The University of Sydney

Chemical and Biomolecular Engineering Foundation

Building J01
University of Sydney
Sydney NSW 2006
Australia
Tel +61 2 9351 5284
Fax +61 2 9351 2854
Email: s.bregu@usyd.edu.au
www.usyd.edu.au/foundation

"Cogeneration and Trigeneration"

Training Course

Professional Development Course

A one day course addressing a number of Cogen and Trigen operation aspects which will give engineers, facilities managers, designers and technical staff a better understanding of the workings of these technologies and their benefits to industry.

Presented by:	**Dr Jacob Klimstra** **Senior Energy and Engine Specialist** **Power Plants Department** **Wärtsilä** **Zwolle, The Netherlands**
Date and time:	**May 8, 2009** **9.00 am registration for 9.30 am start, to 4.30 pm**
Location:	**The Auditorium** **School of Electrical and Information Engineering Building** **The University of Sydney, NSW** **Parking: Corner Cleveland and Shepherd Streets, Darlington**
Registration fee:	**$550.00 (inclusive of GST)** **$440.00 (inclusive of GST) if members of the Foundation** **or of the** **Australian Institute of Energy**

Who should attend

The course is principally aimed at engineers working or with a strong interest in energy and power.

Course objective

This course is a one day course aimed at giving people who work in the field of energy a good understanding of the workings of the cogen and trigen technologies.

At the end of the course participants will have

- An understanding the basic performance principles of reciprocating engines;

and will have covered

- The energy balance of a turbocharged reciprocating engine (fuel, shaft power, heating power)
- Controllability of engine output
- Fuel properties and fuel flexibility
- Mechanism of emission formation and reduction methods
- General applications (cogeneration, emergency power, island operation, chilling)
- Properties of engine-driven systems in supporting the electricity grid.

Rationale for the Course

Governments in Australia have issues warnings to industry that in the very near future there might be episodes of disruption to the supply of energy and has suggested that industry examine options to achieve power requirement reductions.

The second alternative is that industry examines options for the production of energy adopting new and independent technologies.

Cogeneration and Trigeneration are such alternatives, and these technologies have proven themselves for some time now.

The course introduces engineers to cogen and trigen and offers case studies to support the program.

The course provides… Tuition, handouts, lunch, morning and afternoon teas and a copy of 'Planning of Optimal Power Systems' by Asko Vuorinen.

Registration and method of payment – See form attached

About the course leader

Dr Ing. Jacob Klimstra

Jacob Klimstra received his Bachelors degree in Electrical and Electronic Engineering from the Technical College of Leeuwarden, NL. He joined N.V. Nederlandse Gasunie in 1970 to work on pulsating combustion and on vibrations based gas turbine diagnostics. Jacob subsequently studied Mechanical Engineering at the University of Southampton, UK, which was concluded with a Ph.D. thesis on the optimisation of reciprocating engine/compressor combinations. He then worked on the introduction and improvement of cogeneration based on reciprocating engines fuelled by natural gas. During that process, he wrote many international papers on subjects related to reciprocating engines and gave numerous presentations. He also converted diesel buses and boats to natural gas. From 1993 to early 2000, Jacob was Head of Department of Industrial gas Applications at Gasunie Research. In that capacity, he studied modern management techniques and implemented these in research management.

Jacob received the Richard Way Memorial Prize for his Ph.D. thesis, the Van Oostrom Meyjes Prize from The Royal Netherlands Institution of Gas Engineers for his work on engine-driven cogeneration and received 5 Oral Presentation Awards and the Distinguished Speaker Award from SAE. In September 2000, he received the ICE Division Speaker Award from the American Society of Mechanical Engineers. In 2003, he became recognised as Registered Energy Advisor.

Jacob is also a paper reviewer for SAE and ASME. He serves in many national and international committees related to energy use and is active as a board member and adviser of educational institutions.

