



CLASP.

Combustion of Biomass and Wastes

Nigel Blandford

Timber and Bioenergy

The Mersey Forest

Delivered by:



CLASP. **EnviroLink** **Quantum** **AECOM**[®]



Covered?

What is
Biomass?

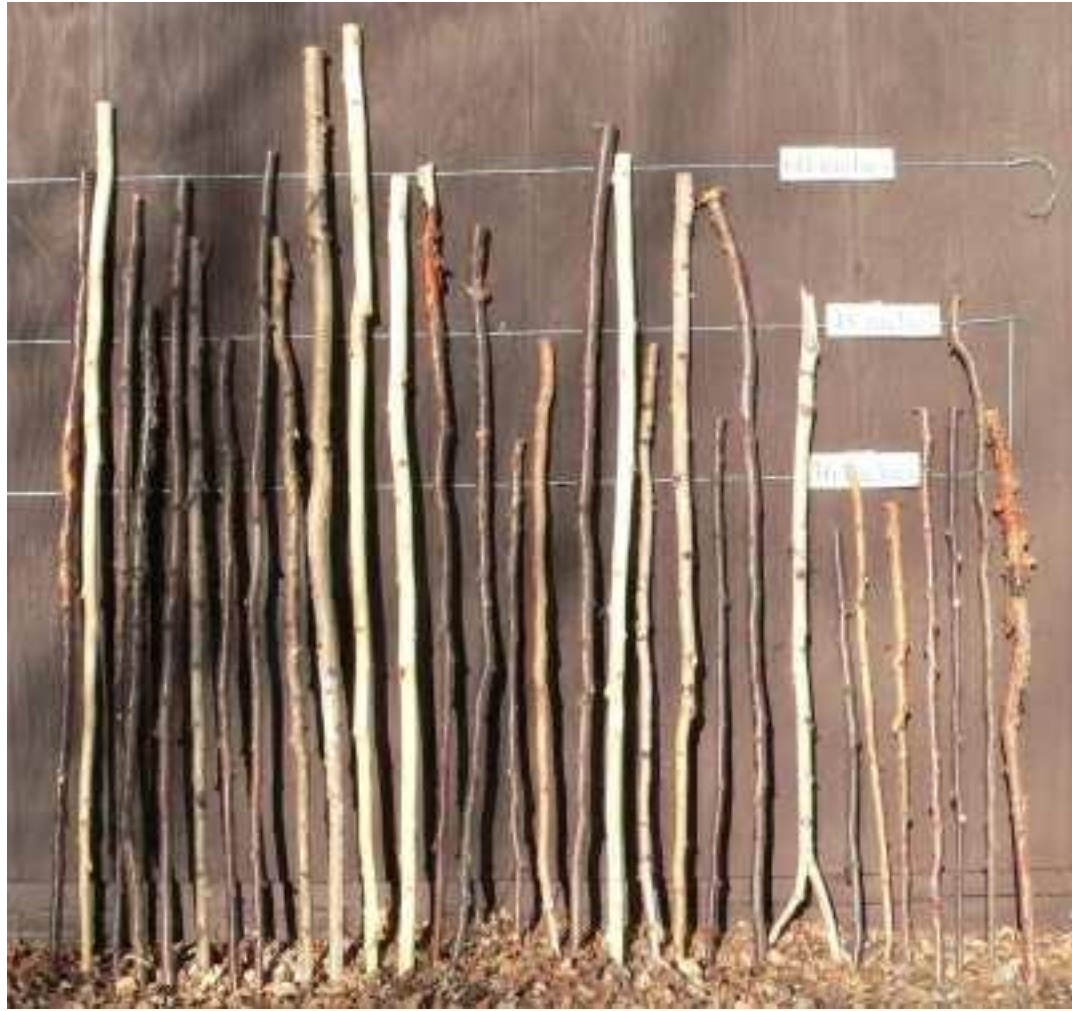
- Organic - Animal or vegetable
- Variety of sources including waste
- Solid, liquid or gas.

We will look at

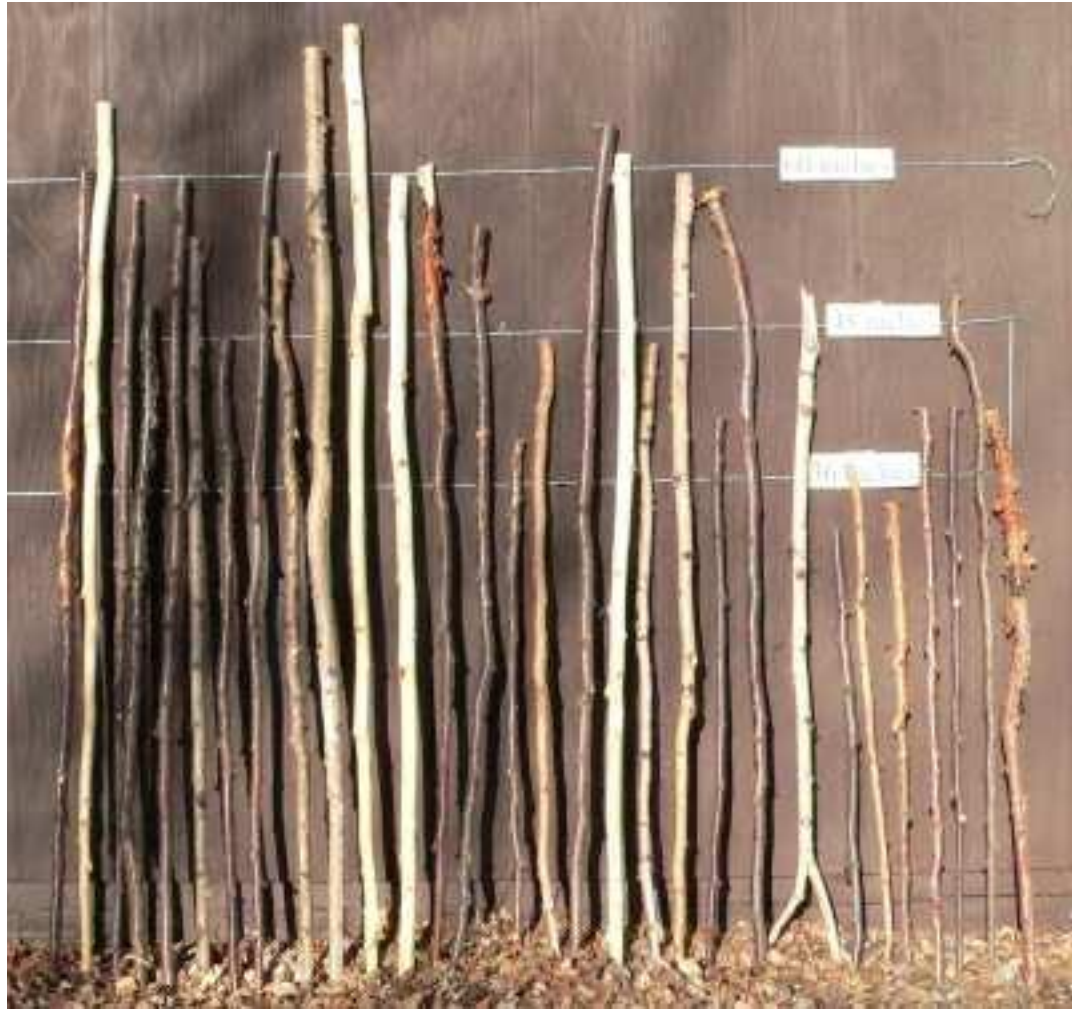
- Why are people wanting to burn stuff?
- How stuff burns
- The kit it burns in
- Planning policy considerations
- Air Quality
- Building Regulations
- Delivery, Storage and Reception

Why are people wanting to burn
stuff?









