

**Glenrothes Biomass Energy's  
proposal for a biomass gasifier at  
Southfield Industrial Estate:  
3 Areas of Concern**

Almuth Ernsting, Biofuelwatch, 25<sup>th</sup>  
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[www.biofuelwatch.org.uk](http://www.biofuelwatch.org.uk)

# Concern 1: Impacts on Climate and Forests

- + In 2016, UK power stations burned >3m tonnes of UK virgin wood and >13m tonnes of imported wood;
- + The UK's total annual wood production is just 10.8 million tonnes;
- + Residues are in high demand and there are not that many – so most of the wood burned comes from whole trees.

# Where might the wood for a Glenrothes plant come from?



The Markinch power station burned 66,000 tonnes of virgin wood and 259,000 tonnes of waste wood in 2015/16, with waste wood sourced from as far as Kent (*Biofuelwatch photo, 2014*)

The developers want to use 200,000 tonnes of virgin and waste wood a year – but haven't said where they plan to get it from.

There is no spare wood left to source locally: RWE struggles to run it plant at even 60% of capacity.



**Typical wood sourcing for biomass power plants: Logs stored for Markinch biomass power station at Cardenden shortly before it opened (2014)**

# Climate impacts:



A plant that burns wood emits up to 50% more CO<sub>2</sub> than a coal power station for the same amount of energy

It takes decades for new trees to grow back and absorb that carbon.

According to figures contained in the UK Bioenergy Strategy, replacing coal electricity with electricity from wood from UK conifers (cut for this purpose) results in:

+ 49% more CO than coal over a period of 40 years;

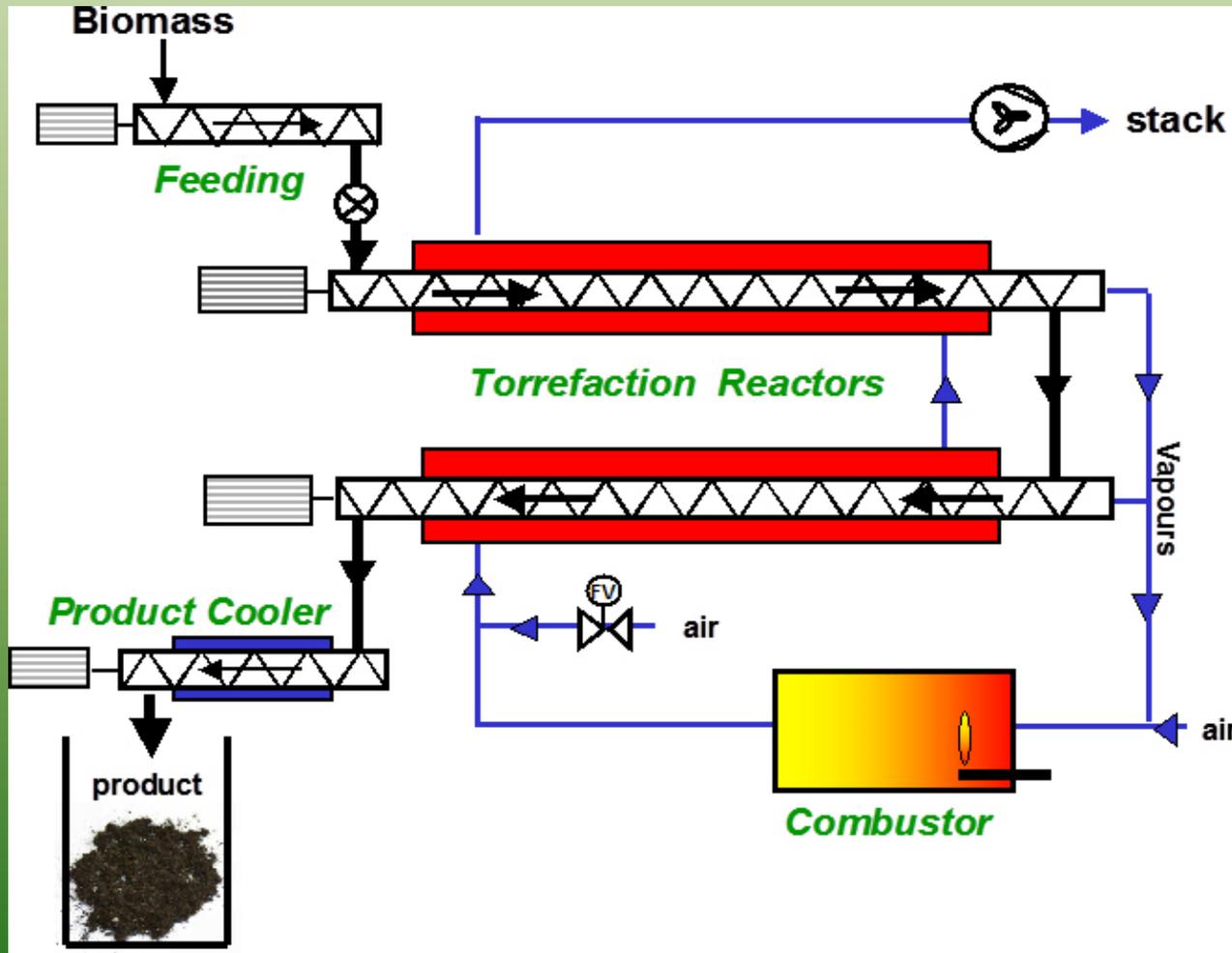
+ 80% more CO<sub>2</sub> than coal over a period of 20 years.

