

COMPUTATIONAL MODELLING OF TURBULENT SWIRLING DIFFUSION FLAMES

Ing. Jiří Vondál completed his PhD studies at Institute of Process and Environmental Engineering of Brno University of Technology, Faculty of Mechanical Engineering – VUT FSI Brno.

The main target of this research work is to provide reliable data measured by an innovative method for the case of swirling diffusion natural gas flames and consequently utilise the data for validation of Computational Fluid Dynamic simulations represented by commercial solver ANSYS Fluent® 12.1. The important part of the work is also to create some in-house software codes needed for the computational support.

The selected approach to tackle the studied problem has been appropriate and I have not got major comments. I consider very positive that the Thesis is written in clear and understandable English and as this is going to be available for potential citations world-wide.

The research has been well structured and is presented neatly. The technical part is very good and I have not got any substantial comments.

The graphical part of the Thesis has been also very good.

Very positive is also that the PhD candidate rather clearly stated his own share of the work in the case where it required some wider collaboration.

They are just some very minor and mostly formal points to be improved:

In a very few places there is some confusion using decimal commas and decimal points – e.g. in the Czech abstract is 0.2 % and in the Appendix F, which is an English text, are decimal commas.

Using a list of lumped references as [3-5] or [46 – 49] is not very helpful for a reader. If you need to use more references at least a short assessment/justification should be provided.

In order to give the readers a sense of continuity, I would encourage the PhD candidate to identify publications of similar research published very recently.

I found only one reference from 2010 and the papers published in recent years (2011 and even 2012) related to the content of the Thesis should be checked and found. It is also possible reference still unpublished “articles in print” using their doi:

This is very important for proving the novelty of research.

I am not fully aware about VUT specific standards for the literature sources referencing, however in the references should be listed all authors.

To use just “et al.” in the List of references is neither ethical nor politically correct.

It is no need to repeat in the list of references <http://> as modern browsers do not require it.

When referencing conference proceedings page numbers should be provided, when proceedings are not available the lecture identification – e.g. lecture number.

For books, thesis, reports etc. - both the place and country where the book was published should be listed.

They are some small inaccuracies in references [2], [14], [18], [22], [21], [24], [42].

They should be checked and corrected.

Some other very minor typos as:

Page 11 – m^2 should be m^2

Fig 2.11 – the symbol for time should be s and not sec

Page 316 – FIG 3 no units provided for the time – this is an appended publication; however I reviewed it as well as this a part of the Thesis.

Finally a few general questions to be answered during the Viva:

What is the biggest original contribution and what is its scientific and economical potential?

It has been positive that your results have been already published. What has been the impact of your publications?

Have your work been already referenced by the other authors?

When the publications are authored by several authors, what has been your share and personal contribution?

Are you planning a publication in a journal with the impact factor?

Despite these very minor comments, which can be answered during the Viva examination, the author clearly demonstrated his ability of a very creative research.

The presented work fully meets the requirements for granting the candidate a PhD grade.

I recommend the work without any reservation to be considered for the PhD Viva.

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