Landfill Tax

EU ETS (Emissions Trading Scheme)

CCA (Climate Change Agreements)

CRC (Carbon Reduction Commitment)





ROCs
Renewable
Obligation
Certificates

A game by
Reiner Knizia

INGENIOUS



LIVING
LIGHT
GAMES

A fun and challenging game for 1 to 4 brains!



Official
Game of the Year



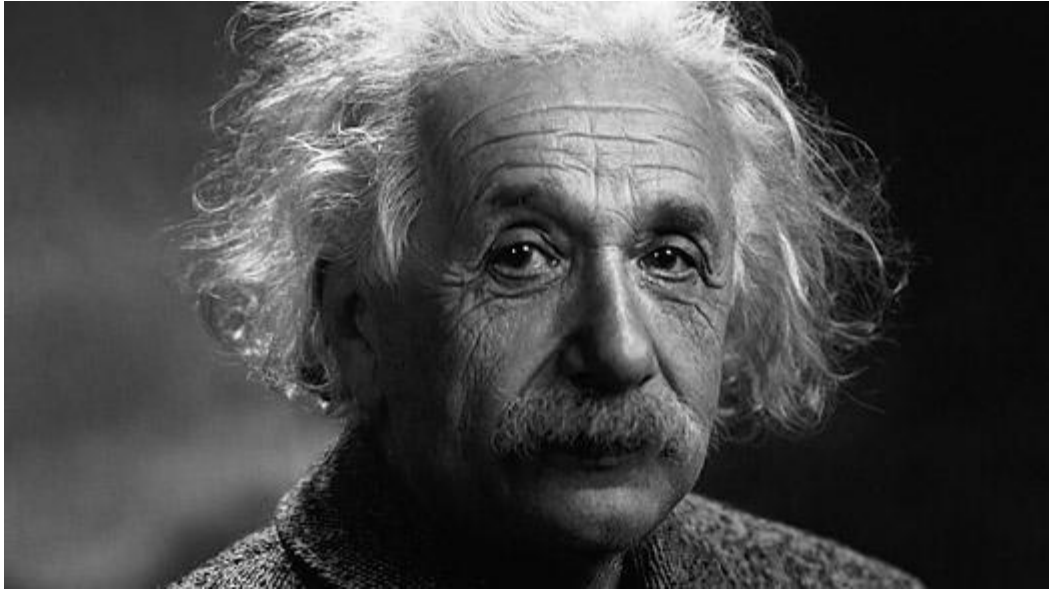
Official
Game of the Year





Wikipedia

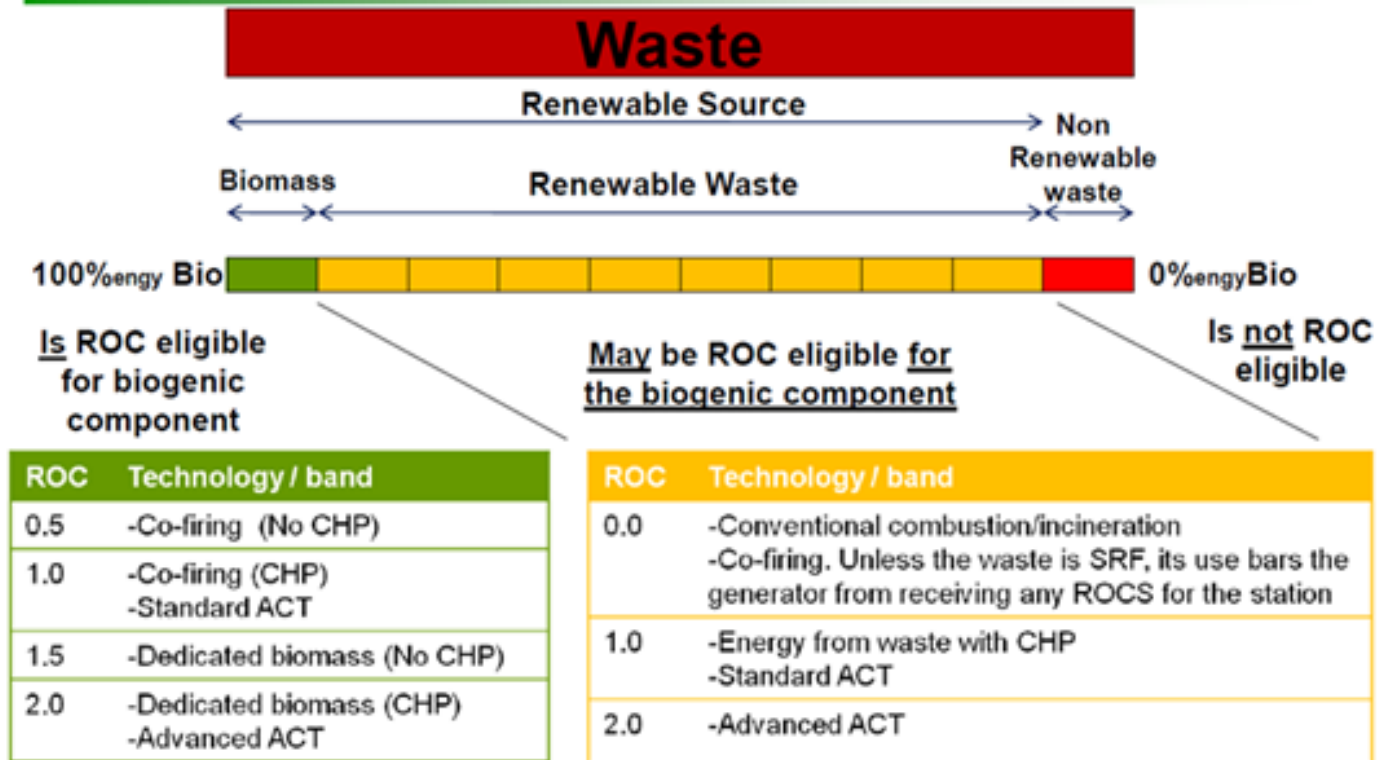
Renewables Obligation







Waste and the ROO - Biogenic Fraction



Must demonstrate biogenic fraction to OFGEM "accurately and reliably"



RHI
Renewable Heat
Incentive

Levels of support					
Tariff name	Eligible technology	Eligible sizes	Tariff rate (pence/kWh)	Tariff duration (Years)	Support calculation
Small biomass	Solid biomass; Municipal Solid Waste (incl. CHP)	Less than 200 kWth	Tier 1: 7.6 Tier 2: 1.9	20	Metering. Tier 1 applies annually up to the Tier Break, Tier 2 above the Tier Break. The Tier Break is: installed capacity x 1,314 peak load hours, i.e.: kWth x 1,314
Medium biomass		200 kWth and above; less than 1000 kWth	Tier 1: 4.7 Tier 2: 1.9		
Large biomass		1000 kWth and above	2.6		
Small ground source		Ground-source heat pumps;	Less than 100 kWth		4.3
Large ground source	Water-source heat pumps; deep geothermal	100 kWth and above	3		
Solar thermal	Solar thermal	Less than 200 kWth	8.5	20	Metering
Biomethane	Biomethane injection and biogas combustion, except from landfill gas	Biomethane all scales, biogas combustion less than 200 kWth	6.5	20	Metering



