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The Newsletter is distributed by YES-DC to their members. Subscription is free of charge and the newsletter can also be downloaded from our website. For any further questions or suggestions feel free to contact us.

Board member 2010 – 2011

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Chairman's Foreword

New technologies for the future

The most interesting part of being a Young Energy Specialist is that we are – in my modest opinion – the future. Our future – our common future – will be nothing like life has always been. Without us and the things we are meant to accomplish, the world is going to stop turning. With us it might just start turning a little bit faster. Why? Because we innovate. We bring the energy technologies of the future that will allow us to cover our ever increasing energy demands, to cover our ever increasing problems of development, our ever increasing populations. And that is what brings us at the exciting frontline of human development.

Being there is like running a never-ending marathon and running out in front, with tons of people following closely behind, their breath in our necks. If we trip, all hell will go loose as a massacre of falling people will follow. It gets even more difficult as none of the people behind us can pass, but they do continuously start running faster, and thus so should we. Fortunately we can! We can thanks to the mesmerizing innovations of some of the brightest among us.

In this newsletter we will discuss some of these developments – realistic developments –, from innovative and surprising wind energy to the newest forms of biomass. From project development tools, to an update to what our common future should look like. And the best part: these developments are not even futuristic; they are actually here, to be implemented in the coming years.

If you want to see how it get's implemented, be sure to join our entrepreneurship evening in November. But if you want to learn more about some of these technologies, be sure not to miss this newsletter!

Enjoy and hope to see you at our next meeting,

Pepijn van Kesteren
Chairman

Our Common Future 2.0

Thijs van Wijk – Alliander

As young energy specialist I guess you are all familiar with the “Our Common Future” - or Brundlandt - report. This report, written in 1987, dealt with sustainable development and the change of politics needed for achieving that. It not only defined the need for sustainable development, it was the report in which for the first time the term sustainability was defined!

At the Radboud University Nijmegen professor Jan Jonker came across this document in his archive, blew of the dust and thought; “well, this was a nice report. But quite outdated now, why don’t we make a new one..?” And so, or maybe a bit less romantic, the project Our Common Future 2.0 started.

The principal report was written by scientist all around the world in a time where internet was still in its infancy. Nowadays we can connect instantly to anywhere/anyone in the world. To harvest the human potential created by these new communication means, the new project was set up as a, so called, crowdsourcing project. This means everyone who is interested and has some spare time can join the OCF2.0 project freely and we all work collectively to the goal of creating a book which portrays the road towards an optimistic future in which the problems in 19 different theme’s have been (partially) solved.

Everyone can join one of these 19 themes. We at Alliander, the largest energy distribution grid operator in The Netherlands, have volunteered to facilitate the energy theme. Because it is a crowdsourcing project we don’t lead the group, we help the group to operate as one, e.g. by organizing meetings and making sure everyone can access our communication means: Hyves and Google Docs.

The project kicked off the 7th of September. We’ve started this day working with our core group, which consists of about 20 people, all from different directions, companies and jobs, but all with a common interest in sustainable energy. With this group we have the responsibility of creating the documents, making sure the outside world knows about the project (making lots of noise, as Jan Jonker called it) and listening to the outside world (including you!).

So if you are interested in joining us in our quest of creating a roadmap to a more sustainable energy future you can connect to our Hyves page to join the discussions in our Forum. You can find us at ocfenergie.hyves.nl. Information about the other 18 themes can be found on www.ourcommonfuture.nl and on ourcommonfuture.hyves.nl. It’s all in Dutch by the way, but feel free to start an English discussion.



Innovative Biomass: Torrefaction vs Pyrolysis

Dagmar Zwebe – BTG

YES-DC can look back at another successful activity on the 31st of August 2010. We came together in Utrecht with the Directors of Topell and BTG Bioliquids, two experts within the field of Torrefaction and Pyrolysis. Robin Post van der Burg kicked off with an interesting presentation on the developments of their 60.000 ton/hr torrefaction unit in Duiven and gave some ballpark figures on the developments of their company and sales. Focus is definitely on scaling up, which is relatively easy with their torbed reactor according to Robin. Focus is also on wood and wood residues in for example the United States.

Unfortunately the interesting discussion had to be stopped by our moderator Martin Juninger (University Utrecht) to give both speakers an equal opportunity to elaborate on their technology. Gerhard Muggen, managing director BTG-BTL discussed with the YES-DC members the developments of the pyrolysis technology in the Netherlands and the way towards biorefinery. Focus was mainly on all opportunities created with the production of pyrolysis oil, which goes beyond electricity and heat. Furthermore a lot of attention was going to sustainability issues, which are becoming more and more important.

The discussion after the presentations showed that, besides one young professional who believed more in the conventional existing technologies, all others in the room agreed on the fact that both technologies will develop side by side. The market is big enough for both technologies. Some of the comments from the YES-DC audience that were made on this matter were:

- Both technologies are in the same stage of development (first large scale commercial units are currently under construction)
- Feasibility of each technology depends on the region/country and on the biomass feedstock, therefore each will have its own focus area or biomass.

