

## **Schleswig-Holstein's first power-to-gas plant goes into operation**

**GP JOULE presents innovative storage technology "made in North Frisia"**

**GP JOULE, the specialist for renewable energy projects and intelligent storage technologies is now putting into operation the first phase of its so-called power gap filler in Reußenköge (North Frisia). This power-to-gas plant, along with the concept it is based on, enables compensation of the increasing fluctuations in the power grid - thereby solving one of the greatest challenges posed by the energy turnaround. The first stage will be to connect four PEM electrolyzers to the grid, each with an output of 5kW; they will be followed by 36 identical PEM electrolysis stacks made by GP JOULE. This will give the power-to-gas system a total output of 200 kW. GP JOULE Managing Director Ove Petersen: "The future of seamless energy provision has started - right on our doorstep up here in the north. People are always talking about how we should make better use of the surplus energy from wind power in Schleswig-Holstein. This is the challenge we have taken on and we are pleased to have put the power gap filler into operation, taking the next step from a mere electricity turnaround to a genuine energy turnaround."**

*Reußenköge, May 18th 2015.* Large amounts of excess energy on sunny and windy days, but virtually no green power supply at night and when there is no wind: the expansion of renewable energy has resulted in a huge increase in power grid fluctuations. Schleswig-Holstein is particularly vulnerable. More than a quarter of the wind energy output in the whole of Germany was installed here in 2014, a total of 1,303 MW. Yet the region's average power consumption is much lower than the renewable output installed. So what can be done with the excess? With its power gap filler, GP JOULE has come up with an intelligent, climate-friendly and low-cost solution to convert electricity into hydrogen and store it by means of PEM electrolysis. If necessary, the hydrogen can then be converted back into electric current with biogas in a combined heat and power plant (CHP) and fed back into the power grid. "Our power gap filler gives us the vital means for being able to draw our energy exclusively from climate-friendly, regenerative sources in future," says GP JOULE Managing Director Ove Petersen. "Depending on the weather, we often have too much wind and solar energy in the north while energy is in short supply elsewhere. Non-climate-friendly coal-fired power stations are then frequently used to make up for the shortfall. This new storage technology will mean we are no longer dependent on the wind and weather in future. Technologies such as the power gap filler ensure we will always be able to tap into climate-friendly power in future - wherever it's needed."

### **From electricity turnaround to energy turnaround: hydrogen is the flexible all-rounder that makes it all possible**

The power gap filler has another advantage: when it converts electricity into hydrogen, heat is produced that can be fed into local heating grids. What is more, the

hydrogen extracted and stored can be used in industry or as fuel for hydrogen-powered vehicles. So in future it will be possible to replace petrol, diesel and liquefied petroleum gas with hydrogen from renewable energy sources. "Up until now our energy turnaround has just been an electricity turnaround", says Ove Petersen. "But if we really want to contribute to protecting the climate, we mustn't neglect the heat and mobility markets. Power-to-gas technology is able to supply the mobility and heat markets with renewable energy, too - not just the power market."

By enabling wind energy to be used in new markets, storage technologies also boost value creation in the north, explains the GP JOULE Managing Director. "Up until now, surplus energy has been lost because wind turbines are closed down during peak times. And the consumer has to foot the bill - even for power that is not generated. In future, power plant operators can decide whether to market the electricity at 'low' rates via the exchange when there are high levels of wind and solar output or else sell it locally on the power, heat and mobility market in Schleswig-Holstein. It's the electrolyser that provides the gateway to these new markets."

### **Soon to be seen on an industrial scale: megawatt electrolyser in preparation**

The power gap filler in Reußenköge is a pilot project which will yield crucial insights for the follow-up project: the plan is to build a combined power plant made up of PEM electrolysers on a megawatt scale and a biogas combined heat and power plant that is five times larger than the pilot project. The core of the technology - the PEM electrolysis stack, which like its smaller sibling was developed by GP JOULE - is to have a power input of one megawatt with the capability of converting this into hydrogen. Based on a resolution passed by the German Parliament as part of an energy storage funding initiative, the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMU) is to provide research funding of 2.1 million euros for the project.

### **The company:**

GP JOULE is a universal, innovative and authentic partner for all areas of renewable energies. Under the motto "TRUST YOUR ENERGY", the company has developed, planned and realised projects for the future-oriented use of sun, wind, biomass and energy storage since 2009. Based on a sense of respect and responsibility for mankind and the environment, GP Joule develops intelligent energy concepts and integrated solutions, thereby ensuring that the power turnaround becomes a genuine energy turnaround. The guiding principles of company founders and agricultural engineers Ove Petersen and Heinrich Gärtner include authenticity, trust, fair play, innovation and quality as well as the aim to contribute to 100% of energy consumption being drawn from renewable sources in the future. GP JOULE is thus able to offer investors a highly promising and profitable investment option.

Press release

GP JOULE operates four sites in northern and southern Germany as well as two international sites in the USA and Canada.

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