How stuff burns

Combustion Master class



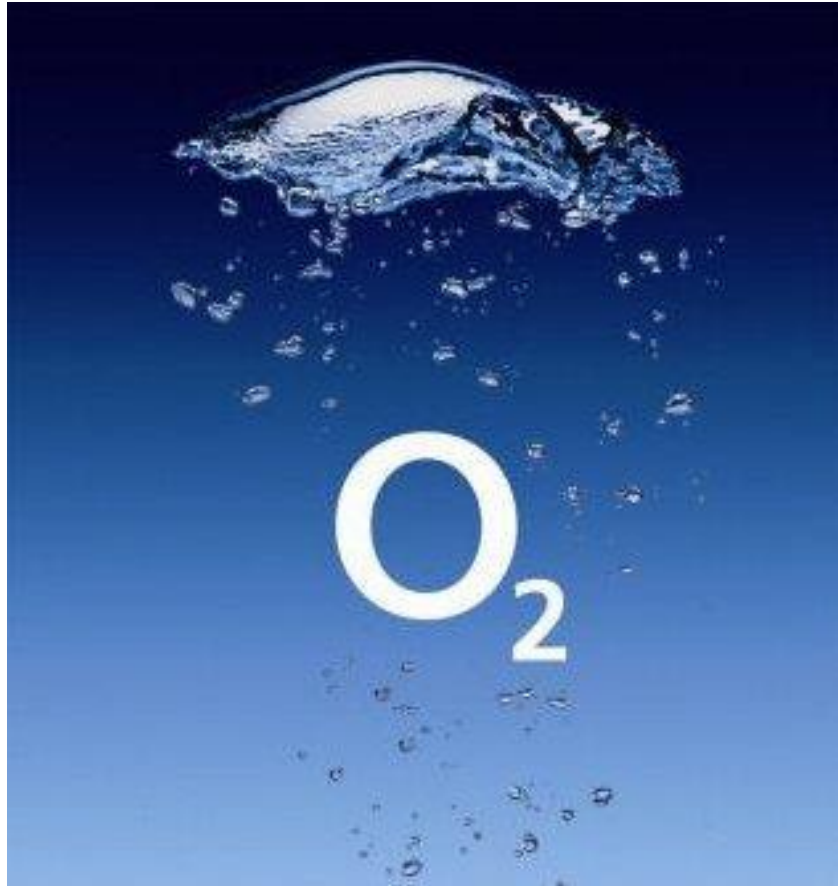
Burning stuff
FOR
DUMMIES[®]



Ingredients









includes high quality
animated flame

Stages

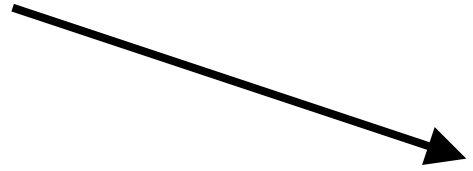
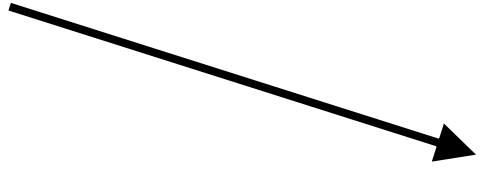
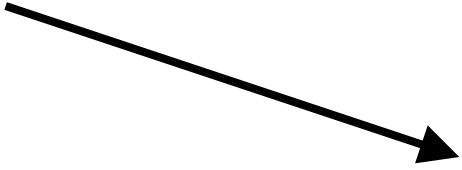
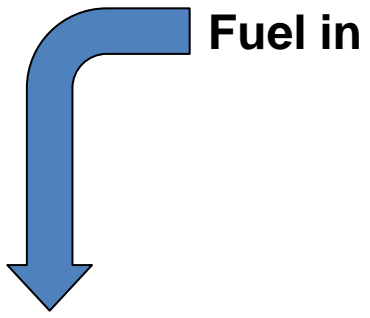




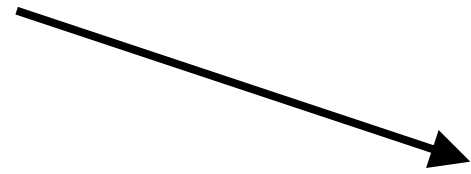
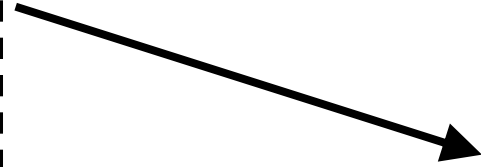
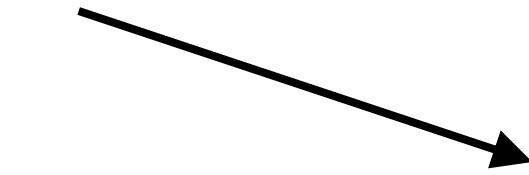




