Computational Fluid Dynamics (CFD) Simulation Using Open Source Software

INTRODUCTION

Under the Green Mark criteria, Computational Fluid Dynamics (CFD) simulation is required and encompasses 4 segments namely, ventilation simulation, thermal comfort, indoor air quality simulation and wind driven rain. As CFD simulation software for commercial projects and outsourcing of simulation can be costly, it would be beneficial for companies and professionals to equip themselves with knowledge on CFD's open source software, OpenFOAM.

In the course on "Computational Fluid Dynamics (CFD) Simulation Using Open Source Software", participants will acquire the knowledge on CFD, OpenFOAM as an open source software as well as the experience needed to start their own CFD projects using OpenFOAM. There will be planned tutorials to guide participants through all aspect of the software.

OBJECTIVES

- To provide participants with an overview of the use of CFD technology in the context of built environment and the process of designing and delivering a green building and a healthy environment.
- To train participants with OpenFOAM, CFD modelling techniques and other relevant software skills.

CONTENTS

Introduction of CFD & Basics of OpenFOAM

- Introduction of CFD
- Basics of OpenFOAM
- Meshing – blockMESH
- Meshing – snappyHexMesh
- Detailed Buoyant Indoor Simulation

Advanced Modelling in OpenFOAM

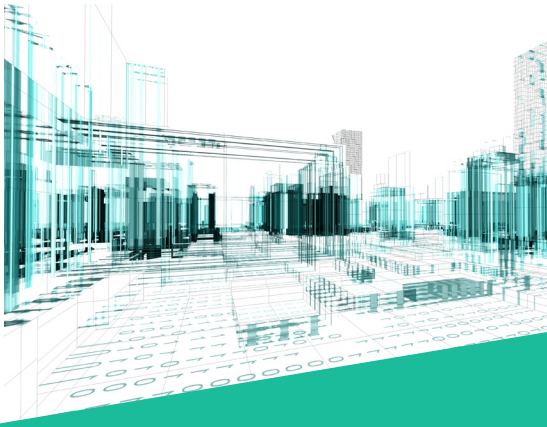
- Mathematical Background of CFD in OpenFOAM
- External Heat Transfer with Rotating Parts
- Dynamic Mesh Movement

Introduction of BIM Centric GUI

- Introduction
- Meshing / General Solver Settings
- Geometry Import / Mesh Refinement Setting
- Running OpenFOAM via GUI

LECTURER

DR ALEX LEE, Managing Director of Tian Building Engineering Pte Ltd, is a pioneer in CFD in Singapore. He has more than 25 years of applied research experiences at STAe, DSO, IHPC, CIMNE (Singapore), National University of Singapore (NUS) and Singapore Institute of Technology (SIT). Under his leadership, he had established a CFD consortium focusing on HVAC and Fire/Smoke applications. Dr Alex Lee was also instrumental in helping SCDF in developing the 1st Performance based fire code. Over the recent years, he has extended his deep knowledge in developing an Integrated Building Performance Analysis solution for ACMV, ETTV, building energy and Fire and Smoke simulation. He is currently an Adjunct Associate Professor in SiT and BCA Academy. He speaks frequently on BIM Centric BPA technology. He is also the co-founder of BIM HVACTool – A Graphical User Interface for Building Performance Analysis Tool.



DETAILS

2nd Run:	17, 18, 24, 25, 31 Aug, 1 & 7 Sep 2020
Duration:	7 nights (21 hours)
Time:	7.00pm to 10.00pm
Frequency:	2 times per week
Venue:	BCA Academy, T5-4 (IT Lab)
Fee (Incl of GST):	S$1,470.00

In keeping with our green and sustainable practices, course notes will be available in e-format.

ASSESSMENT AND AWARD

- Participants are required to complete the in-class assessment(s) during the course of study.
- Participants who achieve a minimum class attendance of 75% and passed the assessment(s) will be issued with a Certificate of Successful Completion (CSC) issued by BCAA.

CPD POINTS

PEB: Pending

TARGET AUDIENCE

Built environment professionals and other stakeholders who wish to learn about CFD, OpenFOAM or perform airflow modelling using CFD analysis and involve in projects related to green and sustainability.

To register, log on to our Online StoreFront (OSF) at: *https://eservices.bcaa.edu.sg/registration/#/login and search for course code* ***80028***

© 2018 Copyright of Building and Construction Authority. All rights reserved.