



The tendencies of the international watch in April 2011 seen through the 20 articles of the blog

## MONTHLY ANALYSIS LETTER

### POLICY AND STRATEGY

Let's start with the bad news. The theory of **Axel Kleidon**, a German researcher, suggests that wind and waves are not inexhaustible and cannot provide the energy necessary for the entire planet. The current technology conversion rate is still quite unsatisfactory and the amount of energy removed from ecosystems would cause a catastrophic imbalance. For him, the solution lies in the exploitation of intelligent solar panels that convert unused portions of light only. (April 5<sup>th</sup>)

But let's go on in a more optimistic way in seeking the **leaders in offshore wind energy**. Here is the ranking taking recently published figures into account : **The European Union** appears as a leader with its 1136 offshore wind turbines in 45 wind farms with a capacity of 2946 MW, the implementation pace is very fast and creation commitments are substantial. Next comes **China**, intending to provide 514 MW by 2015 and investing \$100 billion in 5 years to reach 30,000 MW in 2020. Then comes **Japan**, which has just proved that its technology is the safest and currently produces 28.5 MW. And finally comes the **United States**, still hindered by their antiquated land power grid, and spending large sums - \$50 million - for its wind development. (April 22<sup>nd</sup>)

Within the European cooperation between European regions program, Interreg IVA, the project **MERIFIC** aims at encouraging cooperation between Finistere and Cornwall in the UK to develop marine energy with the support of Iroise Marine Park and the Scilly Isles communities. Pôle Mer Bretagne, a partner of this blog, will participate in this program as well as 9 other institutions. This program will cover the development of tools for decision support, the zoning of resources, public policies, potential obstacles to development, the involvement of local communities and business development. (April 12<sup>th</sup>)

The tender for the **Greater Léjon offshore wind farm** construction in the Saint Brieuc Bay will be launched very soon after many consultations that have helped bring the perspectives of different participants together, including the creation of a special tax for professionals and communities.

5 operators including Nass & Wind are interested in this program. Nass & Wind seems well placed thanks to its consultation habit. The selection will take place in spring 2012 for an operational start in 2016. (April 21<sup>st</sup>)

In the competition between operators to win the call for tenders for a 3000 MW offshore wind farm, a group of companies and institutions in the region of Le Mans created **Le Mans Wind Cluster**, which sets up 3 activities:

GRETA for the further training of young people who have experience on onshore wind turbines, NET-WIND to extend to offshore wind turbines the skills acquired in the maintenance of onshore turbines and CTTM, R & D Pole. The achievements of the various partners will allow them to have a high speed implementation, an important criterion in the final choice. (April 29<sup>th</sup>)

In Scotland, the Highland Council has agreed to allow **Marine Current Turbines (MCT)** to implement four SeaGen turbines in the Strait of Kyle Rhea in 2014. This decision follows extensive consultations with institutions, associations and local communities to address the social, environmental and economic aspects. The total power will be of 8 MW with a budget of £40 million. (April 15<sup>th</sup>)

The **United States** are trying to optimize their marine renewable energy resources:

For the offshore wind turbines : study of the **Outer Continental Shelf (OCS)**, continental shelf area between 3 and 200 miles offshore, to analyze the resources and opportunities to implement offshore wind turbines in the best conditions. (April 7<sup>th</sup>)

Concerning the marine turbines : many projects are being developed both in the north-east and in the north-west, near major consumption centers. The currents in these two regions are particularly strong. **Electric Power Research Institute (EPRI)** estimates a 115 TWh per year energy production in the American seas. (April 18<sup>th</sup>)

New Zealand also hopes to develop tidal energy and has granted **Crest Energy Ltd** permission to build a fleet of 200 tidal turbines with an output of 200 MW and a total cost of 330 million euros. This authorization was given after very careful environmental studies and, if environmental damage was nonetheless observed, the authorization would be immediately suspended and the turbines removed. (April 19<sup>th</sup>)

### FINANCES AND BUSINESS

**Carnegie Wave Energy** implements the wave energy collector CETO in Bermuda in conjunction with **Triton Renewable Energy Ltd**. The first buoy will be put into the water for at least 1 year and the data collected will be published. Eventually the project will reach 20 MW and be the showcase of Carnegie for its extension to other islands. (April 13<sup>th</sup>)

The Irish company **Wavebob**, who developed the wave energy recovery system named Wavebob as well, and the Spanish company **Abengoa**, specialized in technological innovation, have signed a cooperation agreement for at least 6 years for a R & D program and the establishment of a business strategy for the Wavebob that has been tested since 2006 and that is expected to attain a power of 1.5 KW. (April 20<sup>th</sup>)

**Industrial clusters in France for offshore wind turbines** : firstly, EDF Energies Nouvelles and Alstom Wind with Poweo and WPD Offshore, and secondly GDF-Suez and Areva Wind with Dong and Vinci Construction. (April 27<sup>th</sup> article)