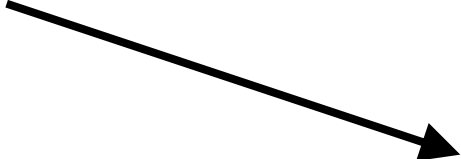


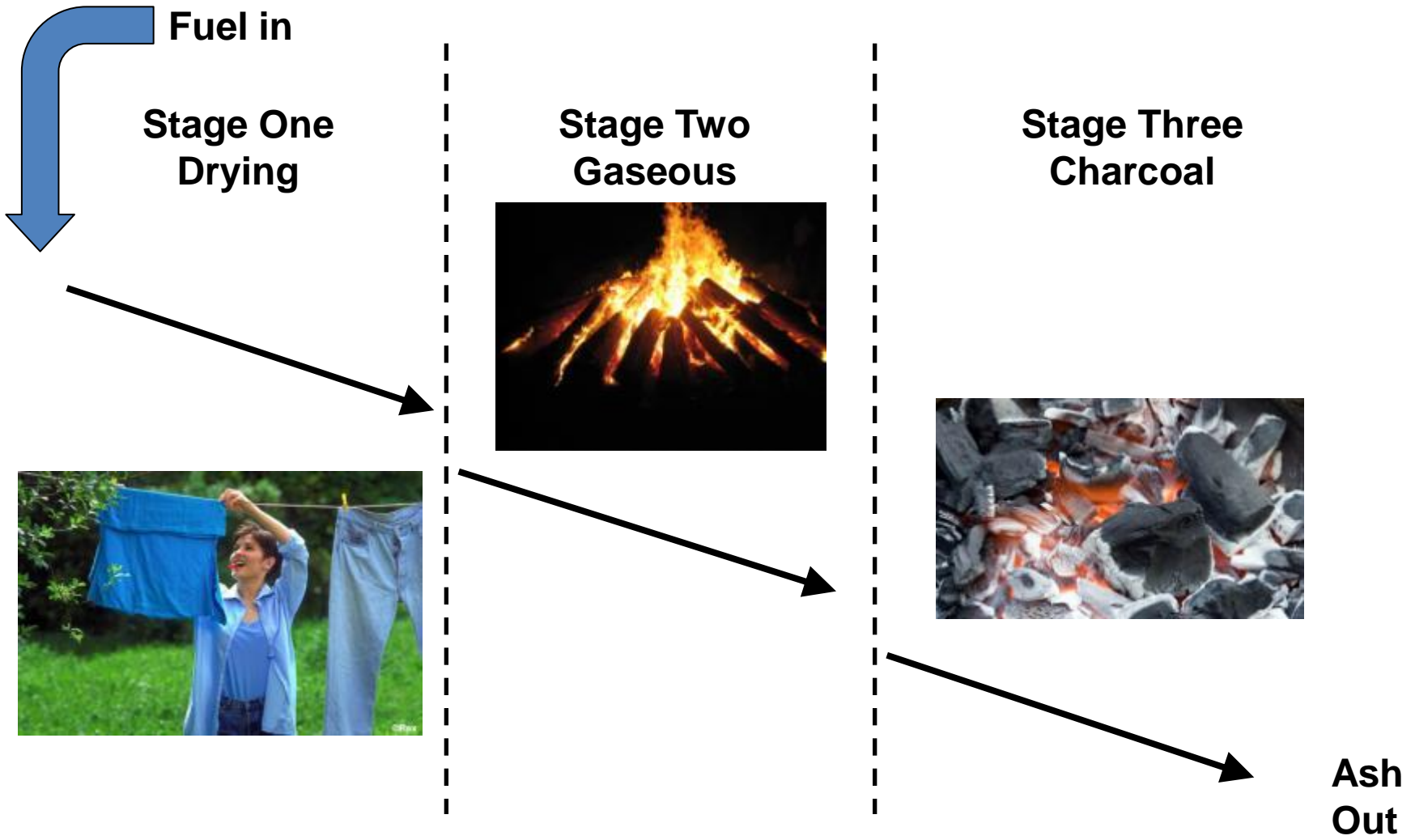


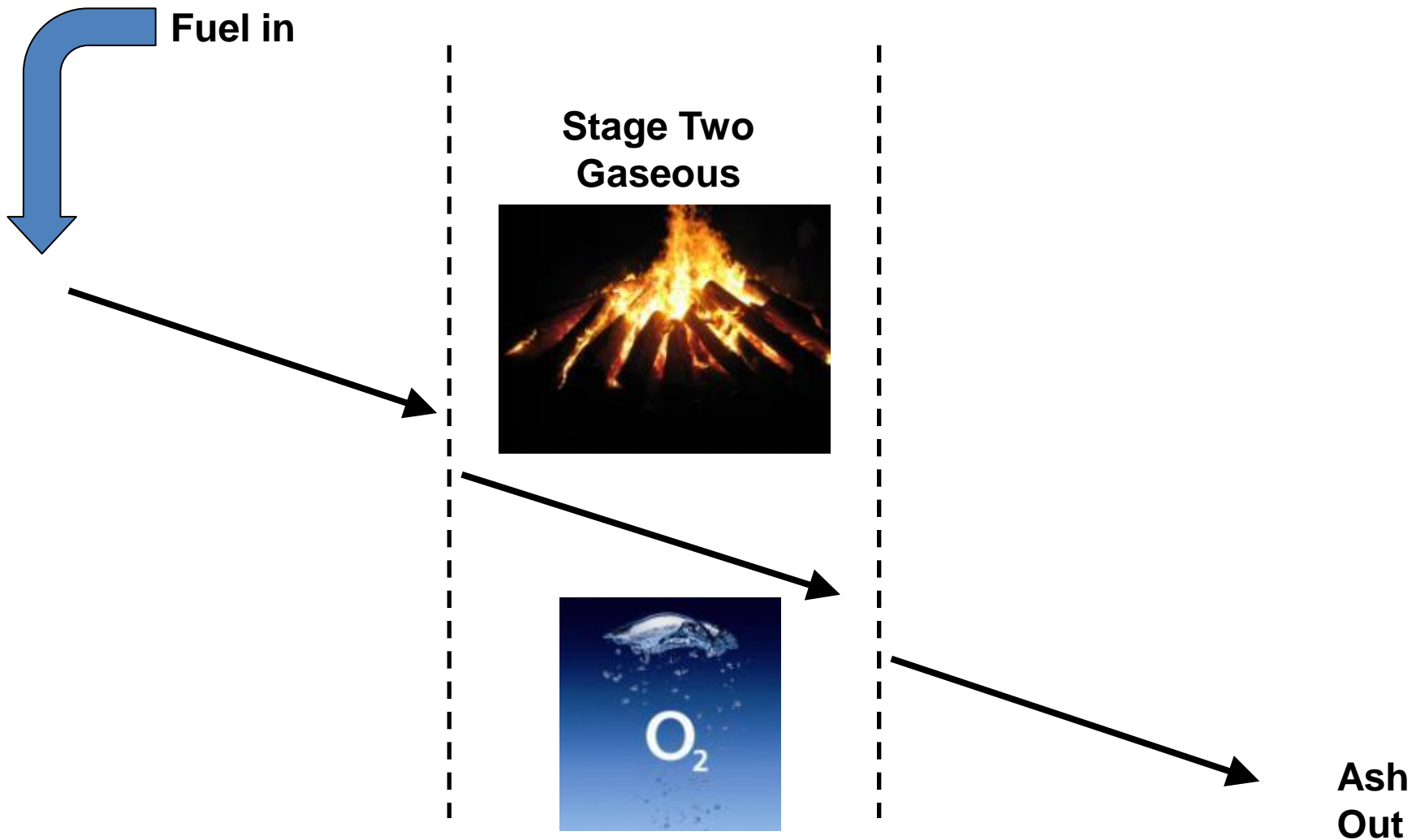
Fuel in
Stage One
Drying



Fuel in
Stage One
Drying







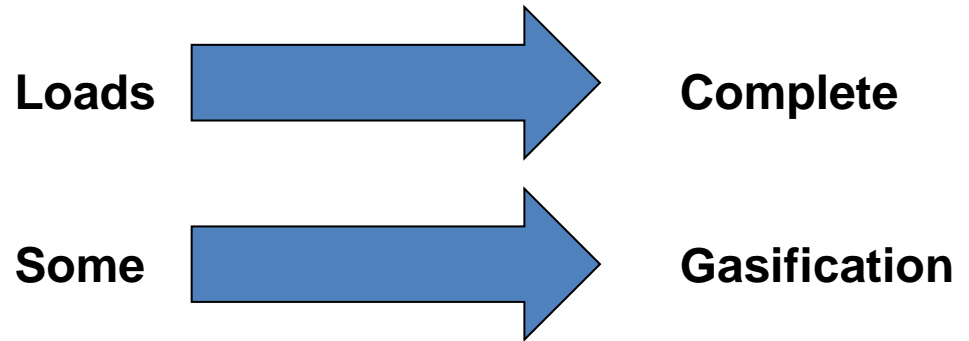


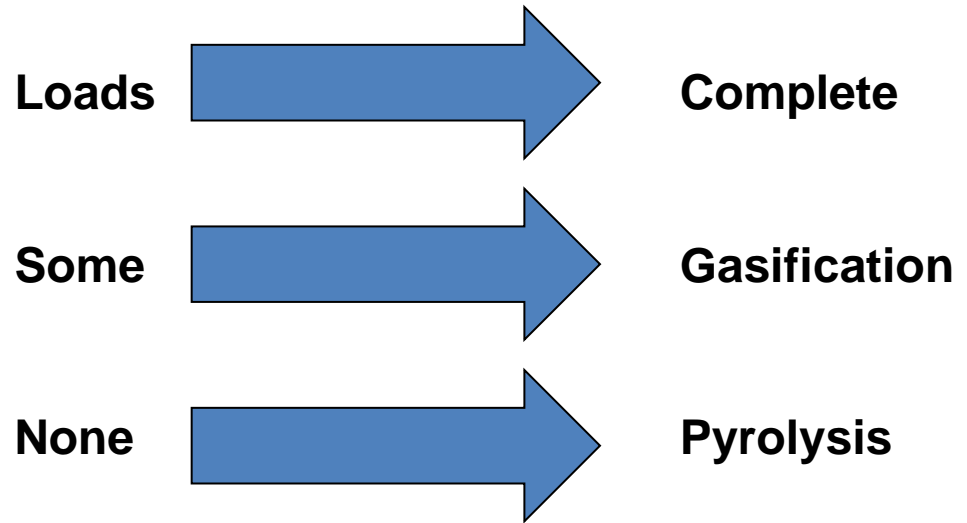


Loads



Complete





**Gasification and Pyrolysis
are a process**

not a technology

Wikipedia

<http://en.wikipedia.org/wiki/Combustion>

Combustion Engineering Association

www.cea.org.uk

