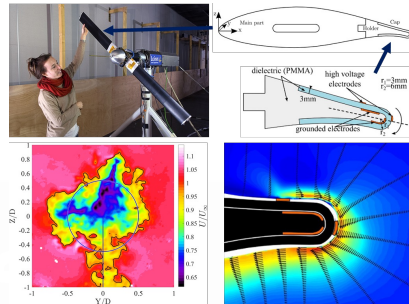


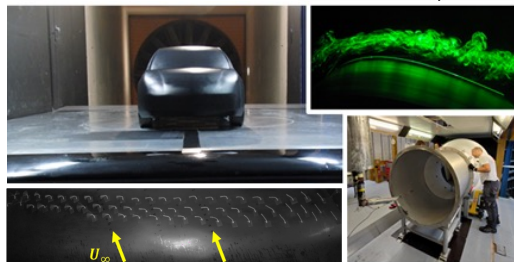
The PRISME S1 wind tunnel



Secondary test section (5 m × 5 m × 12 m)



Fan (ϕ 3.36 m @ 265 kW)



Main test section (2 m × 2 m × 5 m)

- Force balance (6-components)
- Hot-wire anemometry (6 ch)
- Low-speed 2D-3C PIV @ 1 Hz
- High-speed 2D-3C PIV @ 100 Hz
- Pressure scanners (200 ch)

The PRISME S1 wind tunnel

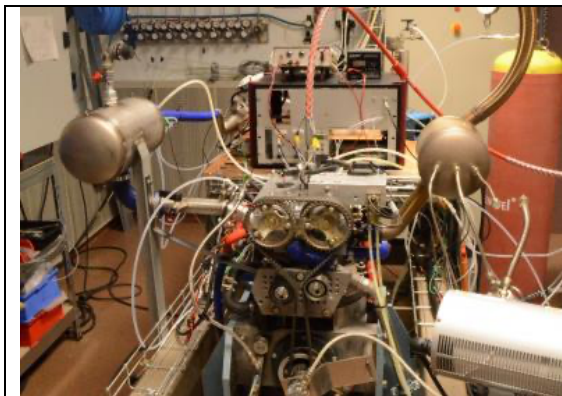
Built in the early 90s, the PRISME laboratory's large S1 wind tunnel is one of the University of Orléans' major test facilities. This subsonic ($Ma \leq 0.2$) recirculating wind tunnel has two test sections dedicated to the experimental aerodynamics of bodies representative of industrial applications. In particular, this facility is used to qualify models up to pre-industrial scale (TRL 5). The main test section is mainly used to study and control flows in the field of road transport and aeronautics, with wind speeds of up to 200 km/h. The secondary test section, which is larger, is used for environmental studies where the atmospheric boundary layer plays an essential role, such as in the production of renewable energy.

The PRISME laboratory, through the activities of the ECM axis (Energy Combustion Engine), has numerous experimental facilities for

- ✓ validate control strategies and manage the energy available within a hybrid vehicle or any other system
- ✓ characterize the impact of fuel on mixture preparation and combustion in thermal machines.

Dedicated resources for studies on dihydrogen/ammonia/bio/syngas combustion:

- High-power multi-cylinder engine cells
- Single-cylinder engine cells :
 - Metalical cylinder for compression ignition, spark ignition.
 - Optical engine

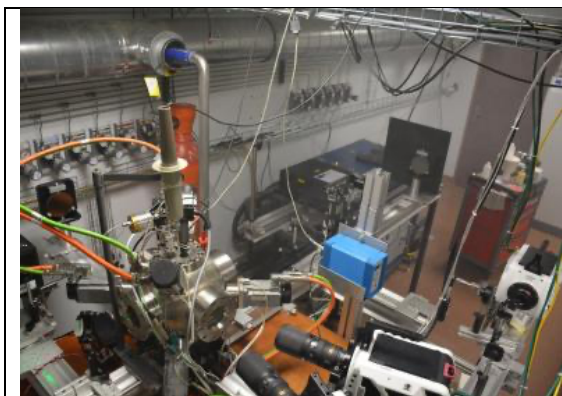


Engine dedicated to ammonia combustion



Engine dedicated to hydrogen combustion

- Specific chambers
 - rapid-compression machine for measuring auto-ignition times
 - spray chambers (non-reactive) and NOSE: "New One Shot Engine" for studying liquid and gaseous sprays
 - combustion sphere for laminar and turbulent flame speed measurements



combustion sphere for laminar and turbulent flame speed measurements



Optical engine

Dedicated resources for validating physical models and control strategies:

- Hot fuel cell bench
- Heat exchanger bench for battery thermal studies