

Quality & Reliability in



Keith Hanna from Fluent News recently interviewed Tim Morris, Chief Operating Officer of NAFEMS, and Althea de Souza, Chair of NAFEMS' CFD Technical Working Group, to find out more about this independent simulation standards organization and what it is doing for its members in the CFD community worldwide.

KH: What is NAFEMS and what is your history?

TM:



Tim Morris

NAFEMS started in the early 1980s as a non-profit organization in the UK focused on the finite element (FE) structural analysis techniques being rapidly adopted by industry, and in particular the safe and reliable use of the tools by engineers. Increasingly, with so many engineers beginning to rely on computer simulation methods as vital components within their product development processes, a need grew for an independent authority and an association of users to resolve best practice use of this technology. It was out of this environment that NAFEMS was born. Since then, both structural analysis and CFD have experienced rapid growth in usage with many companies investing heavily in these technologies around the globe. However, for both established and new users of this software how can they ensure the best returns on their investments? How do they develop and enhance their simulation capabilities? And crucially, how do they know they are using the technology in the most effective way possible? This is where NAFEMS steps in as an impartial best practice guide and network for users.

KH: How big is NAFEMS and how is it structured?

TM: Currently we have about 700 companies who are subscribing members ranging from Fortune 500 companies to small engineering consulting firms in many countries around the world. About 30% of our members are UK based but we are seeing a rapid growth in North America, with 10-15% of our members

based there, and the remainder mostly in Europe. About 15% of our members are academics and although the largest proportion of people are doing FE analysis, our CFD group is expanding rapidly. We now have branches in Germany, France, Italy, America, the Nordic region and Iberia, as well as in the UK, and we are seeing a cross-section of members in all industry sectors. NAFEMS has a governing council of twelve directors from six countries. There are seven geographically-based steering groups and five technical working groups. All committee members in the groups participate on a voluntary basis, and represent leading industrial companies, software vendors, and academics. Currently, our five working groups are: Computational Structural Mechanics, CAD/FE Integration and Optimization, Computational Fluid Dynamics, Education & Training, and Analysis Management. In many ways I think the CFD industry today is where the FE industry was 15 years ago.

KH: What services does NAFEMS offer to members from the CFD Community?

The CFD working group started in 1995 with the

ADS:



Althea de Souza

objective of promoting the safe and reliable use of CFD and to provide best practices, training and education for CFD users of all levels. The work of the group is aimed at encouraging and supporting the growing use of CFD in industry and the expansion of applications and situations to which it is applied. A key activity of the CFD working group is to produce guidance documents on industrial applied CFD. To date, a number of publications have been produced which we hope will benefit novices

Engineering CFD Simulations

and experts alike. These are available at a nominal price to members, but non-members can buy them as well. Many new and potential users can find CFD intimidating because it can be a very jargon-laden subject. We therefore wanted to produce guides that unpacked the language of CFD, dealt with issues in a clear and simple way, and gave good practical industrial CFD advice.

KH: What do you perceive to be the main general issues facing CFD members of NAFEMS?

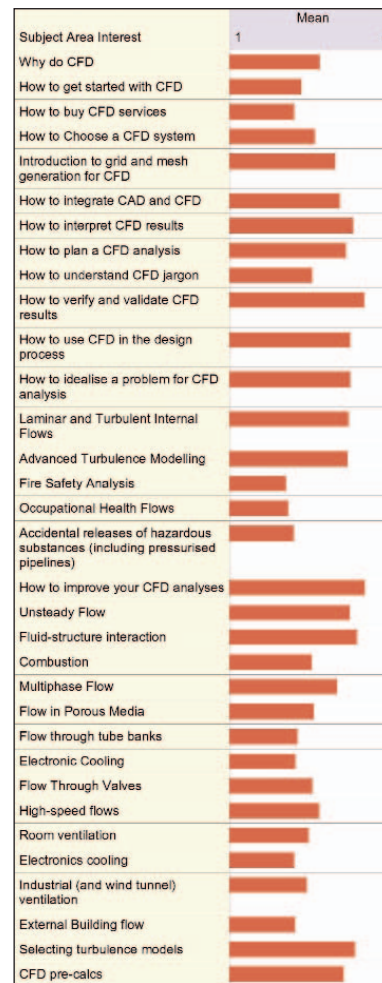
ADS: Today with the profusion of “easy to use” and “push-button” CFD codes for designers, the unwary can easily get wrong or unphysical CFD predictions without being aware of it. Many people want roadmaps through the minefield of CFD usage. We find that meshing is still a big issue especially compared to structural analysis, as is CAD embedding of CFD. The CFD industry is awash with buzzwords like “multiphysics” and “multibody dynamics” and these terms need to be defined clearly in the context of CFD. Many companies are interested in integrating their CFD tools into their design processes – but how do they do so effectively? Ultimately, the bottom line is the quality and reliability of industrial CFD simulations and this is the most important issue today for many NAFEMS members.

KH: I understand that you commissioned the first independent CFD industry user survey of your members recently. What were your findings?

ADS: This year the CFD Working Group decided to carry out a worldwide survey on the availability of CFD information resources. The purpose of the survey was to identify which topics are insufficiently covered at present, but of interest to those involved, either directly or indirectly, in CFD analysis activities. Most of the 300 respondents to our survey were CFD analysts

from all industry sectors and a range of countries. Eighty percent were using commercial CFD packages and most used CFD for over 60% of their working hours. The majority had over one year of experience with CFD. Many of the respondents wanted more information on validations of CFD simulation results, the assessment of solution quality, the theory of CFD, and basic meshing and CFD solver guidelines. They also requested more workbooks of CFD examples, specialist and advanced CFD publications, and basic or introductory CFD information. The survey also identified the most useful format through which the material should be made available, that is, via booklets and online website delivery. ■

More info@
www.nafems.org



Subject Area Interest responses in the NAFEMS CFD survey

Advice Documents published by the NAFEMS CFD Working Group

- Why do Computational Fluid Dynamics?
- How to Get Started with Computational Fluid Dynamics
- How to Plan a CFD Analysis
- How to Understand Computational Fluid Dynamics Jargon
- Introductions to Grid & Mesh Generation for CFD
- 1st NAFEMS Workbook of CFD Examples
- CFD Analysis – Guidance for Good Practice
- 2nd NAFEMS Workbook of CFD Examples
- How to buy CFD Services
- How to choose a CFD System

