

Uskmouth Power Station: What's going on?

Uskmouth Power station photo: Robin Drayton

Uskmouth coal power station was mothballed in April 2017 amid claims that it would soon be run on pellets made from mixed waste that would otherwise go to landfill. This briefing shows that these claims aren't credible, and that they may be masking plans to convert the site to run entirely on wood pellets made from virgin wood. A proposal that would be as disastrous for the climate as it would for forests and local air quality.

The good news is that the company responsible, SIMEC Atlantis, also happen to own the UK's foremost tidal lagoon experiments. Giving them a real choice as to where they put their investment. By calling the current subsidy system to account now, there is potential to stop a bad project and ensure new jobs in genuine renewables.

The Claims

In December 2017 The Financial Times announced that

*“There are plans to convert the Uskmouth plant to run on pellets made from a combination of wood chip and waste”.*¹

The former coal power station was mothballed in April 2017. Ideas for its conversion had been mooted for some years. In June

2015, the plant was bought by SIMEC, which is part of the Gupta Family Group. The Group also owns nearby steel mill, Liberty Steel at Newport. In December 2017 ownership of Uskmouth passed to a newly created entity, SIMEC Atlantis Energy Limited. The news was greeted by a number of national press stories about it's plans to

deliver innovative local energy supplies of both tidal and biomass for Greensteel production. There were reports that the power station would be used to provide low cost sustainable energy directly to the neighbouring Newport arc furnace, enabling the recycled steel plant to expand, creating hundreds of new local jobs.²

Are the Claims Credible?

The problem is that no one has ever run a UK coal power station of the type that exist in the UK on either pelletised waste. There are absolutely no indicators that it's possible to do so. Quite the opposite in fact.

The Trouble with Boilers

More rigorous sulphur dioxide (SO²) emissions targets have meant that for nearly a decade now, operators of Britains coal fired power stations have been desperate to find an alternative low-sulphur fuel. Drax, the UK's largest power station, has been at the forefront of this. In recent years Drax has invested more heavily in upgrading their infrastructure to fire on 'alternative fuels' than anyone else in the UK, as part of a project that has been ongoing for the last five years. They are now the single largest burner of wood in the world.³

Experiments carried out by Drax in 2012 show that their top of the range system is too sensitive to take even the wrong kind of wood. As they rather demurely explain:

“The use of biomass for combustion is not without its technical challenges. One of the most critical is that some of the non-combustible elements (such as alkali salts) within the fuel can have deleterious impacts when deposited upon metal tubing exposed within a boiler.”⁴

In trials during 2011 and 2012 they found that even with just 50% biomass (and 50% coal) “fault conditions were



encountered in terms of slagging, fouling and corrosion” In short, the wood feedstock they were using was clogging up and eating away at their boilers.

The operators of coal fired power stations at Ironbridge⁵ and Tilbury⁶ both tried to do coal to biomass conversion on the cheap and ended up closing after major repairs for serious fires. While the companies responsible

claim that no individual factor was a key player in either devastating blaze, wood pellets are widely recognised to be associated with risks of wood dust explosions as well as fires, including through self-ignition. These risks, and the costs associated with making the power stations compatible with the stricter post-2015 EU standards on emissions of air pollutants, resulted in their

Who's Who

SIMEC have owned the site until recently.

They are part of the **GFG Alliance**, an international group of businesses founded and owned by the Gupta Family.

The GFG Alliance also has an industrial company called **Liberty House**.

Liberty House are at the forefront of 'Greensteel' and bailed out Newports Steel plant in 2013 and rebranded it **Liberty Steel Newport**.

SIMEC group also already own an interest in **Tidal Lagoon plc**, the company developing tidal lagoon opportunities in Swansea and the north-west of England.

Atlantis Energy are a much smaller company with investments in Scottish tidal power. These include the MeyGen project in northern Scotland and the Wyre estuary project in Lancashire.

The nature of their partnership appears complex. The

company they've sought to create as owners of Uskmouth is called **SIMEC Atlantis Energy Limited** and was widely reported as being created in Dec 2017 but is yet to appear on the register at Companies House. The partnership was effected through a conditional share purchase agreement whereby Atlantis agreed to acquire the entire issued share capital of SIMEC Uskmouth Power Limited in on the basis that SIMEC receive 49.99% of Atlantis Shares.

The power station is due to open in 2020 and will sell all its power under two 20 year power purchase agreements to GFG Alliance companies. (ie, Liberty Steel Newport).

