



# First announcement

of two Workshops organized  
in the framework of the  
FP7 project LIMOUSINE

Zaragoza / Spain



- WS1 -  
*6-7 September 2010*

## **Thermo-acoustic instabilities in syngas combustors**

Syngas fuels may become available from a number of sources, including both fossil and renewable solid fuels, and offer very interesting possibilities: valorisation of biomass or residues, CO<sub>2</sub> reduction through H<sub>2</sub> enrichment... The use of these alternative fuels in gas turbines is a challenging objective, due to their peculiar combustion characteristics. The risk of combustion instabilities, still a serious problem with conventional fuels, is one of the most important issues.

The workshop will aim to present current views and experience of the manufacturers and users of gas turbine engines operated on syngas. Further will be discussed the characteristics of syngas flames in combustors with relation to the coupling with acoustics. The effect of a variation of the contents of hydrogen and methane will be explored by means of available knowledge.

- WS2 -  
*9-10 September 2010*

## **Numerical analysis of acoustic phenomena in combustors**

There is continuing pressure on the manufacturers of land-based gas turbines to reduce NO<sub>x</sub> further by operating in fuel lean premixed mode even closer to the lean flammability limit. However, operating in this regime can result in pressure and temperature fluctuations that can reduce the life of engine components. In recent years, this problem has been analysed using transient numerical simulations to predict the fluctuating combusting flow in the combustor and the response of the surrounding casing and components.

In this workshop, the methodology of numerical simulation of acoustic behaviour of combusting flows will be introduced. Students will have the opportunity to run their own simulations using the ANSYS software. There will also be a discussion of possible future developments.

### **Venue:**

The Workshops will take place at the Univ. Zaragoza  
(address: Centro Politécnico Superior / María de Luna, 3 / Zaragoza / Spain)

### **Organized by:**

*Univ. of Zaragoza / LITEC  
with the collaboration of Univ. of Twente and ANSYS*

Updated info will be posted @ [www.unizar.es/lci/limousine](http://www.unizar.es/lci/limousine)

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## First announcement

### LIMOUSINE Workshops @ Zaragoza, Sept.10

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**Any researcher** interested in one or both workshops is most welcome.

A fee applies to non-LIMOUSINE attendants (approx., to be confirmed):

- One workshop (WS1 or WS2): 300 Euro
- The two workshops: 540 Euro

The fee includes: lectures, material, refreshment, lunch and workshop dinner.

Hotel arrangements at special reduced rate are offered, but will be charged separately.



**Persons with interest** in one or both workshops are kindly invited to send an e-mail to [webhci@unizar.es](mailto:webhci@unizar.es), indicating:

- Interested in WS1, WS2 or both?
- Affiliation and e-mail address to which updated info should be sent (only for this event)

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### LIMOUSINE project (FP7, Marie Curie Actions)

(Limit cycles of thermo-acoustic oscillations in gas turbine combustors)

is a multi-disciplinary project providing research training in acoustics, combustion, mathematics, fluid and structural mechanics, experimental techniques, and control systems theory. The research objective is to predict the mechanical vibration in a gas turbine engine and the resulting fatigue and time to failure. Safe operation of the gas turbine on a variety of fuels and operating conditions is targeted. The project is motivated by the need for leaner combustion technologies and reduced emissions.

The consortium includes 14 partners: 6 European universities, 1 American university, 2 research institutes and 5 industrial companies.

<http://www.utwente.nl/limousine/>

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