# **Concern 1: Unproven and inefficient Technology**

The proposal combines two experimental technologies: Torrefaction and Gasification.

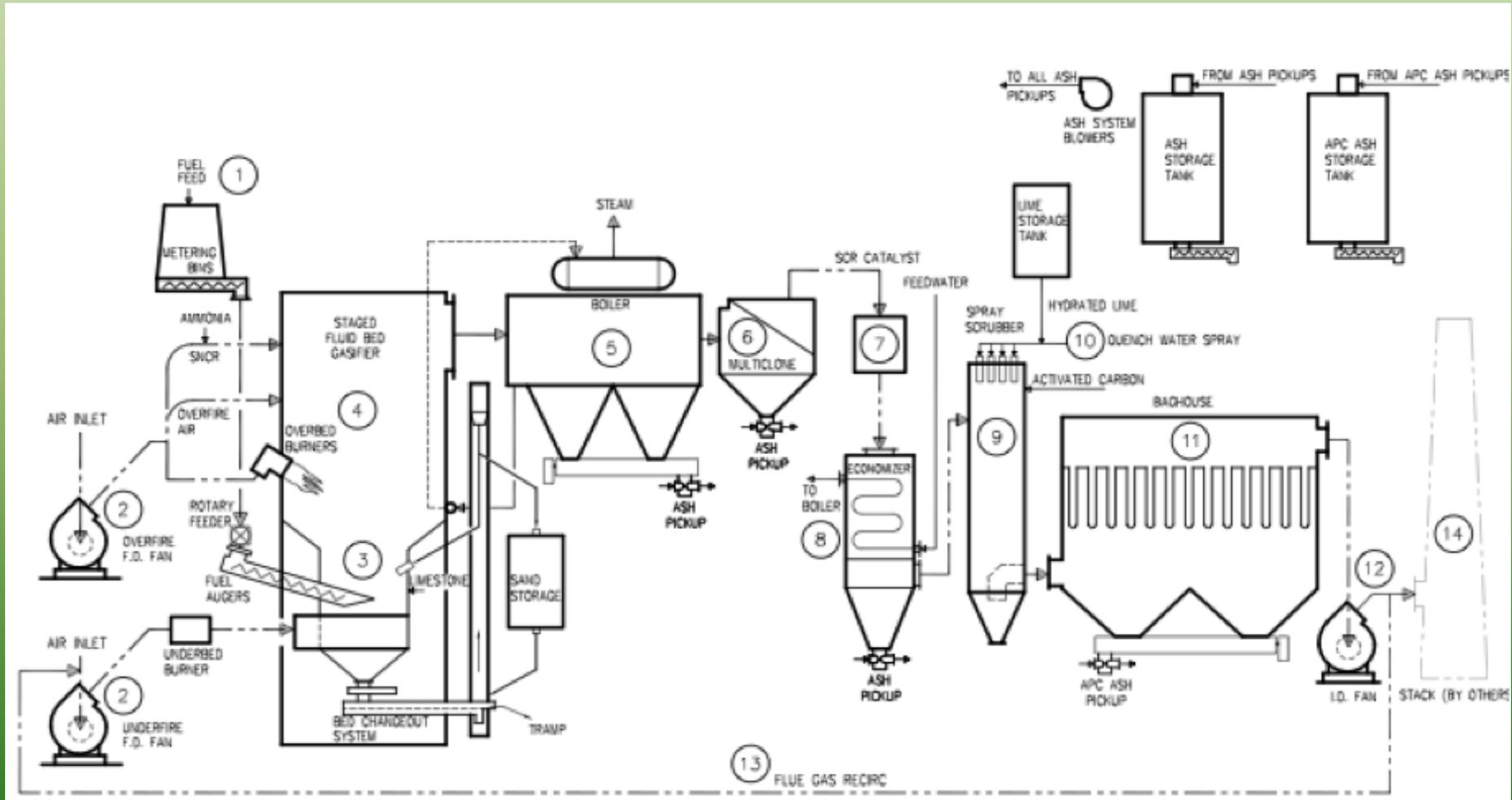
No company in the UK – and probably in the world – has ever tried combining those in the same plant.

