

Faculty of Engineering



UNIVERSITY OF LEEDS

# Energy from Biomass Combustion

Monday 9 – Wednesday 11 January 2017



Please pass this leaflet to  
a colleague if this course is  
not relevant to you.

# Energy from Biomass Combustion

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## Course aims

Biomass is a key element in government plans to increase renewable energy sources and reduce greenhouse gases. It is unique as a renewable fuel since it can contribute to all three energy sectors – electricity, heat and transport fuels. This course focuses mainly on biomass for electricity and heat. In the UK, imported white wood pellets are a major fuel, but energy crops, such as short rotation willow coppice and Miscanthus, as well as forestry residues, agricultural residue and waste woods, all find use in the production of electricity and heat. Bioenergy has environmental and economic impacts.

This course looks at fuel supply options and the emissions implications. The use of biomass for energy production has several associated technical, environmental and socioeconomic challenges. Some of these, particularly the technical challenges, will be addressed in this course.

## What will I learn?

The course will provide a comprehensive overview of energy from biomass combustion and will give delegates a sound understanding of the fundamentals and practicalities of the following:

- Basics of solid biomass combustion
- Dedicated biomass installations
- Solid biomass for electricity generation
- Biogas and landfill gas for process heat and power generation
- Sustainability and safety for biomass
- Storage of biomass
- Regulations for biomass plant

Delegates are free to attend the full 3 days or may choose to attend the day(s) most relevant to them.

The course will be delivered by a team of industrial speakers and academics, all experts in their particular fields of contribution.

## Who should attend?

- Process engineers and chemists new to the bioenergy field
- Regional developers wanting to obtain a technical perspective on bioenergy
- Energy and Environmental managers interested in utilising bioenergy
- Process heat system designers interested in biomass as a heat source

## Course accreditation

The Leeds Energy from Biomass Combustion course has been developed in conjunction with SUPERGEN Bioenergy Hub.

The Energy Institute has approved Leeds University, Faculty of Engineering as an Approved Training Provider.

## Other energy, environmental and waste management short courses

- Industrial Air Pollution Monitoring 27 February – 1 March 2017
- Thermal Treatment of Municipal Waste 18 – 19 September 2017
- Combustion in Boilers and Furnaces – next course dates to be confirmed

# Programme

## Monday 9 January 2017

### Basics of solid biomass combustion

08.30 Registration

### 09.00 Prospects and developments in bioenergy

Hannah Evans,  
Strategy Analyst – Bioenergy,  
Energy Technologies Institute

10.00 Coffee

### Solid biomass sustainability

### 10.15 Sustainable biomass – understanding and meeting the UK, EU and global requirements on sustainability

Matthew Ford,  
Senior Policy Advisor,  
Clean Electricity Directorate  
Department for Business,  
Energy & Industrial Strategy

### 11.15 Life cycle analysis and sustainability

Patricia Thornley,  
University of Manchester

12.15 Lunch

### Fuel properties and combustion fundamentals

### 13.15 Fuel properties of wood, straw, grasses, residues and other biomass fuels

Professor Bernard Gibbs,  
Energy Research Institute,  
University of Leeds

### 14.15 Fundamental of burning solid biofuels: wood, straw, grasses and other solid bio resources

Professor Jenny Jones,  
Supergen and Energy Research  
Institute, University of Leeds

15.15 Tea

### 15.30 Combustion Stoichiometry of Solid Biofuels and its influence of the performance and emissions of biomass heaters

Professor Gordon Andrews,  
Energy Research Institute,  
University of Leeds

### 16.30 Emissions standards and regulations for biomass heat and power

David Graham / Steve Griffiths,  
Uniper Technologies Ltd

17.15 End of day one

19.00 Course Dinner



## Tuesday 10 January 2017

### Storage and safety

08.45 Registration

### 09.00 Issues during the storage of biomass

Carly Whittaker,  
Rothamsted Research

10.00 Coffee

### 10.15 Pulverised biomass explosion hazards

Professor Gordon Andrews,  
Energy Research Institute,  
University of Leeds

### 11.30 Supply chain economics and risk management

Rachel Lee,  
350 Strategy Limited

12.30 Lunch

### Dedicated biomass installations

### 13.30 Types of solid biomass furnaces and boilers: stoker, pellet, pulverised and batch burning

Professor Bernard Gibbs,  
Energy Research Institute,  
University of Leeds

15.00 Tea

### 15.15 UK Biomass Installations

17.00 End of day two

## Wednesday 11 January 2017

### Solid biomass for electricity generation

08.45 Registration

### 09.00 The problem of metals in biofuels – combustion and ash influences

Professor Jenny Jones, Supergen  
and Energy Research Institute,  
University of Leeds