- Local content should be large for both technologies to create local growth for the economies (when talking about biomass rich, less developed countries)
- Besides the application for Fisher-Tropsch, both products produced aim at different markets. Torrefied material is mainly for the replacement of coal, where pyrolysis oil is more focused on replacement of other biofuels (HFO, Diesel) or other high value fossil fuels, and on the long term for biorefinery purposes.
- Focus should be on using the energy locally as much as possible, and try to transport the energy carriers as little as possible.

When discussing sustainability, some (small) fire and debating started. Both technologies are self-sufficient in energy demands and production (depending on the requirements of the torrefied material). With pyrolysis the ashes and minerals stay in the country of origin and can be used as fertilizer. Robin countered this issue with the remark that of every 100 ships of torrefied material 1 or 2 could easily return from Europe to the country of origin with the ashes. Furthermore Gerhard acknowledged that in both technologies the weakest point is the transport and storage of the materials.

After the “official meeting” we continued the discussions in a bar on a more decentralized level. Both speakers and YES-DC members enjoyed this opportunity and Wednesday we all started the working day with a shortage of sleep.

Interested in the presentations? Send us an email at info@yes-dc.org

The Power Plane: Alternative to wind mills

Bas Lansdorp - Ampyx Power

Ampyx Power is a young company from The Hague developing the PowerPlane, a machine that can generate power from the wind at much lower cost than conventional wind turbines, comparable to fossil fuel electricity production.

The PowerPlane

The PowerPlane generates energy by pulling a cable from a drum with a glider plane. During the power production phase the aircraft pulls a line off a ground-based winch, rotating the drum. During cable extraction, the aircraft flies fast across the wind to generate a high tension in the cable. This is illustrated in Figure 1.

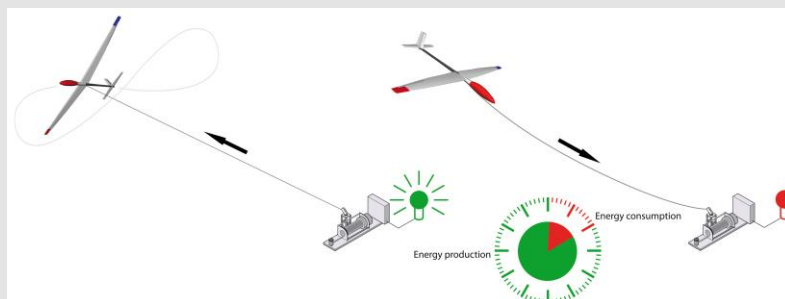


Figure 1: Principles of the PowerPlane concept

To achieve a periodic power generating cycle, the cable is retrieved by driving the generator in an opposite direction while flying the aircraft down in a dive. During the dive the tension in the cable is very low, resulting in low power consumption during retraction. In this way, net energy is produced over one cycle, which is then repeated. Pattern flying and cable reeling is fully automated. The PowerPlane system includes a mechanism that can start and land the aircraft autonomously.

Advantages

The PowerPlane delivers significant advantages over existing wind turbine technology. It allows conversion of wind energy into electricity at significantly lower capital investments as well as total costs per MWh produced than current wind technology. Full generation costs (including capital costs) are highly competitive with coal and gas generated electricity. As winds are stronger and more constant at higher altitude, power output of PowerPlane systems is more constant than of conventional wind turbines, thus reducing balancing costs which are inherent to wind energy. Finally, the PowerPlane system creates a new market in many locations where the wind at ground level is insufficient to deploy current wind technology, and offshore where the PowerPlane is much more economical to install because of the lack of the tower.

Status

Ampyx Power was founded end of 2008 by Richard Ruitkamp and Bas Lansdorp, experts from TU Delft Kite Power Team. 2009 funding was secured from angel investors and subsidies for the start up phase and the development of prototypes. Funding for 2010 – 2011 was recently secured from the Norwegian state utility Statkraft - Europe's largest producer of renewable energy - and angel investors. This investment was supplemented with a subsidy from the European Fund for Regional Development through the "Kansen Voor West" program from the City of The Hague. Ampyx Power has a strong team with extensive experience in design and control of high altitude wind power systems, control algorithms, autopilot electronics and hardware. Currently, 7 people are working in Ampyx Power.

Ampyx Power has built a 10kW demonstrator system (Figure 2), and has a test location in the Noordoostpolder with a permit of Inspectie Verkeer en Waterstaat to conduct PowerPlane tests up to an altitude of 300m. The PowerPlane ground station is connected to the power grid and can deliver power to the grid during flight tests. Ampyx Power is currently working on automation of the PowerPlane.



Figure 2: The 10kW PowerPlane in action

Airborne Wind Energy (AWE) is an rapidly emerging industry with already several competitors in e.g. Germany, Holland, Italy, Canada and the USA. Germany and Ireland are considering a special feed in tariff for AWE, to encourage the development of this industry.

