

PRECCINSTA

PREDICTION AND CONTROL OF COMBUSTION INSTABILITIES IN TUBULAR AND ANNULAR GT COMBUSTION SYSTEMS

ENK5-CT2000-00060

"CAME-GT WORKSHOP 16-FEB-01"

- **21 partners from 5 countries**
- **6 manufacturers**
- **3 utilities**
- **5 research organisations**
- **7 universities**

- **The occurrence of thermo-acoustic oscillations is connected to temporal variations in heat release which, when coupled with the acoustics characteristics of the combustor, can generate pressure and velocity fluctuations.**
- **This can become an unstable situation, leading to damage to the combustor/engine.**
- **Requirements for lower No_x and higher firing temperatures tend to accentuate the problem.**
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OBJECTIVES

- **Methods, tools and criteria for designing ‘quiet’ combustors**
 - **This includes the use of LES methods, which feature the capability to represent the physics of turbulent unsteady flow without averaging out the onset of instability**
 - **Use of active control and passive damping techniques**
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METHODOLOGY

- **Numerical codes**
- **Detailed measurements with novel/advanced measurement techniques on components and a generic rig**
- **Transition from component testing to field tests on commercially available engines**
- **On-line monitoring and off-line diagnostics of operating plant, to create a database of instability data**