

# Common Mistakes

## Made in using CFD in FEA projects

D a t e

21 April 2012

(Sat)

T i m e

2.30 – 5.30 pm

V e n u e

Room N001  
The Hong Kong  
Polytechnic University

Organized by  
Professor W.K. Chow  
Principal Investigator  
Area of Strength : Fire Safety Engineering



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[Ref: Common mistakes made in using CFD in FEA projects]

- I enclose a cheque of HK\$500 for the registration for the lecture course on 21 Apr 2012.
- I am an IFE/HKIE-FED member/BSE Alumni. I enclose a cheque of HK\$300 for the registration for the lecture course on 21 Apr 2012.
- I am an SFPE member/BSE Alumni Association member\*. I enclose a cheque of HK\$200 for the registration for the lecture course on 21 Apr 2012.

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C P D L E C T U R E

# Common Mistakes made in using CFD in FEA projects

S p e a k e r s

Professor WK Chow & Dr. NK Fong  
Research Centre for Fire Engineering  
Department of Building Services Engineering  
The Hong Kong Polytechnic University

## Program Schedule

1 4 . 3 0	-	1 4 . 4 5	Registration
1 4 . 4 5	-	1 5 . 4 5	P A R T 1 : Mistakes and problems on examples such as open kitchens and historic buildings in missing combustion in fire simulation (Professor W.K. Chow)
1 5 . 4 5	-	1 6 . 0 5	Coffee break
1 6 . 0 5	-	1 7 . 0 5	P A R T 2 : CFD Concept and Application in FEA (Dr. N.K. Fong)
1 7 . 1 0	-	1 7 . 3 0	P A R T 3 : Open forum (Professor W.K. Chow and Dr. N.K. Fong)

## Abstract

Fire Engineering Approach (FEA) was allowed to determine fire safety provisions for big construction projects having difficulties to comply with prescriptive codes since 1998. There might be other reasons for using FEA such as for cost reduction. Empirical formula on fire engineering or fire zone models were used to give short FEA reports before. Computational Fluid Dynamics (CFD) was commonly applied in hazard assessment after free software became readily available. However, many mistakes were made in using those CFD packages while preparing the FEA reports. Common examples to watch are:

- Treatment of free boundary conditions for openings.
- Low heat release rates for small design fires.
- Missing other important information on pressure field and turbulence parameters to demonstrate consistency.
- Justification of predicted results.

All these mistakes made in CFD applications would lead to very unsafe design and will be briefly outlined in this CPD talk. Such mistakes should be addressed properly in future FEA projects.