Development path

Most of the system's hardware components (glider plane, winch, generator and cable) are based on existing technology with specific innovations for application in the PowerPlane. Technology development concentrates around development of the PowerPlane control systems. The technology status allows Ampyx Power to develop a commercial PowerPlane in a short period at low cost. Market introduction of a 1MW commercial PowerPlane system is scheduled for 2014, while revenue generating prototype and pre-commercial PowerPlane wind parks are scheduled to be in operation as of 2012.

While Ampyx Power is testing the 10kW PowerPlane in the Noordoostpolder, locations for a 100 kW prototype are already reviewed. More information can be found on the website:

www.ampyxpower.com.

Retscreen: Software for decision making in sustainable energies

Joop Neinders

The RETScreen Clean Energy Project Analysis Software is a leading clean energy decision-making software tool provided completely free-of-charge by the Government of Canada.

RETScreen is a comprehensive tool that allows engineers, architects, and financial planners to model and analyze any clean energy project, from PV to wind to energy efficiency. Decision-makers can conduct a five step standard analysis, including energy analysis, cost analysis, emission analysis, financial analysis, and sensitivity/risk analysis. Its functionalities have proven a true contribution to development of energy projects worldwide and has the significant potential of also helping the projects YES-DC members are working on.

The technologies included in RETScreen's project models are all-inclusive, and include both traditional and non-traditional sources of clean energy as well as conventional energy sources and technologies. A sampling of these project models include: energy efficiency (from large industrial facilities to individual houses), heating and cooling (e.g., biomass, heat pumps, and solar air/water heating), power (including renewables like solar, wind, wave, hydro, geothermal, etc. but also conventional sources such as gas/steam turbines and reciprocating engines), and combined heat and power (or cogeneration).

Fully integrated into these analytical tools are product, project, hydrology and climate databases (the latter with 4,700 ground-station locations plus NASA satellite data covering the entire surface of the planet), as well as links to worldwide energy resource maps. And, to help the user rapidly commence analysis, RETScreen has built in an extensive database of generic clean energy project templates.

RETScreens contributions to clean energy development

RETScreen significantly reduces the costs (both financial and time) associated with identifying and assessing potential energy projects. These costs, which arise at the pre-feasibility, feasibility, development, and engineering stages, can be substantial barriers to the deployment of Renewable-energy and Energy-efficient Technologies (RETs). By helping to break down these barriers, RETScreen reduces the cost of getting projects on the ground and doing business in clean energy.

The program allows decision-makers and professionals to determine whether or not a proposed renewable energy, energy efficiency, or cogeneration project makes financial sense. If a project is viable — or if it's not — RETScreen will help the decision-maker understand this: quickly, unequivocally, in a user-friendly format, and at a low cost.

What's next for this tool?

Though RETScreen is already an extensive tool that allows for rapid and cost-effective decision making, it is constantly being developed further. The basis for these further development are coming from the constantly changing demands of industry, to allow RETScreen to stay applicable for all energy projects. It will therefore allow the further development of renewable energy projects with minimized barriers on a decision making level. Among the current developments are the following:

- Net-Zero Energy (NZE) facilities
- Energy efficiency, heating, cooling, power & CHP models merged
- More detailed methods - heating, cooling & heat recovery
- Design support - expanded suite of engineering tools
- Integration algorithms – ice rinks, supermarkets & industrial processes
- Monitoring, Targeting & Verification (MTV) tool
- Full project cycle
- Reference with other facilities - benchmark database
- Integrated features
- API pilot - Google Map for climate data
- Multilingual – 35+ languages for software & data
- Help - Manual, e-Textbook, templates & distance learning material

Together with RETScreen the renewable energy sector will be able to develop further faster. If you have any questions on RETScreen, feel free to contact to Mr Joop Neinders at Joop.Neinders@ibth.nl. If you are interested in the program, it can be downloaded from www.retscreen.net On the 4th of November a training course is given in Utrecht, with exclusive € 75.00 reduction for YES-DC Members!

Brief news

COP 16

We are happy to share that six of our members will be participating as observers during the next Climate Change Negotiations round to be held in Cancun (Mexico) from November 29th until December 10th 2010.

YES-DC Networking activity – save the date: 15th of December 2010

Every year, at the end of the year, we have the networking activity where our younger members can meet our experienced (slightly) older members or where members in general can meet each other. It has been the best rated and visited evening activity of the last years, always a big success and with a more social character!

To make sure you will be there we already picked a date! So block the evening of the 15th of December for YES-DC!!!

RETScreen COURSE

Training course on analysing renewable energy and energy conservation projects with RETScreen:

On the 4th of November 2010 an introduction course in RETScreen is given in Utrecht (LaPlace congress center, near to the train station).

Costs: 375 euro ex btw (including meal (dinner or lunch?) and drinks). Members of YES-DC pay 300 Euro ex btw.