

## EVALUATION REPORT ON RESEARCH LINE – “FIRES”

LAETA – Associated Laboratory for Energy, Transport and Aeronautics

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### Background

The undersigned Prof. Roman Weber visited the LAETA group on 23<sup>rd</sup> and 24<sup>th</sup> September 2009 to evaluate the performance of the Energy Line.

The activities within the Fires Line were presented by:

at IST of Lisbon	Prof. J. C. Pereira (23 <sup>rd</sup> of September),
at University of Coimbra	Prof. D. X. Viegas (24 <sup>th</sup> of September),

The evaluation was carried out for year 2008.

The evaluation was carried out on the basis of both the visit and RL-MECH-750022-60 report.

### Objectives of the Fires Line

Forest fires and energetic materials are important topics not only for Portugal. General objectives of the Fires line of Laeta can be summarize as follows:

- (a) to carry out fundamental and applied research in forest fires and energetic materials – explosives and propellants,
- (b) promote and carry out research on ignitability and combustability of materials, materials promotion of research on renewable and new energy technologies,
- (c) to develop mathematical models for predicting fire spread,
- (d) to develop and carry out advanced training programs for post graduate students and for professional institutions in the filed of fire prevention and fighting.

### Fires Line

The following research groups were evaluated within the Fires Line of Laeta:

Flow Physics and Simulation

IST

Forest Fires and Detonics

University of Coimbra

### Research Activities

The research in flow physics is an important part of the fire research program since it provides the basic understanding of the fire spread by convection (winds). However, it is perhaps fair

to say that the flow physics and simulation group provides a much wider basis for mechanical and chemical engineering. Understanding of fluid flow belongs to the basics of engineering. The on-going research can be split into three main sub-fields: Aerodynamics and experimental Fluid Mechanics, Turbulence Physics and Modeling, and CFD and New Computational Paradigm.

The Forest Fires and Detonics group is active in the field of fire initiation, spread and extinction. There have been a number of projects covering the area of fire dynamics, building tests, motor vehicle tests as well as railways vehicle tests.

### **Productivity of the Fires Line**

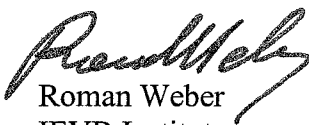
One of the indicators of productivity is a number (list) of publications, patents and degrees awarded. The table below summarises the productivity:

	2003-2007	2008
Books	4	1
Chapters in books	8	2
Papers in Int. Journals	69	35
Papers in National journals	1	-
Presentations at Int. Conferences	132	41
Presentations at National Conferences	32	15
International Projects	20	7
National Projects	18	18
Organization of Conferences	1	1
Organization of Symposiums	12	1
Ph.D thesis completed	10	2
M.Sc. thesis completed	23	11
Membership of Edit. Boards of Journals	1	1

### **Evaluation and Recommendations**

The Fires line of Laeta has a very good publication record. Laeta members are being seen at International and National Conferences. Their work has been published in journals of very good and good scientific ranking. This is an outstanding record of accomplishments.

However, I would recommend strengthening of interaction between the Flow Physics and Simulation group and the Forest Fires and Detonics since fluid mechanics must be a strong basis for both groups.



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