The deal also states that Uskmouth will receive fuel under a proposed 20 year fuel supply agreement with a joint venture company to be partly owned by a Liberty House Group company and partly owned by **Dutch recycling group N+P Group BV**. N + P are a small company who produce waste pellet fuel for cement production.

permanent closure.

Drax found that waste wood, wood with a lot of bark or wood from fast growing trees, corroded their equipment to such an extent

that it wasn't viable. They are currently burning highly contentious imports of pellets sourced from clearcut biodiverse coastal hardwood forests in the Southern United States⁷.

Given their distinctly lacklustre environmental reputation, it is safe to assume that they would have avoided doing so if they could in any way change this supply.

Dried Squished together Rubbish

So, what are they proposing to burn at Uskmouth? The announcement of the creation of SIMEC Altantis Energy Limited⁸ suggests that the plant will receive fuel under a proposed 20 year fuel supply agreement with a joint venture company to be partly owned by Liberty House Group and partly owned by Dutch recycling group N+P Group BV.

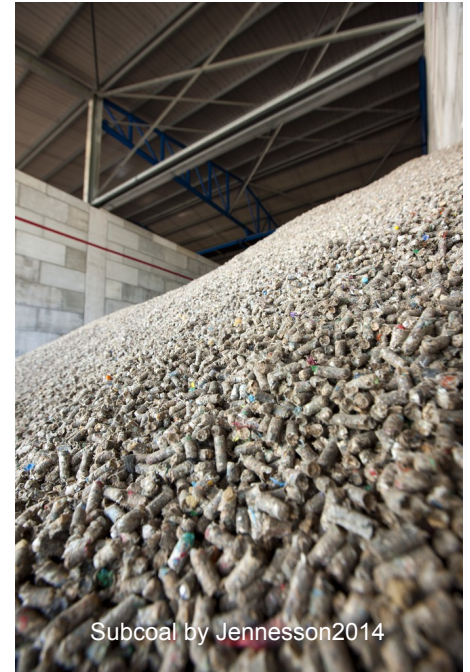
Liberty House group have no record of, or assets related to, the production of fuel. Which leaves the likely manufacturers as N + P Group BV.

So what are N + P proposing to burn? The only product available on their current website that could possibly be expected to be used as a coal substitute is called Subcoal, which is made of Solid Recovered Fuel and Refuse Derived Fuel, both of them derived from Muncipal Solid Waste⁹.

N + P talk about how they carefully select individual waste streams, yet there is no description of how their chemical content would make them viable as an alternative to coal in UK power stations. While an article in the cement industry press loudly vaunts the two tests of their product in cement production, there are no examples of them being used in any plant designed for electricity generation.

When asked to expand on the unique features of Subcoal, the company says:

*"First and foremost they are, obviously, solid fuel pellets. ... our pellets look more like an engineered fuel than SRF or RDF... It helps convince governments and the wider public that this is a 'fuel' not 'waste'. ... Subcoal pellets are very dry in comparison to other alternative fuels, with around 5% moisture"*¹⁰



By the companies own admission, the key novel factors of the product are essentially that it is dried squished together rubbish.

Not Enough Fuel

Assuming that unpublished trials have been conducted demonstrating the feasibility of using of Subcoal in UK coal power stations, how ready are N+P to roll the project out? How much fuel would they need to be producing? The current projected output from both N + P's plants in 2018 (one still under construction in the UK) would amount to 268,000 tons¹¹.

It is notable however, that despite their readiness to be direct about the markets they have in their sights, and the public announcement of the deal with Liberty Group, N + P appear to have made no mention of their plans to supply Uskmouth. They do make one carefully couched reference to supplying a power plant in a recent article:

"For example, we have had

*discussions with a power plant in Europe to supply it with Subcoal pellets. If the plant converted just two of it's 110MW units to use the pellets, it would need 1Mt/yr of pellets.*¹² [1 million tons per year]

If it is Uskmouth they are referring to then it seems N + P are at far from certain about the deal and are yet to achieving little more than a quarter of the the capacity they would require to supply a power station of Uskmouths size.

Not Enough Money

Uskmouth has been regarded as something of a financial liability for some time. In May 2014, SSE, the power station owners at the time announced that it would close. In the press release they conceded that:

"Uskmouth's future operational regime had been an area of uncertainty for SSE over the past 12 months as the asset neared the end of its working life and the ongoing financial position of the station continued to be challenging... Built around 50 years ago, Uskmouth is the UK's oldest and least efficient coal fired power station¹³."

So, what investment is being proposed to get this plant 'at the end of its working life' back in a position to burn unpredictable new feedstock? A news article from Feb 2018¹⁴ states that £200



million has been set aside for the task. This huge amount of money is laughably insufficient when it comes to converting a former coal fired power station in the UK.