# Proposed technology: Step 1 - Torrefaction



First, the wood is to be charred using a technology called “torrefaction”.

# Proposed technology: Step 2 - Gasification



Technical drawing from the planning application

“Gasification and pyrolysis are still considered to be emerging and **unproven technologies** for the treatment of waste biomass fuel. To our knowledge, there are very **few commercial scale** gasification and pyrolysis plants operating in Europe and world-wide...There are several cases where plants **failed to achieve** their design throughput or **air emission standards.**”

*2011 Report by Arup, commissioned by the UK Department for Energy and Climate Change*

“The maturation and market introduction of torrefaction technologies has gone slower than anticipated in 2012...It has been hard to fully prove the claims made earlier on product characteristics, and several companies have gone bankrupt due to inability to produce good quality product or due to a lack of buyers. “, *IEA Bioenergy, 2015*

# SEPA shares concerns about the technology

“Our greatest concerns about this proposed development relate to air quality. We are especially concerned as what is being proposed is **novel and unproven technology**, and it is located in a built-up area.” *(from SEPA’s objection to this planning application)*

# Key problems associated with gasification

- 1) Highly explosive and flammable gas: Risk of explosions and of a need to vent dirty gas straight into the air to prevent an explosion if pressure builds up;
- 2) Components of the plant being clogged up and corroding due to tar, causing frequent shutdowns  More pollution.

# Experience with waste and biomass gasification so far

- Over \$2 billion investment lost over 10 unsuccessful gasifiers, 6 of them in the UK;
- No example of a successful waste (incl. waste wood) gasifier;
- At least 10 biomass gasifiers built in the UK have failed due to technical problems – no evidence of any other one succeeding.

# The least efficient biomass plant ever?

## 2020 Routemap for Renewable Energy in Scotland:

“Biomass policy and support need to encourage the most efficient and beneficial use of this finite resource. For that reason:

Scottish Government policy supports the deployment of biomass in heat-only or combined heat and power plants, particularly off gas-grid, and to a scale which maximises heat use and local supply.”

Based on the figures given in the planning application, the proposed plant would have an efficiency of

**15.8%**

# How experienced is the developer?

- Glenrothes Biomass Energy is not a registered company – which may make the application incompetent.
- Sainc Energy appears to be behind the proposal. Sainc has not so far delivered any project.

***According to Companies House, Sainc Energy is fully owned by Kamaljid Singh Sood. Mr Sood***

- Is a director of Sainc Energy and its three subsidiary companies;
- Was a director of 8 different companies (only one related to energy);
- ***3 of the companies of which Mr Sood was director went into liquidation***, two of them during his directorship;
- ***3 other companies*** of which Mr Sood was director ***have been struck off the register by Companies House***, one of them during his directorship.

# Director of technical consultancy for the developer associated with failed gasifier schemes



Protest against the Newton Mearns waste gasifier proposal, which was stopped.



Director of GLP Ecotech, the technical consultants was director of several companies behind unsuccessful gasifier schemes, including the controversial Newton Mearns waste gasifier (Renfrewshire)

# Concern 2: Public Health

## Air Pollution:

Biomass power plants that burn virgin wood emit over 70 different pollutants, including nitrogen oxides, small particulates and Volatile Organic Compounds – some of which are linked to respiratory and heart disease, others to cancer and birth defects,

**BUT...**

# ...as for air pollution from this particular plant



There is no experience with a plant of the type proposed in Glenrothes, which combines torrefaction and gasification.

# Why worry that a scheme like this might fail?

...Because of the experience with Scotland's only gasifier so far:  
Scotgen's waste gasifier in Dumfries



# Scotgen's gasifier was closed by SEPA in 2013 after....

- Hundreds of breaches of air emission limits;
- Dozens of noise complaints;
- At least 88 by-pass stack activations – i.e. Venting of dirty gas straight into the air in order to prevent an explosion;
- An explosion;
- A major fire and then...
- Failure to remove partially burned waste from the site....

**This was finally enough for SEPA to withdraw the permit.**

# Conclusions

- 1) The biomass power station proposed by Glenrothes involves an *experimental*, never successfully tested technology, raising *health and safety concerns*;
- 2) The plant would be *less efficient* than any other in the UK;
- 3) *Air pollution and wood dust* are public health concerns associated with biomass power plants and especial with gasifiers;
- 4) Wood would need to be trucked across very long distances since all available nearby wood is already burned at Markinch.