



## LAERTE Combustion benches

### Identification of the installation/facility :

Country: FRANCE  
Location (city):Palaiseau  
Name of the facility:LAERTE  
Date of construction or of acquisition or of main refurbishment: 1991  
Owner: ONERA  
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Internet site: [www.onera.fr](http://www.onera.fr)

### Technical characteristics:

#### 1 - Type of infrastructure

Wind tunnel	<input type="checkbox"/>
Propulsion bench	<input checked="" type="checkbox"/>
Structures facility	<input type="checkbox"/>
Material facility	<input type="checkbox"/>
Simulator (ex. Flight simulator, tower, ...)	<input type="checkbox"/>
Flight test bed (aircraft, embedded facilities, ...)	<input type="checkbox"/>
Supercomputers	<input type="checkbox"/>
Other	<input type="checkbox"/>

#### 2 - Main technical characteristics

Basic researches on turbulent combustion are led in LAERTE test facilities (Laboratoire des Ecoulements Réactifs et de leurs Techniques d'Etudes) where data bases are made up for the validation of the combustion models implemented in the CFD codes. Those data bases are obtained from experiments carried out in simplified basic combustor configurations.

There are two flow lines available. One dedicated to subsonic flows and one for supersonic flows.

The main characteristics of the subsonic flows are the followings:

Maximum Air mass flow: 0,3 kg/s

Maximum pressure: 0.3 Mpa

Minimum pressure: 0.1 Mpa

Maximum temperature : 550 K

Type of fuel : Kerosen and methane

#### 3 - Research domains which can be addressed (refer to ACARE taxonomy

<http://www.acare4europe.com/docs/ASD-Annex-final-211004-out-asd.pdf>)

Propulsion/ Combustion

- Combustor operability
- Combustion technologies for reducing emissions produced by conventional engines configurations
- Enhance mixing design /technologies for lean combustion
- Multi-point fuel injection

#### 4 - Main (or specific) associated measurement techniques

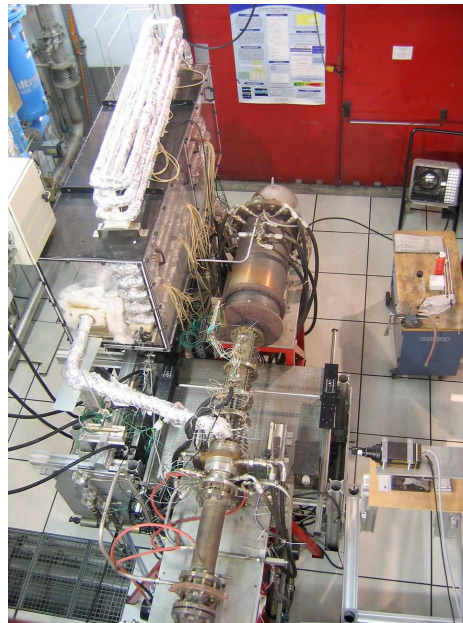


- Dedicated to the bench: pressure, temperature, mass flow rate, gas analysis
- Specific measurements: non intrusive optical measurement methods (LDV, PIV, PLIF, CARS)

**5 - Operational status**

- Fully operational (around 250h in 2010)

**6 - picture**



**Financial elements:**

Replacement cost (M€uros)

- |               |                                     |
|---------------|-------------------------------------|
| Less than 10  | <input type="checkbox"/>            |
| 10 to 30      | <input checked="" type="checkbox"/> |
| 30 to 60      | <input type="checkbox"/>            |
| 60 to 100     | <input type="checkbox"/>            |
| More than 100 | <input type="checkbox"/>            |

**Practices concerning:**

Access policy (contract, voucher, free access for research, etc...): Contract and free access

Support (regional, national, European, private, ...): regional, national, European, private (industries)

**Origin of information** ('signature'): author and date

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