Again, extrapolating from the Drax experience¹⁵, SCIMEC Atlantis are setting aside less than a fourth of the funds required to do the job – yet Drax is the newest coal power station in the UK, and more efficient than Uskmouth.

Would a waste powered station be a good thing?

If dramatic leaps forward were made in this field, what would a fuel made of mixed waste mean for sustainability, international emissions targets and local air quality?

Climate Change From Burning Waste

Unfortunately, for every tonne of waste burned, typically more than one tonne of CO² is released into the atmosphere. This means that waste incineration has a higher carbon intensity than the conventional use of fossil fuels.¹⁶ There is also evidence to suggest that incineration of waste, rather than dealing with rubbish for which there is no other current solution, instead incentivises against recycling.¹⁷

Air Quality impacts from Burning Waste

What might be released into the local atmosphere if waste was burnt for fuel? The best evidence to draw from in this area are modern waste incinerators, which despite being fitted with expensive filters still emit significant levels of dioxins

and furans, NO_x and ultrafine particles that can be harmful to human health. Dioxins are a group of chemicals that are carcinogenic and act as endocrine disruptors.¹⁸



Would a Wood Burning Station be a good thing?

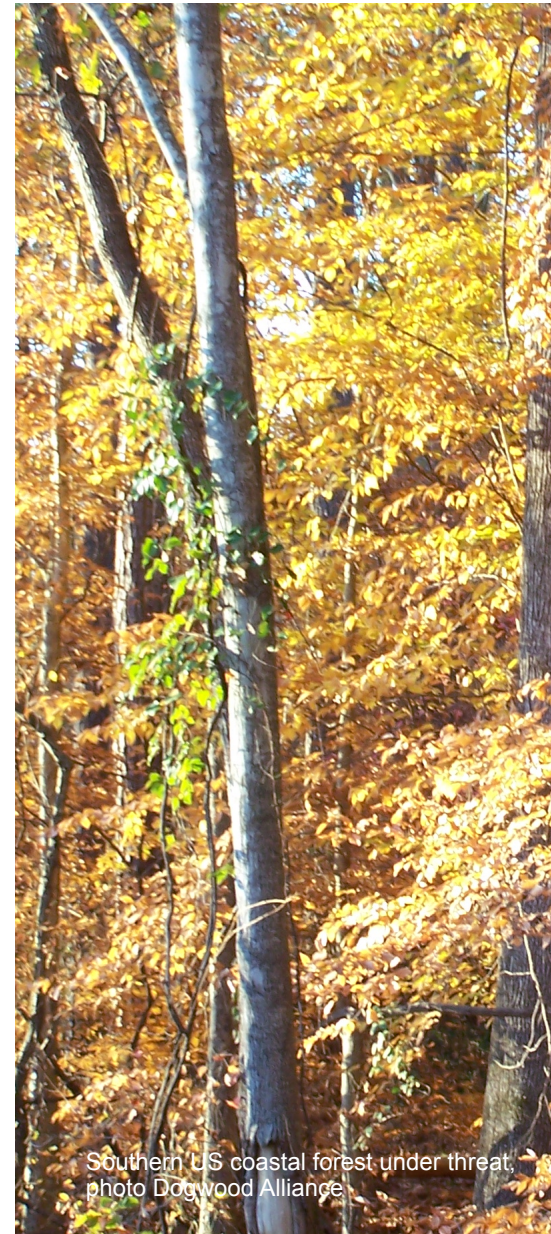
There is reason to believe that ultimately SIMEC plan to convert Uskmouth to run on burning wood. They certainly have form in terms of presenting it as a 'renewable' source of power. On 26th July 2016 they formally opened a 9MW Peaking Plant to generate electricity from biomass at Liberty Steel's facility in Newport.¹⁹ It was proposed as one of 14 such stations under their 'Greensteel' plan. At the time they expressly stated that they intended to convert Uskmouth to run on biomass in the future.

Climate Change and the Problem With Burning Forests

Burning wood for electricity is also no less disastrous for the climate than burning coal. Per unit of electricity, biomass emits more CO² from smokestacks than burning coal does.²⁰ Biomass supporters claim that this CO² should be ignored because it will be absorbed by newly planted trees. But trees take decades to grow and minutes to burn. Clearcut forests may never be able or allowed to regrow.