### TECHNOLOGIES

#### Wind : offshore wind turbines

To test different types of offshore wind turbines and develop the best technology, **SSE (Scottish and Southern Energy)** will develop an operational test center in Hunterston in 2012 if all agreements are obtained quickly. SSE concluded agreements with different manufacturers: Burntisland Fabrications, structure maker, Mitsubishi, Siemens and Marsh Wind Technology for example. (April 6<sup>th</sup>)

#### Waves

The interest for wave energy is not new : in 1977 the Canadian John Berg invented **Waveberg**, a wave energy, recovery system first tested in his pool in 1985, in San Francisco Bay in 1988, then in Canada and Florida, where it demonstrated its

resistance to storms, and finally for 14 months in Nova Scotia. Waveberg is 50 meters long. It consists of plastic tubes and fibreglass and can be mounted in battery to achieve a power of 1.2 MW. The unit cost is estimated at \$ 100 000, and the search for funding has been launched. (April 27<sup>th</sup>)

### Flow

**IRENav-Naval Academy** promotes academic research on future technologies. The tank tests of a «RIM-Driven» model turbine, meaning that its active elements are in the hull and driven by magnets at the periphery of the helix, showed the validity of Laurent Drouen's thesis. The Naval Academy, Jeumont-Electric and probably DCNS participated in this operation. (April 4<sup>th</sup>)

**Ocean Renewable Power (ORPC)**, a marine energy developer, and **Homer Electric Association (HEA)**, an electricity distributor will use the currents of Cook Inlet in Alaska with several Tidgen Power Systems placed at a depth of between 18 and 45 meters. The model to be installed by 2013 is an improved model of the first turbines, taking advantage of the experience of ORPC in Maine, in Cobscook Bay as well as in Nova Scotia, in Fundy Bay. (April 11<sup>th</sup>)

In Bordeaux, a tidal **Eco Cinetic** turbine has been affixed under a hull in construction to use the current of the Garonne and supply the lights of the dock with electricity. Small in size, ECO CINETIC is 1.70 m high, and has a diameter of 70 centimetres, a vertical axis, and a maximum power of 4 KW. It was designed by a company in La Rochelle and was built with the help of companies in the Charentes region. This is a first experience that could be adapted to other bridges in Bordeaux. (April 28<sup>th</sup>)

### Solar energy produced on water surface

To make the land free for food crops while maximizing the solar power production, the Indian company **Tata Power** and the Australian **Sunengy Pty** tested the Liquid Solar Array (LSA) technology that enables the operating of standard solar panels on water surface . Its benefits: no need for land infrastructure, natural cooling by water, costs significantly less. Placed on a reservoir, LSA would increase its production by 230%. The first tests will take place in fresh water in India, before the sea trials. (April 1<sup>st</sup>)

The same thinking and almost identical solution has been adopted by **Solaris Synergy**, an Israeli company that will test its **AQUASUN** on the Cadarache EDF site. Aquasun is composed of modules assembled on a raft of 40 meters in diameter with an engine to track the movement of the sun and that lets the oxygen needed for fauna and flora go through it. In addition, its resting on water reduces evaporation. (April 8<sup>th</sup>)

### Algae

Researchers from the **University Honors College in Arkansas** are trying to convert common algae directly into **Butanol**, an algo-fuel usable in diesel engines. Grown in ponds, the algae are fed on nitrogen, phosphorus, sunshine for photosynthesis, and CO<sub>2</sub>. Within days they can be harvested and processed by well known drying and fermentation methods but also with a confidential technique that speeds the process up. Another advantage : nitrogen and phosphorus may come from sewage or polluted stagnant water which would have the dual benefit of growing algae, while purifying water. (April 26<sup>th</sup>)

### Energy mix

A young British company, **Sustainable Marine Technologies (SMT)**, wants to be the champion in reducing the high costs of installation and maintenance of machinery at sea. These costs,

she says, are an obstacle to the development and economic balance of marine renewable energy. It will first address the horizontal axis wind turbines before launching studies on marine turbines. SMT already has an international experience with actions in Korea, Germany, Croatia, the Bahamas and Borneo which seems to guarantee it success. (April 14<sup>th</sup>)

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### MEDIA-BLOG NEWS

#### The blog was be present :

- 10<sup>th</sup> to 13<sup>th</sup> May, SAFERSEAS at the Quartz Congress Centre, Brest "for safer, cleaner seas".

To complete this information, see also the blog heading « *latest news* » in the right column which refers to articles in English for the topics that cannot be tackled in the blog.

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### Statistic (April 2011)

**2041 subscribers** to the daily newsletter and 14 982 visits, making a total of **55 802 connections** from 101 countries and territories.

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