Newsletter e-harbours #8, April 2015

Flexibility: a new industrial product

'We have to find ways to accommodate more and more renewable energy. Nowadays everybody is looking at batteries as the solution. That may be part of the deal, but other options may be more advantageous. The energy intensity and capacity of batteries remains low, they still are expensive stuff. I'd like to add a different way of thinking: accommodate the renewable energy by generating flexibility through industrial processes and products. Industrialized harbour areas like Zaanstad can develop flexibility as a new type of industrial product. Look how much industry you have, add wind turbines and solar panels and your knowledge about smart grids, and you could become an experimental zone of high quality.'

Jan Paul van Soest is an independent sustainability consultant with a long track-record in fields like energy and industrial ecology. In his keynote speech for the conference *Port&City: Connected Energy* he will talk about the chances that appear now the growth of renewable energy is changing the playing field in a fast pace.
'What we see developing at the moment is a new branch of industrial ecology, not concentrating on waste and materials streams, but on energy flows and the trading of energy. It is all about delivering services to the energy market, especially flexibility services. What you do, in fact, is store energy in products, and modify processes to 'go with the renewable energy flow': high production as the wind blows, lower production in the calm. Take the example of an aluminum smelter, that increases the production at the moment the energy prices approach zero (or even get negative). This way, the excess energy is stored in blocks of aluminum, and that could very well be a much better solution than charging all those batteries.'

Let the players decide

Jan Paul van Soest

'I think the different energy subsystems (gas, electricity and heat) are getting intertwined. That means we can choose the best option at any given moment: burn some extra gas to produce electricity, or use excess power to generate heat, or start producing aluminum blocks. Will batteries have a place in that system? Sure, they too. Let the industry develop new battery technologies, and let's see what flexibility options will win. Governments now tend to make a choice in a too early stage, they say for example: the future lies in the combination of electric transport and battery technology. And then they subsidize that combination with 1500 euros per ton of CO2 avoided. I think that is a dangerous strategy. Look at the enormous amounts of demand side flexibility that industry can deliver. Do not say beforehand what technology will win, create a level playing field and let the market players decide.

Of course, we need a market for flexibility, that does not exist yet. It will have to be created. I think we should aim at real-time pricing for energy, on the spot prices. And it is a government task to organize that market.'

(continued on page 2)

Editorial

This is a time when many certainties are put to doubt: labour, health care. And energy. The last 24 months it seems we are fully confronted with our fragile energy dependency. The Dutch gas supplies are discussed, two Belgian nuclear power stations shut down and the German *Energiewende* making energy giants take severe measures. Every European region has its own energy topic, with different angles. EU is developing a policy for an integrated market and strong cooperation on an international level. This is what binds us: the quest for local, clean and affordable energy solutions, facilitating economic activities. Over the last few years e-harbours has proven to be a strong brand on this topic, attracting attention of a wide variety of stakeholders within EU, Africa, Asia and the America's.

More and more the customer is aware that energy is not as common as it has been. This might affect our economic position on a scale beyond imagination. For the early adopters this is a strong driver to anticipate a change of behaviour. These early adopters are the smartest regions; regions where companies already started cooperating, relying on their trust and shared interests, the strongest network in their own micro-cosmos. Not with a blue-print, but with an open mind and curious to new markets and services. The e-harbours comes to an end, but in fact we're just starting with creating a new 'energetic society'.

Dick Emmer,
Alderman Sustainability of the Municipality of Zaanstad

(continued from frontpage)

The driving force

'Who makes sure that the new energy systems we need are effectuated? Someone has to provide the driving force. The Dutch government is reluctant to give the guidance and install the incentives that are needed. Look at the slow development of district heating networks: the government has calculated how vast the potential is of that sort of solutions. But when you do not influence the people and institutions that make the investment decisions, nothing happens. What we need now is a sort of revolving fund, where government cooperates with the pension trusts to get the long term investment going. Give those trusts the necessary guarantees and a reasonable rate of return.'

Public support for industrial ecology

'What I have seen up till now in harbour areas is that municipalities and port authorities play a very strong role in getting things realized. I believe very much in what Mariana Mazzucato calls 'The Entrepreneurial State', seeing that so many private innovations follow from public investments. A country like Denmark devised in an early stage, that the government had to manage the development of the energy sector. For example, by trying to attract companies that would complement the renewable energy produced. When you plan a wind park, why not try to attract cold stores that directly use the energy but can be switched on and off according to the wind regime? Perhaps it helps to provide them with some extra fiscal advantages. Does that comply with European legislation? I am not sure. We should find out where the limits are. And stretch the limits if necessary…..'

