

# Are you working in engineering and looking to:

- gain experience in a 1 MW process plant?
- enhance your knowledge?
- acquire new skills?

## Training Course

### Practical Process Engineering

Interdisciplinary understanding of a process plant

Birmingham, March 2021

Aston University's four-day training course combines classes, workshops and live demonstrations in a 1 MW bioenergy process plant for combined heat and power generation.



### Agenda

- Day 1: Practical Introduction to a Process Plant
- Day 2: Mechanical Systems
- Day 3: Electrical Systems
- Day 4: Control Systems



This **Continuing Professional Development (CPD course)**, which has been rated as "Outstanding" by the Institution of Chemical Engineers (IChemE), will be held at the world-leading Energy & Bioproducts Research Institute (EBRI) situated on the Aston University campus in central Birmingham.

You will have the opportunity to operate, monitor and control a number of subsystems and utilities from EBRI's control room. Delivered by Aston's multidisciplinary team of professionals, we will cover all the essentials to boost your confidence in dealing with "at-scale" plant and acquire essential skills for practical understanding of mechanical, electrical and control systems.

## Reviews from previous delegates



As a Chemical Engineer I found it very useful and interesting. It provided me an excellent opportunity to learn about process engineering, plant documentations, electrical control panels, utilities, and related mechanical equipment.

It also refreshed my memory on working with Piping and Instrumentation Diagrams (P&IDs) through practical activities and live demonstration. Specially, the activities in the EBRI power plant were fascinating and great fun too!”

**Amin Osatiashtiani, PhD, FHEA, MRSC, AMIChemE.**



I have looked at P&IDs before, I have visited plants before, but I have never used them both at the same time. This course was really enjoyable and incredibly useful. I learnt how to recognise equipment and instrumentation and learnt about the practical aspects related to plant services, electrical and control systems.”

**Marta Granollers, PhD, SFHEA, AMIChemE, IChemE-EdSIG Committee member.**

## IChemE feedback



I think this is possibly the best course I've reviewed in terms of an overall learning experience. I would loved to have gone on something like this back in 1990 when I first started in the process safety arena!

The materials are extensive. The lecture materials will form a good reference manual and the practical examples such as diagrams will be very useful for comparative purposes in the delegates' own facilities.”



# Course contents

## Day 1: Practical introduction to process plant

- Process plant implementation
- Bioenergy process plant for the production of combined heat and power generation
- How to read complex P&IDs (workshop)
- Identifying components in a process plant (workshop)

## Day 2: Mechanical systems

- Rotating equipment: pumps and compressors
- Industrial utilities (workshop)
- Systems for the transport of solids and fluids (live demonstration in the plant)
- Operating utilities in a process plant (live demonstration in the control room)

## Day 3: Electrical systems

- Basic electrical concepts
- Elements in power distribution
- Electrical schematics (lecture and workshop)
- Industrial control panels (live demonstration)
- Understanding your building electrical system (live demonstration)

## Day 4: Control systems

- Introduction to Programmable Logic Controllers
- Introduction to Siemens software
- Tracing signals through the process plant
- Basic concepts in communications
- Control systems integration

## By the end of this course, you will be able to:

- Liaise with mechanical, electrical and control engineers using their jargon
- Apply multidisciplinary skills in troubleshooting engineering systems
- Read complex piping and instrumentation diagrams
- Read electrical schematics and simple single-line diagrams
- Get familiar with hardware and software involved in control systems
- Understand the integration of a control system, from inception to the site acceptance tests with the client

## Course details and registration

Dates: **March 2021**  
Location: **Energy & Bioproducts Research Institute (EBRI)  
Aston University, Aston Triangle,  
Birmingham B4 7ET, UK**  
Course fee: **£1950 standard rate**  
*(15% discount for Aston Alumni, Public Sector  
and Group Bookings of 4 or more)*  
Contact: **Clara Serrano**  
Email: **c.serrano@aston.ac.uk**  
Tel: **+44 (0)77 2145 5354**

**Click here to express your interest & receive an extract of  
the training materials**

The fee includes all printed training materials, lunch and refreshments.  
Personal protective equipment will be provided for the course.  
The pilot plant is a four-storey building located in Birmingham city centre, with  
easy access by train and on-site parking.



## About the trainers



**Clara Serrano.** Clara is PhD CEng with 11 years' experience of the commissioning and operation of bioenergy process plants. She was Head of the Bioenergy Department in the Science and Technology Park of Albacete (2007–2012, Spain), leading the commissioning of a 100 kg/h pellet mill, a 50 kW pellet boiler, a 50 kW/h gasifier and a biofuels laboratory, delivering consultancy services at national level.

Since 2013, she has worked at the Energy & Bioproducts Research Institute (Aston University), where she is the Plant Manager of a bioenergy pilot plant for combined heat and power generation. Her responsibilities include managing plant modifications, operation, safety and maintenance. She is also responsible for organising HAZOP studies, safety audits and regular functionality tests in the plant.

Clara is experienced in liaising with engineers from different disciplines, and since 2015 she has been involved in practical teaching activities for chemical engineers. She has 15 publications and holds a Professional Certificate in Teaching in Higher Education (Spanish Agency for Accreditation, 2012) and the Managing Safely Certificate (Institution of Occupational Safety and Health, 2016).