### 09.45 Corrosion, slagging and fouling – special issues relating to biomass firing

Professor Bernard Gibbs, Energy  
Research Institute, University of Leeds

10.30 Coffee

### 10.45 Practical experience of biomass firing and co-firing in large coal-fired utility boilers

Doosan Babcock, speaker TBC

12.00 Lunch

### 13.00 Torrefaction of biomass

Dr. Leilani Darvell, Energy Research  
Institute, University of Leeds

### 14.00 Gasification – A view from industry

Chris Manson-Whitton,  
Progressive Energy

15.00 Tea

### 15.15 Biogas and landfill gas resources, current utilisation and future potentials

Stewart Davies,  
Viridor Waste Management

### 16.15 The highs and lows of renewable energy

Fred Walter, Coppice Resources Ltd

17.15 End of day three

## What our previous delegates say:

“Most enjoyable and very relevant course on this topic. All the guest speakers are very well informed and interacted with the audience.”

**EDF Energy**

“The course is very useful for learning more about biomass combustion and the challenges faced by the biomass market.”

**Ofgem**

“An excellent insight into the world of biomass and biomass combustion. Excellent technical content would recommend to any future delegates.”

**Sembcorp**

# Further information

## Venue

The course venue is the School of Electronic and Electrical Engineering, Faculty of Engineering, University of Leeds, Leeds, LS2 9JT.

The University campus is a 20 minute walk from Leeds city train station. Please note, car parking for visitors is unavailable at the University. The nearest public car park is Woodhouse Lane (multi storey) at LS1 3HQ.

## Course fees

The following course fees include the cost of tuition, course materials, lunches and light refreshments for the day(s) of attendance:

Full three days **£850** Any one day **£350**

## Accommodation

Delegates are responsible for their own evening meals and accommodation, except on Monday evening when the course dinner is included. A list of hotels close to the University will be provided within the delegate joining instructions.

## Course dinner

The course dinner will be held at a Leeds city centre restaurant and is included in the course fee. This will take place on Monday evening and delegates are responsible for making their own way to and from the restaurant. The dress code is smart casual. If you would like to attend please indicate when booking.

## Accessibility

Please let us know if you have any specific requirements including any access or dietary requirements in relation to this course.

## How to book

Booking for this course should be completed through our secure Online Store using debit or credit card. To complete your booking please follow the instructions below:

1. Log on to our Online Store at: <https://store.leeds.ac.uk/>
2. Select Conferences and Events in the left-hand navigation bar.
3. Select CPD Faculty of Engineering
4. Select the course or event for which you wish to register and click on 'Book'.
5. If you are a new user, please follow the instructions to register. If you already have an account log in as instructed.
6. Complete the application process as directed by the booking system.

You will receive an automatic confirmation email within 24 hours of your booking.

**For online booking queries and for all other enquiries please contact:**

## Jenny Carter

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**TW:** [@LeedsUniCPD](https://twitter.com/LeedsUniCPD)

## Terms and conditions for booking

Payment in full should accompany your booking. The course fee is exempt from VAT. Fees must be paid in full no later than 15 working days before the course commences. Failure to pay may result in attendance being refused. Registrations are accepted on the understanding that the printed programme is given in good faith but may have to be re-scheduled or the speakers changed for reasons outside our control. The University of Leeds reserves the right to cancel or postpone the course, in which case fees will be refunded in full. In the event of cancellation, the University will not be held liable for delegates travel or accommodation expenses.

Delegates will receive a full refund for cancellations made within 7 days of online booking, except where the booking has been made for an event commencing within the next 7 days. Where a delegate wishes to cancel a registration after this 7 day period, written cancellations received up to 15 working days before the course will be subject to an administrative charge of 20% of the total remittance. After this date the full fee is chargeable and no refunds will be made, this also applies for non-attendance but copies of the course documents will be sent. Substitutions may be made at any time.

If you are unable to complete your registration using the online booking system please contact the CPD, Conference & Events Unit to discuss alternative arrangements.