Issue: #8
Publication date: April 2015

Available for free download at:
www.eharbours.eu

Sign up for a free subscription at:
www.eharbours.eu/newsletter

Text: Sander Kooistra

Photo: E-harbours (where nothing else stated)

Production: LassooyDesign BNO, Wormerveer

The e-harbours project is financially supported by the Interreg North Sea Region program.

Virtual Power Plant in Hamburg

Massive balancing project links the city of Hamburg with the surrounding region

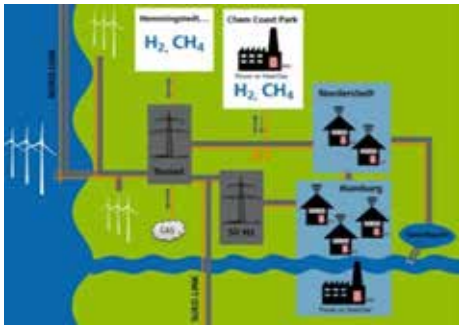
The City of Hamburg is one of the contenders for a prestigious project that could have a vast influence on the future of the German energy sector. Together with the neighboring region of Schleswig-Holstein, the city wants to investigate all options to keep theregional energy system balanced. The scale of the project is massive, involving existing wind parks onshore and offshore in Schleswig Holstein, hundreds of businesses in the Hamburg region that can offer flexibility in their uptake of energy, and thousands of households with smart metering systems. Moreover, facilities are included that store energy in the form of gas, heat or water power. These components combined form what a Smart Grid-specialist would call 'a Virtual Power Plant', that can cope with the intermittent nature of a renewable source like wind power.

The German 'Energiewende' is progressing so rapidly, that it becomes ever more complex for the network administrators to guarantee the stability of the energy supply. As the share of energy produced by wind turbines and PV systems increases, the need for balancing mechanisms grows even faster. The German government has announced it will choose two 'showcase' projects that investigate how the energy system can be kept stable, and that subsequently can be can scaled up to the rest of the country. One of the 'Schaufenster' projects will be in the field of solar energy (most relevant in the South of Germany), one in the field of wind power. Hamburg and the surrounding area consider themselves 'an ideal region' for the wind project. The project proposal states: 'the region offers a constellation, that will be typical for future structures in the country.'

Impressive infrastructure

The combination of stakeholders and systems that Hamburg and Schleswig-Holstein can offer is impressive indeed. The extensive wind parks in the North of Germany will be connected with big consumers of energy in the Hamburg harbour area and in the 'Chem Coast Park' of Brunsbüttel, the most important industrial estate in Schleswig- Holstein. Brunsbüttel until recently housed a nuclear power plant, which means that a vast electrical infrastructure is available, that now will be employed to organize a flexible and adaptive system. To help the system cope with the variability of wind and solar energy, a number of storage techniques is available in the region, from old-fashioned hydro electrical storage (water pumped up into an artificial lake) to new Power-to-Gas techniques producing hydrogen.

(continued on page 4)



Developing new structures
But that sort of technical solutions do not form the core of the project. The real goal is to develop new social and economic structures that can sustain a more flexible energy system. It is about developing markets for a commodity like 'flexibility', and defining new roles for different stakeholders like consumers, industrial production facilities and energy companies.
One of the big question is for example, how to get stakeholders interested in the energy supply, that traditionally are not involved – like most industrial companies. How can we persuade them to invest time, money and perhaps even their reputation in devising an energy system that is sustainable and future-proof?

Although it is clear that Hamburg and Schleswig-Holstein are very strong contenders for this prestigious project, it is not yet decided they will get the permission to build the 'showcase wind'. The decision follows later this year.

Check the website www.eharbours.eu for updates.

Highlights from Urban Magma

The conference Meeting Point Urban Magma in Malmö, Sweden (March 18/19th), focused on two themes. First: how can cities and regions help to create successful international business clusters, that develop and implement the clean technologies we need to make our cities sustainable?

Both the presentations of keynote speakers and the debate in the breakout-sessions pointed towards the same conclusion: more and more municipalities, regions and port authorities choose an active role in stimulating business clusters. They go beyond the classical activities (stimulating contact between companies), trying to influence location choices, and searching actively for companies that can fill in white spots in technological clusters. Some local authorities even think about investing in those 'missing links'.
The second major theme of Urban Magma was industrial symbiosis. Sweden can show at least five successful projects on industrial symbiosis, of a complexity and size comparable to the famous Danish example of Kalundborg. In most of these projects district heating systems – highly developed in Sweden – played a fundamental role as transporters and storage of energy. More and more, applications are found for excess heat at lower temperatures (agriculture, fish farming), enlarging the scope of the projects.

Programme and presentations of the conference can be found at www.urbanmagma.se/meetingpoint2015