



2008 Australasian User Conference

November 10-11, 2008
Sydney, Australia



Post Conference Course – 12th & 13th November 2008

“State of the Art Multiphase CFD”

Dr Paul W Guilbert,

Project Manager, Funded Development Projects, ANSYS Inc.

With over 30 years experience in Advanced Computational Physics and over 20 years experience in the development & application of CFD methodology in CFX, Dr Paul W Guilbert has a wealth of knowledge in advanced physics applications. Dr Guilbert is currently the Project Manager for Funded Development Projects, CFX Technical Services with ANSYS Inc and has been responsible for implementing custom models for customers requiring a complex knowledge of physics, thermodynamics and multi-phase flow. He's been heavily involved in the development of CFX including the development of a radiation transport program for modeling radiative heat transfer in complex geometries that uses both a Monte-Carlo model and a Discrete Transfer Model. He has also been involved in the implementation of condensation models, advanced radiation models, solidification models and Magneto-hydrodynamics modeling, as well as many more multiphase type applications. Dr Guilbert is a speaker not to be missed.

Format: The course will be run in an interactive manner, with a mix of theory, discussion & examples covering both CFX & FLUENT. There will also be adequate time for participants to raise their own problems of interest (for a thorough analysis, details should be submitted provide prior to the course). A copy of the overheads used will be provided as notes to all participants.

Intended audience: This course is aimed at Engineers and Scientist who want to understand more about the practicalities of mathematical modelling of mixture of fluids, gases and solids. It is suitable for all levels of experience and will provide the foundation for attendees to either start working in this area or to enlarge their existing knowledge.

Expected outcomes: Participants should leave this course with a sound background in multiphase flow, a knowledge of what models are available, when they can be used and confidence to tackle such problems.

Cost: \$3,850 (2 days) (GST Inc) (Course fee will cover attendance, morning and afternoon tea and lunch)

Academic discount - 2 people for the price of 1. Volume discounts are available on request.

If you have not registered using the 2008 Australasian User Conference Registration Form please complete the attached training registration form to confirm your place at this course.



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“State of the Art Multiphase CFD” Course Agenda

The course will cover the basic theory of Multiphase Flow (MPF) in a manner that is non-code specific but will draw examples from both ANSYS CFX and FLUENT. The outline of the course will be as follows:

1. MPF introduction (modeling approach, challenges, phase equation)
2. Eulerian Approach
 - 2.1 Description of options, additional forces, sources, etc.
 - 2.2 Turbulence modelling in multiphase phase models
 - 2.3 Condensation (wet steam model, film & droplet condensation) & Boiling (cavitation, thermal phase change, film boiling, RPI boiling)
 - 2.4 Solids modelling, dense packing, kinetic theory models etc.
 - 2.5 Free surface modelling, VOF, surface tension, contact angles, etc.
 - 2.6 MUSIG model, population balance etc.
3. Algebraic Slip Model
 - 3.1 Describe basic equation, limitations.
 - 3.2 Show how it is setup and used
4. Lagrangian (Discrete particle) Approach
 - 4.1 Basic equations, forces, heat transfer etc
 - 4.2 Droplet breakup
 - 4.3 Droplet evaporation & combustion
5. Practical Examples
 - 5.1 Gas-liquid system (typical applications of this are: bubble columns, tank sloshing)
 - 5.2 Gas-solid system (typical applications of this are: fluidized beds for catalytic cracking, coal/ biomass gasification, packed bed reactor)
 - 5.3 Stirred tanks with reaction & settling (typical applications include crystallizers, polymer production, precipitators etc)
 - 5.4 Slurry transport through pipes etc.
 - 5.5 Use of the wet steam model for non-equilibrium condensation in turbines
 - 5.6 Sedimentation in settling tanks etc.
6. What's new in ANSYS 12.0 in both ANSYS CFX and FLUENT
7. Current R&D: what does the future hold?

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TRAINING COURSE REGISTRATION FORM

TAX INVOICE for GST Purposes
LEAP Australia Pty Ltd ABN: 87 905 032 785

Personal details - (Please print)

(Ms/Mrs/Mr/Dr/Prof) Family Name: _____ Given name/s: _____

Organisation: _____

Department: _____

Address: _____

City: _____ State: _____ Postcode: _____

Country: _____ Tel: (____) _____ Fax: (____) _____

Email: _____

Contact Person (if not registrant): _____ Phone No: _____

Contact Email Address: _____

I have read, understood and agreed to LEAP Australia's Terms and Conditions, related to training courses, as outlined on the following page.

Signature: _____ Date: _____

Payment details

TOTAL PAYMENT DUE: \$ _____

Payment is required at least 7 days prior to the scheduled commencement of the training course. An official purchase order must accompany this registration form when paying by cheque or direct deposit.

Payment Method (Please tick appropriate box)

Cheque enclosed Cheque to follow (Cheques must be in AU\$ and made payable to **LEAP Australia Pty Ltd**)

Purchase Order No: _____ (LEAP Aust to invoice)

Payment by Credit Card: Mastercard Visa

Card Number: _____

Expiry Date: _____/_____ Card holders name (please print) _____

Authorising Signature: _____ Date: _____

Direct Deposit (Please notify Sue Bowen on (02) 8966 7833 or fax (02) 8966 7899 of payment date and amount)

Account: LEAP Australia Pty Ltd Bank: Commonwealth BSB: 062231 A/C: 10164311

Please send registration form by mail, fax or email: LEAP Australia Pty Ltd,
Suite 20, 74-78 The Corso
Manly, NSW 2095
Fax: (02) 8966 7899 OR Email: lisa.shaw@leap.au.com



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State of the Art Multiphase CFD Registration Form

Terms & Conditions – LEAP Australia Training Courses

A signed registration form, returned to one of LEAP's offices indicates that you have read and agreed to the terms and conditions set out below:

- A place on any course is reserved only upon receipt of a signed training registration form accompanied by a purchase order for an amount equal to the quoted course fee.
- Full payment for all training activities must be received 7 working days prior to the commencement of the course.
- LEAP reserves the right to cancel or re-schedule courses with 7 days notice. In the event of such cancellation, registrants can opt to have all pre-paid fees refunded in full or credited towards the next available course.
- In the event of customer cancellation, course fees shall be refunded in full provided at least 14 days notice is given prior to course commencement. No refunds will be given in respect to customer cancellations received less than 14 days prior to commencement of the scheduled course.

Thank you for your interest in LEAP's training services.