From the year 2000, Jacob is employed by Wärtsilä in Zwolle, NL, as senior specialist for engine-driven power systems fuelled by natural gas. At Wärtsilä, he has written and presented about 90 papers on energy supply, cogeneration and engine development. In January 2005, he received the 2004 Quality Award from Wärtsilä. In June 2007, Jacob received a Best Paper Award at the PowerGen Europe Conference in Madrid. At the PowerGen Europe 2008 conference, he gave a key note presentation on the future of electricity generation.

This professional development course is sponsored by

Wärtsilä Australia Pty Ltd

WÄRTSILÄ

We look forward to your company taking this opportunity to become a stakeholder in the “Cogeneration and Trigeneration” professional development course.

For information on the Foundation, as well as on the Course
please contact Skender Bregu, Foundation Executive Officer
tel: + 61 2 9351 5284 - fax + 61 2 9351 2854 - email s.bregu@usyd.edu.au

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May 8, 2009

Please complete details below and return with fee to:

Skender Bregu
Chemical & Biomolecular Engineering Foundation
Chemical Engineering Building J01
The University of Sydney NSW 2006
Phone (02) 9351 5284
Fax (02) 9351 2854
Email: s.bregu@usyd.edu.au

Surname ..... First Name .....

Title/Position .....

Organisation .....

Address .....

Phone No .....Fax No .....Mobile .....

Email address .....

Payment Details:

▶ Cheque for $ ..... made payable to **The University of Sydney** is attached

Or

▶ Credit Card: ☐ Mastercard ☐ Bankcard ☐ Visa ☐ Amex ☐ Diners

Cardholders Name (Please print): .....

Card No.: .....

ID Number (Amex only) .....Exp. date ...../ .....Amount: $ .....

