer less inverter solutions that can cope with the challenges of thin film and contribute to lowering total system costs.

TripleLynx is an attractive alternative to central inverters for installations from 10 kW up to several MW owing to the possibilities of bringing down system costs combined with the simple installation and service procedures of string inverters compared to central inverters. We think that more and more the market will demand standardised string inverters rather than customised central inverter solutions due to cost-efficiency, simplicity and ease-of-use.

PES: R&D is obviously a vital aspect of your operation – is your investment in this arena reaping rewards?

HR: R&D is definitely a very important part of our operation. The TripleLynx inverter just mentioned is a good example of the importance of foreseeing the needs of our customers and even take a step further than expected by the market. The value of product leadership can hardly be overrated.

The need for bringing down system

costs is essential, and it requires new technological approaches and optimised purchasing and logistics processes. Danfoss' experience in developing power electronics products and the scale of our activities in this field combined with our experience in the PV industry gives us a unique basis for being in the forefront. We also use our own power modules – produced by Danfoss Silicon Power in Germany – which ensure very high performance and a long life of our inverters.

PES: How much does the solar sector contribute to your Group's business as a whole, and can you see it making up for a larger share in the future?

HR: The PV industry is still small compared to the other businesses Danfoss is involved in. The value of the total PV inverter market in Europe is only a fraction of the Danfoss Group's annual sales of approximately 3 billion Euro. Therefore, naturally Danfoss Solar Inverters' part of the Danfoss Group is also small. However, with the high growth rates of the PV industry these years – around 40% p.a. – and Danfoss' ambition of being among the leading PV inverter players, the solar inverter business will no doubt make up a larger and larger share of the Danfoss turnover in the years to come.

PES: How does Danfoss work as a multinational company across Europe, and what advantages does that have for its operability?

HR: Danfoss products are sold and serviced all over the world by a global network of about 115 sales companies and an equal number of agents and distributors. Sales companies are predominantly managed by local people who know the special needs of their markets.

Moreover, Danfoss has 70 factories in about 25 countries, helping to meet our goal of being closer to the customers. The Danfoss facilities are capable of turning out some 250,000 products a day.

Even though we consider Europe our home market with our extensive network of production, sales and service facilities, we are global in our approach and are rapidly building up capacity and presence in China and the US. Nonetheless – when it comes to solar inverters we lean on our European history as it provides an excellent basis for us to match the pace of the fast growing solar energy business. We have the organisation and structure to rapidly expanding our activities. Having such a setup is quite unique in such a young industry.

PES: Your company literature says that 'internal and external communication' is one of the most important tools you possess to help reach your targets. Could you tell us more about this?

HR: Motivated and engaged employees are without any doubt one of the most important assets for a company that is reaching for its goals. And communication is a very important factor in creating motivation.

As for external communication, we do believe that a strong bond to our stakeholders and the societies we are involved in is essential for our success – and it's hard to have great relations without communication!

PES: Do you believe that your group's strong commitment to ethical values enhances what you do as a company?

HR: I think this commitment is important in all aspects; in relation to customers, employees, suppliers and the society in general. Social responsibility is an integral part of Danfoss' history and it came about long before the concept of CSR (Corporate Social Responsibility) emerged. Over the past years, as Danfoss has become increasingly global, the company's social responsibility has evolved. Social responsibility is about treating employees with respect; evolving together and providing necessary support if someone is in need. However, it is also about taking social responsibility on a global scale. Therefore, Danfoss has joined the UN Global Compact, which consists of ten principles of good company ethics. The ten principles cover respect of human rights, labour rights and the environment as well as an obligation to counteract corruption.

This year Danfoss distributed an Ethics Handbook to all of the group's employees. The Ethics Handbook determines the ethical guidelines for all employees and covers employee conditions, the relationship with customers/suppliers and the relationship with society. In addition to covering the ten Global Compact principles, the Ethics Handbook also includes issues which, up until now, were "unwritten rules" implicit in Danfoss' values.

PES: How do you see Danfoss' long term future and what will life be like when you're celebrating your 150th anniversary?

HR: Foreseeing what happens in the next 75 years is certainly a very difficult task. Imagine the development the society – and Danfoss – has gone through since 1933. I think, however, that our mission statement "Making Modern Living Possible" is still applicable in 2083. The need for solutions to improve our standard of living and at the same time take care of our planet will become even more important in the future. Depending on the pace of the climate changes we might face radical political measures which will change the conditions we know today. Assuming that such measures are based on global conventions it will make Danfoss' position even stronger.

The challenge of storing renewable energy might be met in the not so far future. Combine this with the resources invested in product development for improving the efficiency of renewable energy systems. Precisely how fast fossils are outperformed by renewables is of course hard to predict. In any case the need for constantly reducing energy consumption per capita is essential in the light of the ever increasing world population and the climate changes that are foreseen in this century.

PES: The theme of this issue is the rising price of oil and how it will affect the renewables industry. Do you feel it will impact upon your business? How?

HR: The PV industry is very focused on reaching grid parity – becoming competitive to conventionally generated energy. The rising price of oil of course supports our industry in reaching that goal faster than expected. And with the capital invested in the sector these years to boost efficiency, lower system costs and integrated solar cells in our buildings we are certain that the PV industry will be on the renewable winning team.

The process of transforming our energy consumption to renewable sources however is a long-term and global project. And coping with the climate change challenge is a combination of changing energy sources to renewables and reducing energy consumption. Danfoss focuses on both sides of this challenge.

In general Danfoss as a global company takes on a joint responsibility for a sustainable development of the areas and in the countries where we operate. We have joined the UN's Global Compact Initiative and The Business Charter for Sustainable Development issued by the International Chamber of Commerce, called the ICC Environmental Charter, and is the co-founder of the Danish Council for Sustainable Business Development. As a member of Global Compact who wishes to demonstrate a leading role in the climate debate, Danfoss has signed the voluntary UN initiative "Caring for Climate". This initiative requires companies to set targets and implement relevant measures to improve the global climate.

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www.danfoss.com