The kit it burns in







Fixed Beds



Stepped Grate



Wythenshawe Hospital



Chain Grate



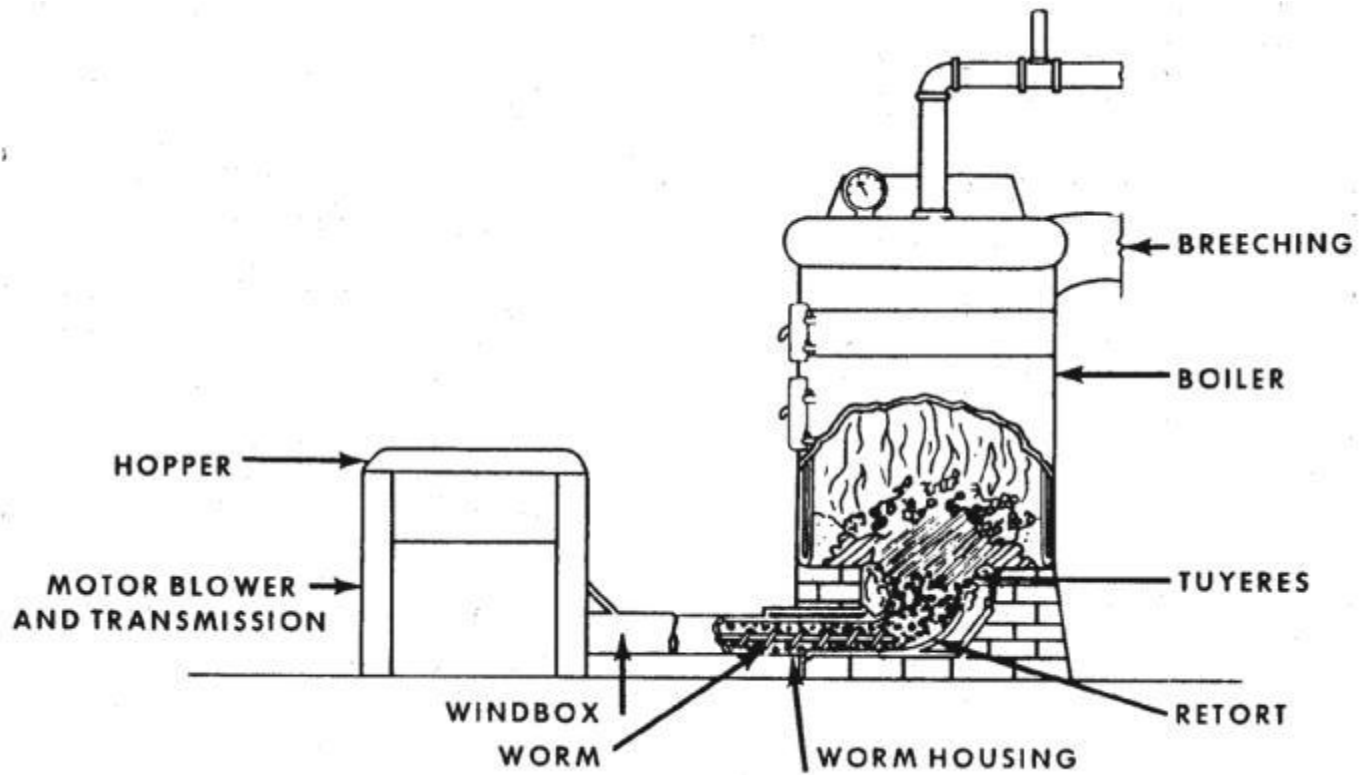
HMP Kirkham



Rotating Grate



Heineken, Manchester

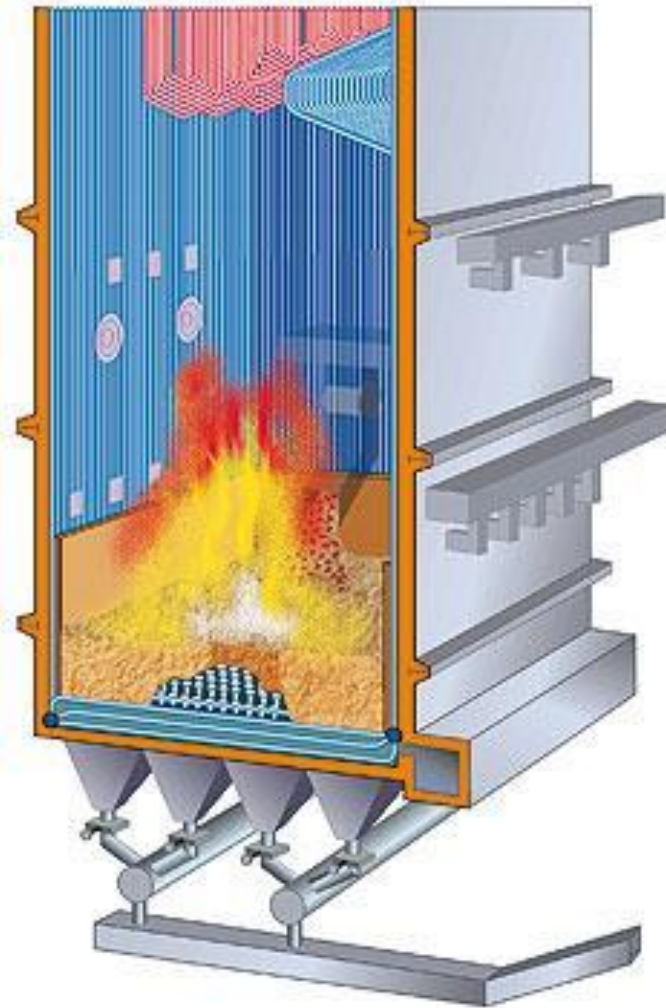


Underfed Stoker



Most small pellet boilers

Fluidised Bed

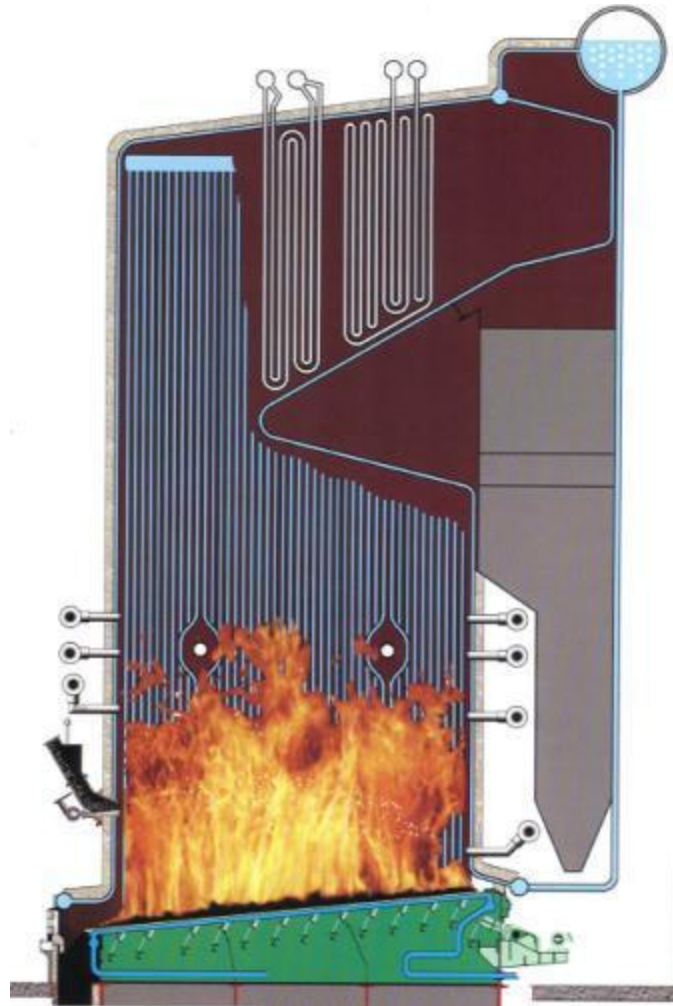




Renewable Energy

Stevens Croft Biomass Power Station

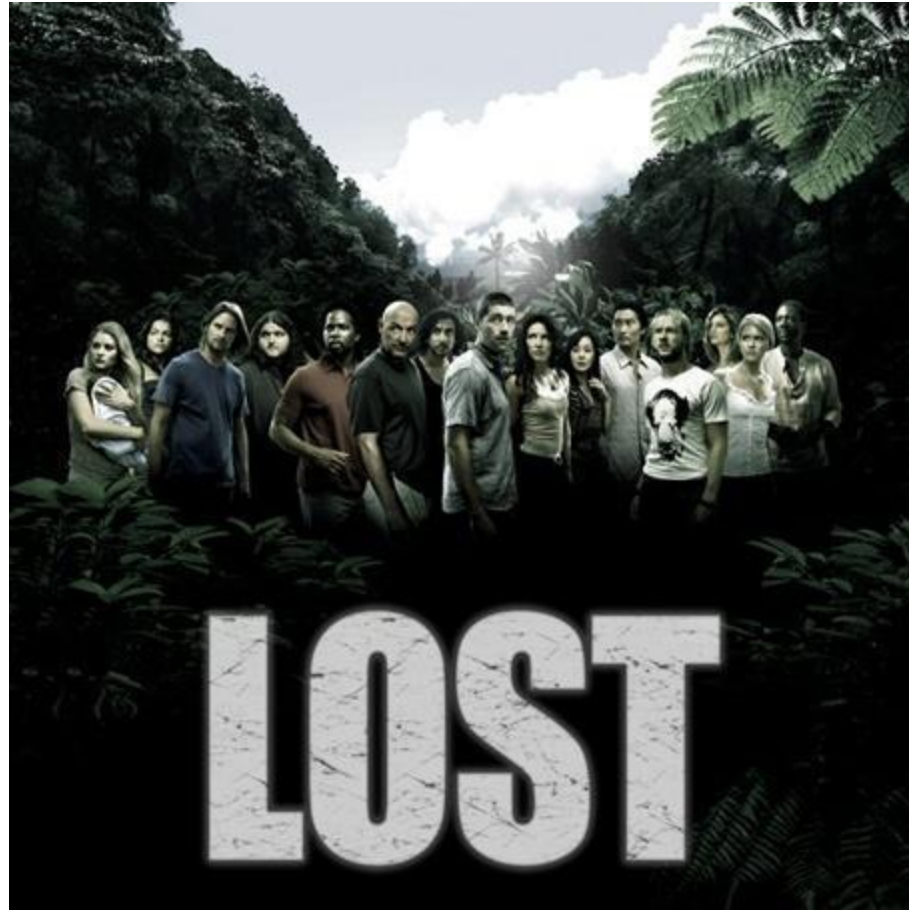
Pulverised Fuel





- Hot Water – Space Heating