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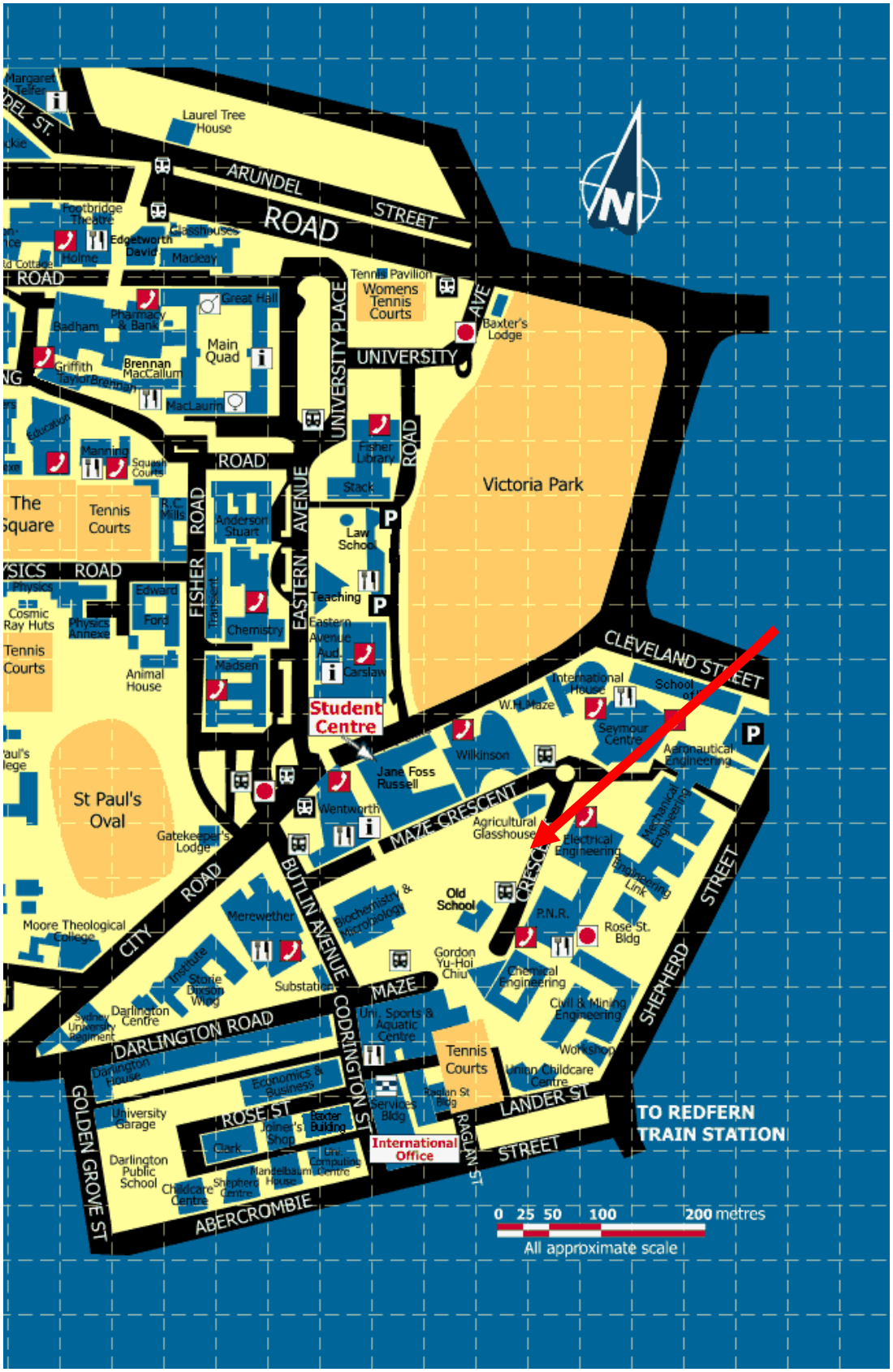
ARUNDEL STREET
ROAD
Laurel Tree House
Footbridge Theatre
Edgeworth David
Holme
Glasshouses
Mackay
Tennis Pavilion
Womens Tennis Courts
Great Hall
Pharmacy & Bank
Badham
Main Quad
Griffith Taylor
Brennan MacCallum
MacLaurin
UNIVERSITY PLACE
UNIVERSITY AVE
Baxter's Lodge
Fisher Library
Stack
Victoria Park
Manning
Squash Courts
The Square
Tennis Courts
R.C. Mills
Anderson Stuart
Law School
FISHER ROAD
EASTERN AVENUE
Physics
Edward Ford
Transient
Chemistry
Eastern Avenue Aud.
Teaching
Carslaw
Cosmic Ray Huts
Physics Annexe
Tennis Courts
Animal House
Madsen
Student Centre
CLEVELAND STREET
International House
W.H. Maze
Seymour Centre
School of
Aeronautical Engineering
Wilkinson
Jane Foss Russell
Wentworth
St Paul's Oval
Gatekeeper's Lodge
MAZE CRESCENT
Agricultural Glasshouse
Electrical Engineering
Mechanical Engineering
Engineering Link
SHEPHERD STREET
Old School
Biochemistry & Microbiology
Merewether
Moore Theological College
CITY ROAD
BUTLIN AVENUE
Institute Storie Dixson Wing
Substation
P.N.R.
Rose St. Bldg
Gordon Yu-Hoi Chiu
Chemical Engineering
Civil & Mining Engineering
MAZE
Darlington Centre
Sydney University Settlement
DARLINGTON ROAD
Uni. Sports & Aquatic Centre
Tennis Courts
Workshop
Union Childcare Centre
Darlington House
Economics & Business
CODRINGTON ST
Services Bldg
Roslyn St Bldg
LANDER ST
TO REDFERN TRAIN STATION
University Garage
ROSE ST
Joines's Shop
Baxter Building
Clark
International Office
RAGLAN ST
STREET
GOLDEN GROVE ST
Darlington Public School
Uni. Computing Centre
Mandelbaum House
Shepherd Centre
Childcare Centre
ABERCROMBIE
0 25 50 100 200 metres
All approximate scale