

James Barrett gets the inside scoop on a France-based CHP plant as the government announces more support for biomass energy projects

Peddalling towards CHP goals

Efficiency is a key component of any slick operation and the more you have of it, the slicker your final outcome will be.

It is certainly a vital part of renewable energy production as we all strive to squeeze out every last drop of feedstock potential, make sure transportation links are constantly accessible and that the internal machinery at our facilities runs smoothly all day, every day.

And, as the French government confirms more investment into future

biomass projects moving forward, one combined heat and power (CHP) plant situated near Rouen, Normandy by the River Seine could seemingly lead the way in using that backing to its fullest.

Vital link

The CHP plant is owned and operated by Cofely Services, a subsidiary of GDF Suez, which aims to generate and distribute local and renewable energy while also looking to improve the environmental impact

and energy consumption of buildings or industrial sites.

The plant currently produces a net electrical production of around 64,000MWh per year, which is equivalent to the yearly electrical production of 17 windmills. Meanwhile an annual steam production of 400,000 tonnes is sold off to nearby sunflower and rapeseed oil producer Saipol, which also dabbles in biodiesel too.

This project was borne after Saipol wanted to increase its steam production, via clean energy, by working

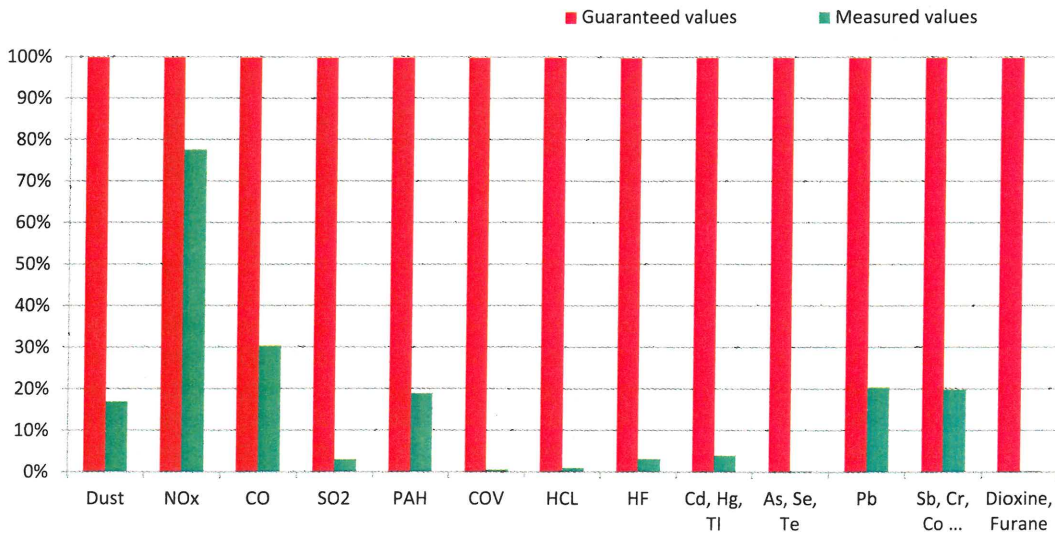
with Cofely Services. The overall facility production is powered by boilers from Denmark-based engineering and technology company Aalborg Energie Technik (AET) and its sales manager Frank Scholdann Lund reveals the numbers behind the first year of operation.

'The facility's overall global efficiency is close to 75% and the boiler is operating at more than 93% efficiency which is almost unheard of,' states Scholdann. 'Typically most boilers in this environment work between 89 and 91% efficiency so it



Basking in the sun: the Cofely plant produces around 64,000MWh annually

Measured and guaranteed plant emissions*



*Measurements verified by Bureau Veritas on behalf of Cofely Services, April 2012

is pleasing Cofely Services is further ahead on that curve.’

Scholdann puts that extra increase down to the simple fact that all its boilers are designed and made in-house, so it contains low pressure drops all the way through the system.

‘Other companies outsource some of their work but that can have a detrimental effect on projects sometimes. I compare our operation to a bicycle chain – if one link on the finished product is faulty, it will affect the whole chain or, in our case, our technology. We like to keep a direct eye on everything that goes into our work,’ he adds.

And the facility’s carbon dioxide emissions have a reduced level of 72,000 tonnes a year, the same number produced by 32,000 cars during the same timeframe, when compared to a gas boiler.

‘All of the verified emission figures come from testing and inspection body Bureau Veritas and show that all the emissions are well within guaranteed values (see above graph). I believe this is the result of the advanced AET combustion system,’ explains Scholdann.

Feedstocks used within the system are made up

mostly of woodchips (around 75%) and the rest made up of clean, recycled wood.

‘The biomass will only be sourced and transported from sites within 150km of the facility and, because it is situated right by the Seine, barges can be used as well as trucks,’ explains Scholdann, with shipping agency Sea Invest the preferred carrier for the project.

Future CHP growth

Being based in France, a country that seemingly puts both high value and confidence into biomass-based facilities is also a benefit for Cofely’s plant and other similar projects. Most recently, the French energy ministry selected 15 large-scale biomass projects as part of a plan to double energy generation from

the renewable source.

The French state has supported the creation of 4,395 heating stations running on biomass since the start of the 21st century, their installed capacity of 3,300MW equal to the power of three nuclear reactors. When it comes to the CHP sector however, France only has 15 sites throughout the whole country.

All those came as a result of successive tendering processes, of which there have been four between 2004 and 2011, but there are a lot of obligations to be filled by CHP projects in order to qualify.

‘Any wood supply contract would need to be able to fulfil any long-term agreement, minimum annual electricity production needs to be hit or global CHP efficiency demonstrated as examples,’ explains Scholdann.

Key aspects of the BCN CHP facility

- Boiler capacity : 55MW of power and 66 tonnes an hour of steam
- Biomass consumption: 160,000 tonnes a year (equivalent to approx. 27 deliveries a day)
- Construction budget: €55 million
- Length of commercial contracts: 20 years
- Global efficiency: 75%

‘All these constraints require long-term commitments from the heat consumer and can make the signing of steam supply agreements and financing closure complicated for industrial customers. The third tender process in 2009 flourished as it allowed projects above 3MW capacity, instead of 9MW or 12MW, to be involved with a majority of them supplying district heating systems.’ Results of the fourth process have yet to be published.

France’s ecology minister Delphine Batho pledged at the end of November that the government will continue to support the domestic biomass sector despite recent austerity measures and existing budget constraints. She promised that the French authorities want to make the development of renewable energies a major axis of their domestic policy.

A special fund dedicated to the renewable energy sector, launched in 2008 and potentially dispersing up to €1.2 billion over five years, will also be kept active. With more tenders announced, France is on track to meet its target of 17.2TWh of electricity from biomass by 2020.

‘The success of further tendering procedures remains uncertain if 12MW remains the minimum power output required for eligibility. A feed-in tariff does co-exist for projects between 5 and 12MW, with a price incentivised alongside the annual CHP efficiency,’ adds Scholdann.

‘However, the price level decreased by almost 10% from the start of 2011, which explains why only a few number of projects have been developed so far. The future of biomass CHP might be brighter if the next tendering documents release negative constraints which prevent getting financing of the projects due to unbalanced risk allocation.’ ●