

EVALUATION OF LAETA GROUPS

INVOLVED IN ENERGY LINE AND FIRES LINE

LAETA – Associated Laboratory for Energy, Transport and Aeronautics

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Background

The undersigned Prof. Roman Weber visited the LAETA groups on 23rd and 24th September 2009 to evaluate the performance of the Energy Line and the Fires Line.

The activities of the following groups were presented:

Renewable and Sustainable Energy Systems	Prof. P.Coelho, Prof. L. Gato (23 rd September, at IST, Lisbon),
Flow Physics and Simulation	Prof. J.C. Pereira (23 rd September, at IST, Lisbon),
Forest Fires and Detonics	Prof. X. Viegas (24 th September, at University of Coimbra),
Energy, Environment and Comfort	Prof. G. de Silva (24 th September at University of Coimbra),
Advanced Studies on Energy in the Built Environment	– Prof. O. Fernandes (24 th September, University of Oporto)

The evaluation was carried out for year 2008.

Renewable and Sustainable Energy Systems Group

In the year 2008, the research team of the Renewable and Sustainable Energy Systems Group consisted of two full professors, four associated professors, five assistant professors, thirteen post-doc research fellows, fourteen Ph.D. students, twenty one researchers, two technicians and two administrative workers. All together sixty three people were involved.

The group run several laboratories among them: Combustion Laboratory, Laboratory of New and Renewable Energies, Laboratory on Micro-Fluids, Turbomachinery Laboratory and Vehicle Experimental Laboratory. The research areas included: heat transfer (models for radiative heat transfer, turbulence-radiation interaction), combustion (biomass combustion, pulverized coal combustion, flameless combustion, automotive catalytic converters), micro-fluids (Micro-PIV, blood oxygenators), renewables (biomass utilization, hydrogen, reformers), energy policy, waste management, ocean wave energy conversion, cross flow turbines, wind turbines for urban environment.

The Group was granted five patents and several awards in the energy research sector. The group is represented on editorial boards of thirteen journals. The list of journal publications for the year 2009, it means papers written and prepared in 2008, includes an impressive thirty three positions.

In my opinion the Renewable and Sustainable Energy Systems Group belongs to the best European research teams of the energy field. The overall output of the group is indeed very impressive.

Flow Physics and Simulation Group

In the year 2008, the Flow Physics and Simulation Group consisted of one professor, three assistant professors, nine post-doc research fellows, and six Ph.D. candidates and three M.Sc. students. The group produced two Ph.Ds, four MSc thesis and organized two conferences.

The main research areas includes laminar flow technology (supersonic LFC, laminar wings), flow control and heat transfer (boundary layers), Low NO_x Combustion for Gas Turbines (mild combustion in gas turbines), Micro-and Nano-Particles Flows (fine particles and droplets), CFD Development, Analysis and Applications (flapping aerofoils, porous media flow, reactive porous media flows, non-intrusive measurement techniques).

Three prestigious awards were granted to the members of the group. The publication list includes around fifteen journal publications, sixteen conference publications and three manuscripts under review.

All together the accomplishments of the Flow Physics and Simulation Group are very impressive. The group not only belongs to the best European teams in fluid dynamics but also provides a solid basis for mechanical engineering and chemical engineering at IST.

Forest Fires and Detonics Group

In the year 2008, the Forest Fires and Detonic Group consisted of 64 people; 24 post-doc research fellows, 18 MSc. students, 16 graduate students, and 6 technicians.

The main research activities included fire behaviour, fire safety, urban fires, structural components of fire, detonics, detonation and diagnostics.

The productivity of the group was highlighted by two patents. The publications include a book, two book chapters, eight papers published in peer review international journals, thirteen papers presented at international conferences, seven MSc. thesis. The group participated in eleven national research projects and four international ones.

All together the group plays a very important role in the research scene of Portugal. The group interacts actively with similar institutions all over the world. The group achievements record is indeed very good.

Energy, Environment and Comfort Group

The main research activities concentrated on the development of the experimental facilities for studying indoor environment quality and comfort. Several new experimental rigs were developed to this end.

The main achievements of the Group during the year 2008 was the successful launching of M.Sc Program on Sustainable Energy Systems at the University of Coimbra. Twenty five students enrolled on this program. The Group was also involved in courses for Qualified Experts of the Portuguese Buildings System.

It is important to realize that the Group joined the Laeta cooperation in 2007. Despite such a short involvement period the Group produced seven papers in international journals, presented twenty two papers at international conferences. The Group organised the 7th International Meeting on Thermal Manikins and Modelling. Taking all these facts into account, the achievements of the Group are very good.

Advanced Studies on Energy in the Building Environment Group

The main research activities concentrated on the development of cleaner production materials for buildings. Several experimental rigs were designed and constructed to meet this objective. The rigs were equipped with measurement equipment for determination of VOC and formaldehyde. Furthermore several concepts for buildings windows were developed and tested.

The main achievements can be summarised in two papers published in international journals, three in national ones, ten papers presented at international conferences, three MSc. thesis. The Group participated to the formulation of some strategic publications at the National, Regional and Municipal level. The Group was involved in the organisation of an international workshop in Brussels and a conference at Oporto on "Policies for millions of indoor environments". The Group actively participated in the MIT-Portugal programme.

Realizing the fact that this Group is also rather young, its achievements are already very good. There is no doubt that more will come.



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