- Steam – Industrial Process
Heat and Power Generation
- Thermal Oil - Industrial Process
Heat
- Syn Gas – Power Gen.







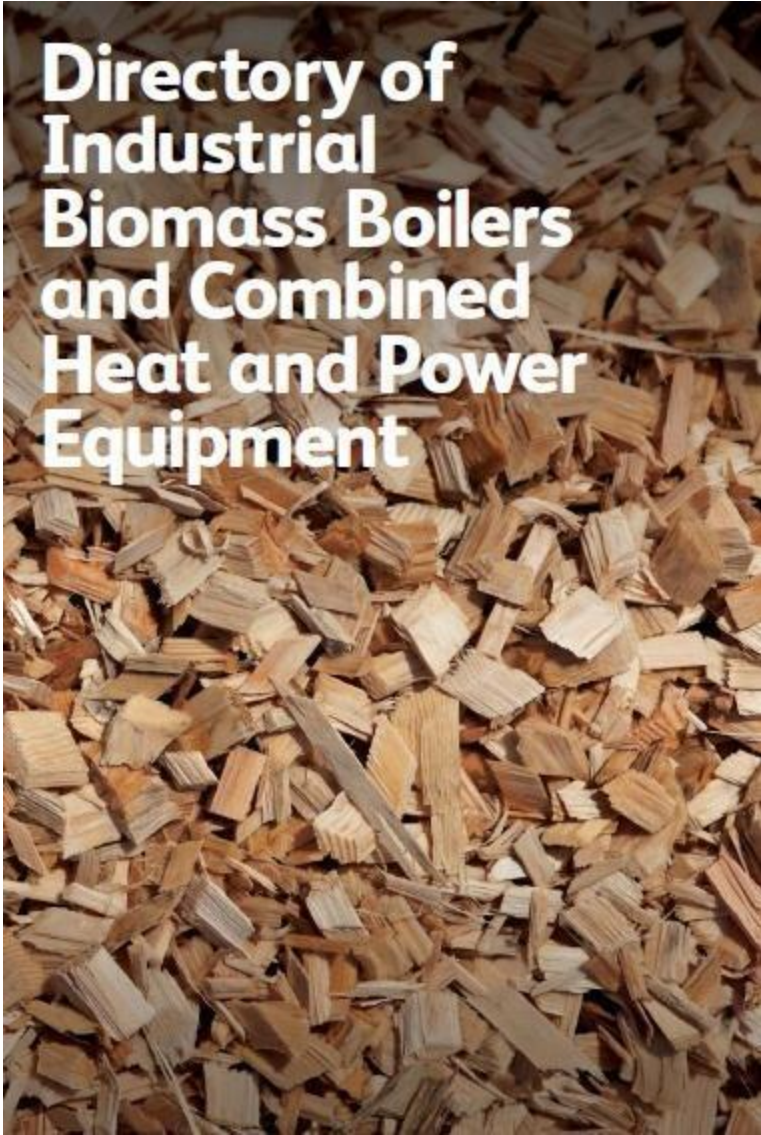
DON'T PANIC



B B C

ONE



A close-up photograph of a large pile of light-colored wood chips, which are irregularly shaped and fragmented pieces of wood. The chips are densely packed and fill the entire frame. The lighting is even, highlighting the natural texture and grain of the wood.