**Patricia Thornley.** Patricia has been a chartered physicist since 2001 and has over 25 years' experience working in bioenergy in industry and academia. She has a PhD in the performance of gasification plants and worked as Lender Engineer in Parsons Brinckerhoff (now WSP) for 7 years, where she was involved with the practical construction, commissioning and testing of around 20 different UK bioenergy and waste plants. She is currently participating in a £1m Innovate UK project, supporting demonstration of a pilot rice straw conversion plant in the Philippines.

Since 2012, Patricia has led the UK's national bioenergy research programme (the £6m Supergen Bioenergy Hub), bringing together over 40 academic, industrial and policy partners to focus on sustainable bioenergy implementation. She is Director of the Energy & Bioproducts Research Institute (EBRI) at Aston University, and was previously professor of sustainable energy systems at the school of Mechanical, Aerospace and Civil Engineering at the University of Manchester.

Patricia has guest-lectured on an Energy Institute accredited CPD course at Leeds University for over 5 years, has worked as an Open University tutor on an entry level course with students from a wide variety of professional backgrounds.



**David Smith.** David has 16 years' industrial experience, initially as a seagoing Marine Engineer Officer with BP Shipping Ltd. Working on BP oil tankers, with responsibility for all aspects of operation, maintenance and safety associated with plant found on foreign-going ships carrying crude oil and petroleum products.

He subsequently joined GEC Marine (now BAE Systems) as a Senior Design Engineer, responsible for the design and development of platform systems on a variety of nuclear and conventional submarines and surface ships. Systems included; chilled water, air conditioning, refrigeration, air purification, ICBM missile environment and other related environmental systems.

Currently a Teaching Fellow at Aston University in the Mechanical Engineering and Design department, lecturing in all aspects of thermodynamics, fluid mechanics, turbomachinery, heat transfer and engineering design.



**Steve Luke.** Steve is a Chartered Engineer with corporate membership of the Institution of Electrical Engineers (now IET) (1992), the Institute of Measurement and Control (1993) and the Energy Institute (2005).

With 15 years of industrial experience, Steve has worked at Rolls-Royce Plc offering internal consultancy in all aspects of electrical, instrumentation and control systems. He led a team at Rolls-Royce Fuel Cell Systems Ltd. for the development of electrical, instrumentation, control and safety systems, applied to solid-oxide fuel cell systems, and worked as Senior Design & Development Engineer in Plessey Naval Systems, designing and developing circuit boards and sub-assemblies for submarine based sonar and command systems.

Steve has held managerial positions working at different universities for 28 years (Head of Engineering & Automotive in Cornwall College, Programme Director at the University of Exeter and Aston University). He is currently Director within the Aston Professional Engineering Centre, with responsibility for the development and operation of work-based programmes and degree apprenticeships. He has delivered a wide range of work based degrees and CPD modules for National Grid, E.ON, Western Power Distribution and Scottish and Southern Energy.



**Lee Jenkins.** Lee joined Aston University in 2009 from Sterling Power Group as a teaching fellow on the work based Electrical Power Foundation Degree. In 2014 he became the Programme Director of the Foundation Degree in Electrical Power Engineering (Transmission, Distribution and Power Systems Management).

Lee has developed a successful programme which meets the needs of UK Transmission and Distribution Network Operators and is accredited by the IET. The programme currently takes students from the National Grid, Western Power Distribution and Scottish and Southern Energy.

**Adam Reilly.** Adam has 13 years' experience as an electrical engineer and project manager. He has worked at Couch Perry & Wilkes as a consulting engineer for 6 years, and then as an electrical engineer at Aston University, where he has been the Estates Engineering Manager since 2016. Adam is a high voltage authorising engineer and responsible for all new infrastructure projects and maintenance works on the campus.



**Dave Burnley.** Since 2015 Dave has been working at Cougar Automation; a well-established, reliable and sought-after supplier of System Integration Services. He is currently Business Unit Leader for the Warwickshire area, where he is responsible for ensuring a happy and motivated workforce, focusing on delivering projects that play into the strengths of his team.

Dave has worked in Controls and Automation for 30 years covering electronic hardware design in avionics for GEC Avionics, PLC programming for transfer lines and special machines to PLC/SCADA for the Airbus A380 Fuel Test Facility. He naturally moved to project management within the industry, which included managing electrical installation along with the software element. Dave's responsibilities were to manage several concurrent projects, individually up to a value of £1m, through to completion with the responsibility for successful delivery on budget and on time, whilst meeting the customers' expectations. He has successfully run a large software team for many years growing this team to meet increased capacity.

**Glyn Davis.** With 12 years' industrial experience, Glyn has worked for Thorn Automation mainly in their electronics division. First, in research and development designing a range of instrumentation and sensor packages for various industries. Then as a project engineer on magnetometry development for various arms of the MOD.

As a way to see the world! He then joined British India Steam Navigation Co. Ltd. as an Electrical Officer and spent two marvellous years globe-trotting and being paid for it. He then went into the teaching profession and taught for 30 years at various colleges in Birmingham. A range of subjects but predominantly Electronics, Control systems and Programmable Logic Control to Foundation Degree level. For three years of his time at Birmingham Metropolitan College he spent seconded to BMW's new engine plant at Hams Hall, developing and delivering courses to the maintenance and control engineers on system control.

He is presently delivering similar subjects on the Power Engineering Foundation Degree to National Grid students.



  
**Aston University**  
BIRMINGHAM UK

[www.aston.ac.uk](http://www.aston.ac.uk)