Biomass pellet production is driving the destructions of forests

which would otherwise help mitigate against climate change, as well as destroying global biodiversity hotspots. Coastal hardwood forests in the southern US (currently the UK's main biomass sourcing region) are amongst the most diverse forest and aquatic ecosystems outside the tropics. These critical ecosystems are being clearcut, with increasing amounts of the wood being turned into pellets²¹. The communities around these pellet mills suffer noise, dust and air pollution.



Southern US coastal forest under threat, photo Dogwood Alliance

Air Quality impacts from Burning Wood

Burning wood has serious impacts on air quality. A Freedom of Information request to the Environment Agency in 2017 revealed that small particulate (PM10) emissions by Drax had more than doubled since the power station began its conversion to biomass.²²

PM10 and the even smaller PM2.5 are tiny particles less than 10 or 2.5 microns respectively in length, and are especially

dangerous because their small size means they can travel deep inside your body, in some cases entering your bloodstream and organs. They are linked to a wide range of health problems including cancer, heart disease and neurological problems. However, they are poorly monitored nationwide and legal limits in England and Wales are 2.5 times the limit recommended by the World Health Organisation²³.

The Bottom Line

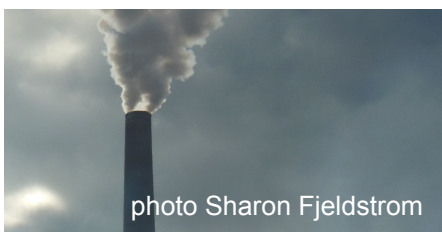


photo Sharon Fjeldstrom

At the moment, all the evidence suggests that reopening Uskmouth would mean either its continued unsustainable use of coal, or a conversion to burning biomass from slow growing trees, in the same way as Drax does. Neither of which are ecologically, socially or economically viable.

It Doesn't Have to be This Way

They're not sure what they want to do

The good news is that it doesn't have to be this way. In the last three years SIMEC have made a number of announcements for how they plan to go forward with energy generation at the site which vary quite considerably and have some positive options in the mix.

In June 2015 when they bought the plant SIMEC announced that they intended it to be:
*"converted to use biomass energy generation using the latest pyrolysis gasification technology, as well as looking at developing solar and wind power for the UK grid."*²⁴

In March 2016 the South Wales

Argus reported that SIMEC's strategy for Uskmouth. ²⁵

"centres on the creation of major power-generating capacity based on Advanced Conversion Technology, that turns waste into syngas... This is in addition to biomass generation and tidal lagoon power from the neighbouring Severn Estuary. Later this year the company hopes to begin thermo dynamic cracking at the site, converting auto-waste into energy."

Despite the confident assertions and timeframe, thermo dynamic cracking has never apparently materialised. Neither did

Pyrolysis Gasification, which was mentioned in 2015 and then dropped.

Along side these there seems to be both a flexibility of thinking, and at least a mention of solar and wind. The joining of SIMEC and Atlantis also makes the group responsible for the UK's two foremost Tidal Lagoon experiments. These projects in the Severn Estuary and the Pentland Firth are innovative power generators that may prove to be genuinely sustainable. Critically, the biomass based schemes, and the no burn renewables projects, rely on government subsidy.²⁶

Subsidies for What?

Subsidies for new solar and onshore wind were scrapped in 2016, and the government is still deliberating on it's backing for tidal lagoon work. The Scottish Government has accused Westminster of renegeing on promising to ringfence support for wave and tidal technologies.²⁷

Subsidies for biomass are dependent on the wider public not becoming aware of the anomaly that carbon emitted from burnt

trees isn't counted in emissions budgets.²⁸

SIMEC have said that they would require government subsidies to go forward. In March 2016 the South Wales Argus reported that.

*"the Group explained that the speed at which the ambitious plans progress will depend on UK government support for renewable energy projects. ..."*²⁹



Artists impression of the Swansea Tidal Lagoon. credit 10:10

Conclusion

At the moment the future of Uskmouth is uncertain. It seems that its new owners are openly seeking subsidies to proceed, and talking a big game in doing so.

Yet their current proposal around waste doesn't appear credible, and any back up plans to use biomass more than loose their green veneer under scrutiny.

The people of Newport and surrounding areas have a lot to gain and a lot to loose from the future of Uskmouth.

Calling SIMEC Atlantis to greater account now could not only deter a damaging and high risk foray into waste and wood burning, it could also provide further leverage to secure subsidies for renewables experiments like the Swansea Tidal Lagoon. A timely

project that, if effective, could boost the economy along the South Wales coast as well as contributing to the national grid which is currently powering the Newport steelworks.

SIMEC Atlantis are after all the company who have everything: a terrible current plan, and the potential to help drive forward local employment and genuine renewables.

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