**Directory of
Industrial
Biomass Boilers
and Combined
Heat and Power
Equipment**

www.envirolinknorthwest.co.uk/biomass

Select the “documents” tab

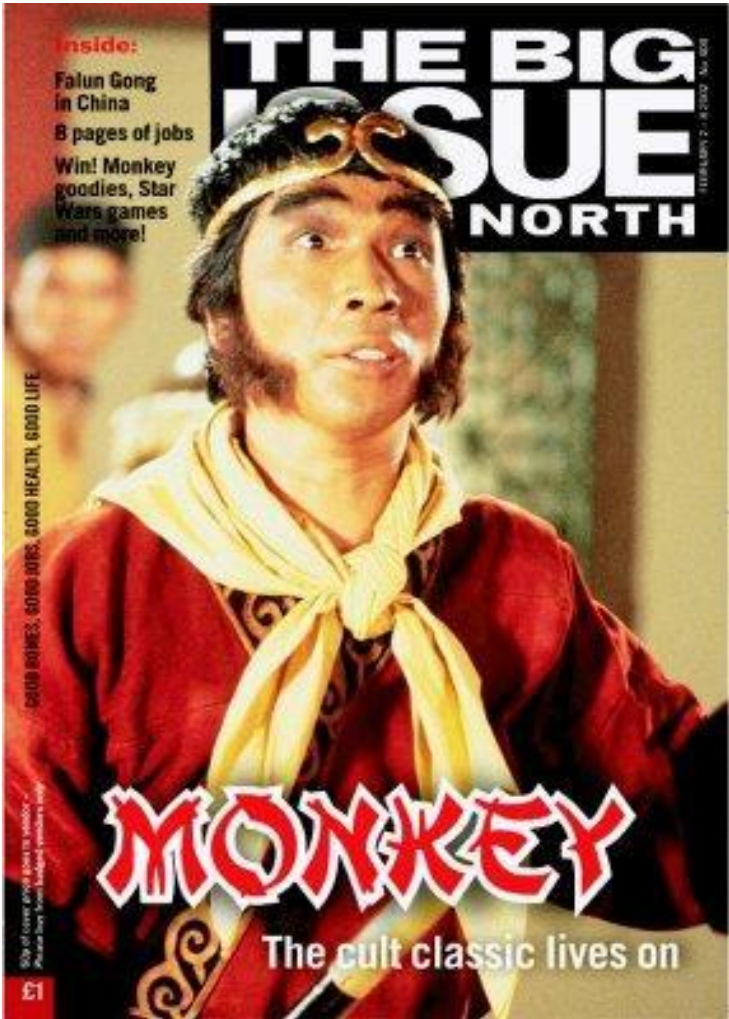
Planning Policy considerations

PPS1

PPS22

Regional Policy?

Air Quality













Policy Planners Hands Up

DC Planners
Hands Up

EHOs Hands Up

Clean Air Act 1956
and
subsequent enactments





MUSIC FROM THE MOTION PICTURE

CONTROL

A FILM BY ANTON CORBIJN

Areas





**SMOKY
COAL**

Smokeless fuel for open fires

Authorised for use in smoke controlled areas

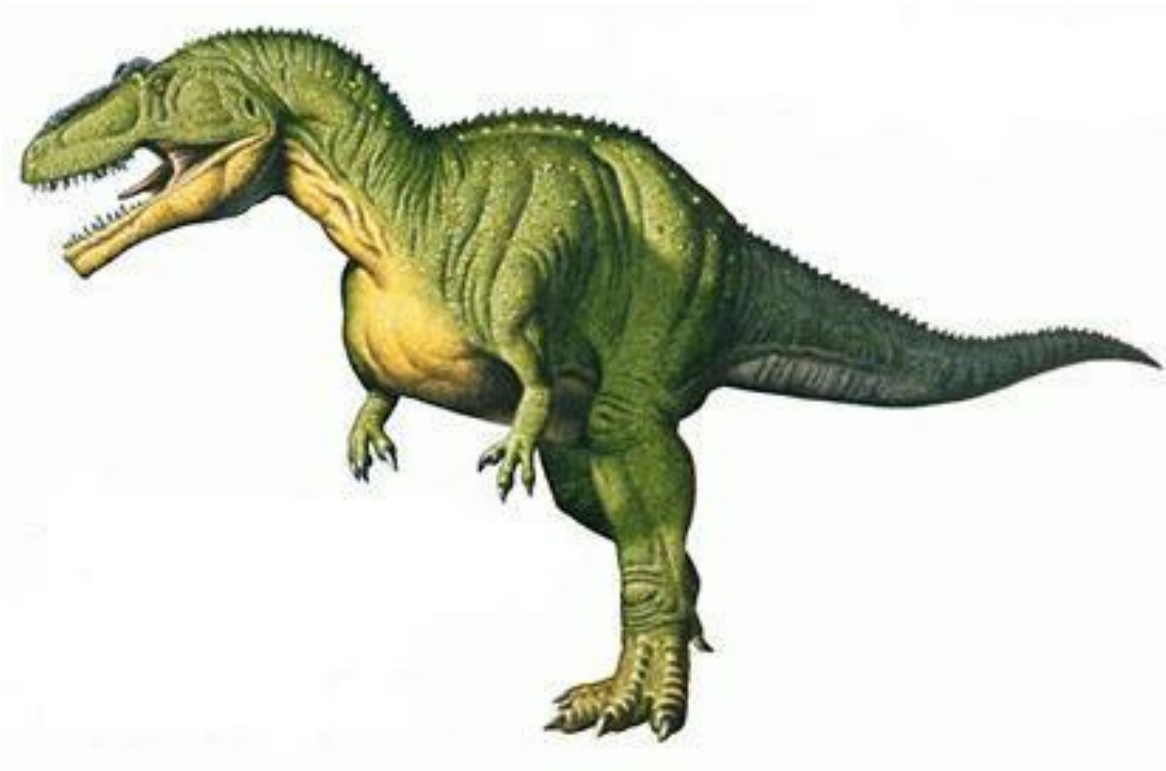


**SMOKELESS
COAL FIRE**

Smokeless fuel for open fires & stoves

Authorised for use in smoke controlled areas

10kg





1. No Smoke Control Areas in Authority
2. Whole Authority Smoke Control Area
3. Partial Smoke Control Areas

All you need to know at;
<http://smokecontrol.defra.gov.uk>

Air Quality Management Areas

AQMA









NO_x SO_x PM_s



Particulate Matter PM

PM 10s

PM 2.5s

All you need to know at;
<http://aqma.defra.gov.uk>

www.greatairmanchester.org.uk

Pollution Prevention & Control

PPC



400kW – 3MW

WID

Waste Incineration Directive

B B C

ONE





www.environmental-protection.org.uk/biomass

Building Regulations

Who's heard of Part L?

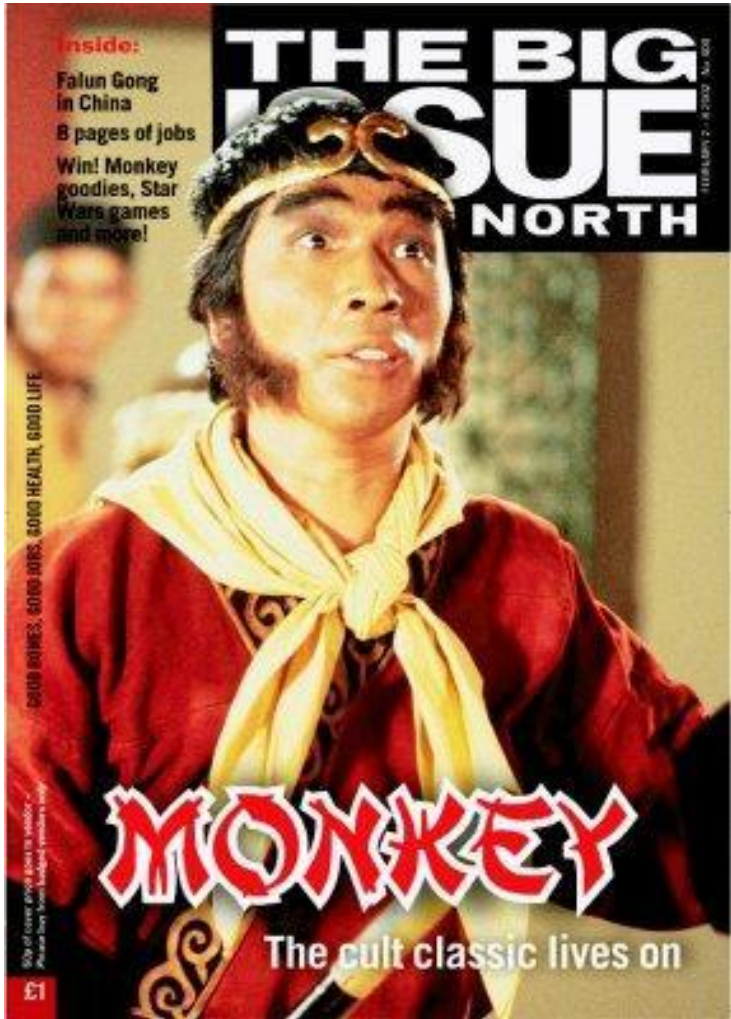
Hands Up

Who's heard of Part J?

Hands Up

Part J
Combustion Appliances and Fuel
Storage Systems
(Under 50kW)

Delivery, Storage and Reception









































The logo for 'nes' features the lowercase letters 'n', 'e', and 's' in a bold, rounded font. The letters are filled with a vibrant, swirling pattern of orange and red, giving them a sense of energy and movement. The 'n' and 's' are connected to the 'e' in a way that suggests a continuous flow.

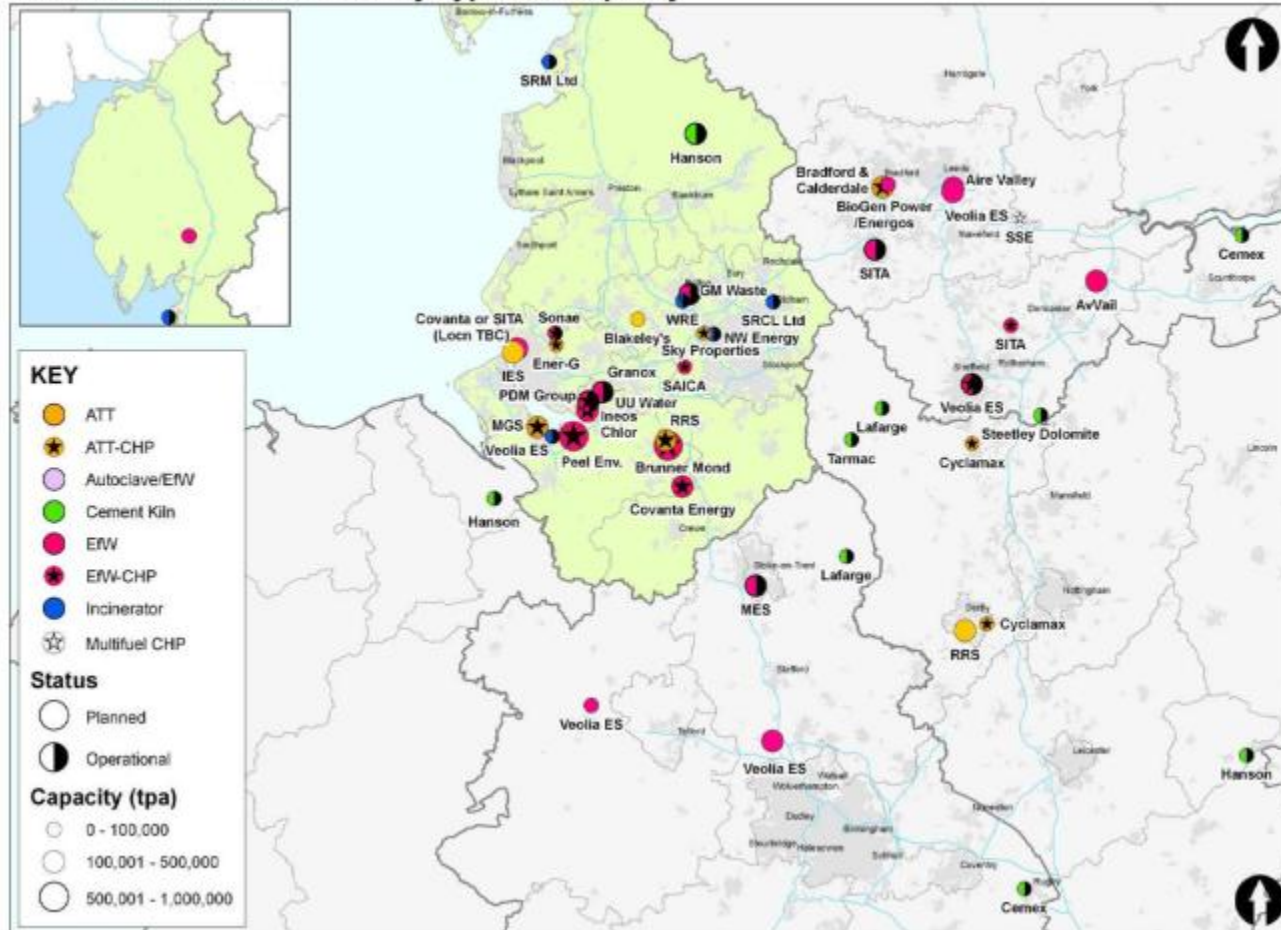
nes

power for good





Thermal Treatment Facilities by Type and Capacity

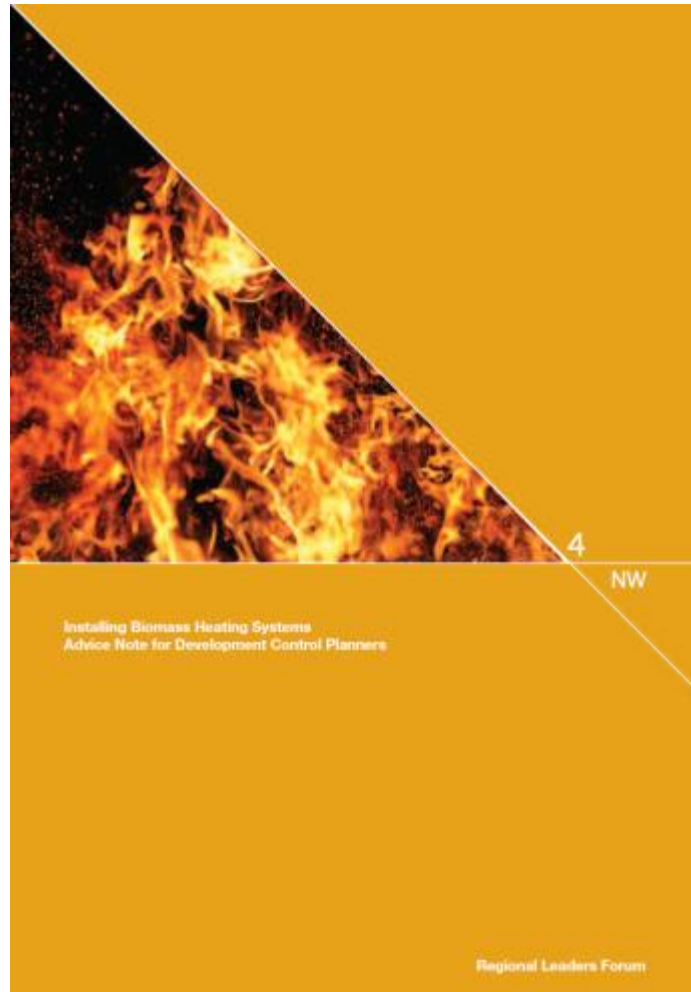


Under 20MW

B B C

ONE





www.4nw.org.uk

> Archive>Sustainability>Biomass Guidance>Planners



Thank You