

Scheda Laboratori di Ricerca

<p>Denominazione del Laboratorio</p>	<p><i>Italiano</i> Trasmissione del Calore <i>Inglese</i> TheLabs Thermal Laboratories</p>
<p>Gruppo di Ricerca di Riferimento</p>	<p><i>Italiano</i> Gruppo di Trasmissione del Calore ed Efficienza Energetica <i>Inglese</i> TheLabs-Thermal-Laboratories</p>
<p>Descrizione sintetica delle attrezzature, della strumentazione e delle attività di ricerca</p>	<p><i>Inglese</i></p> <p>The activity encompasses both experimental and numerical aspects. In the former, the equipment already present in the DIII is used, such as:</p> <ul style="list-style-type: none"> Data acquisition systems Calibration systems for temperature, flow rate, and fluid velocity sensors System for measuring thermophysical properties. High-resolution and quality infrared thermograph Hot-wire anemometry systems. <p>Building thermophysics and energy certification</p> <p>There are in-house software development capabilities, alongside the use of commercial software both specific to thermofluid dynamics and heat transfer and generic, with possible in-house development in specific environments. Commercial software employed includes Ansys-Fluent and CD-STAR (thermofluid dynamics simulation), EnergyPlus (building energy simulation), PyroSim (fire simulation), and COMSOL-MultiPhysics (integrated multiphysics simulation).</p> <p>Research activities are conducted at three levels: basic, applied, and project and measurement. Particularly noteworthy is the active collaboration in the field of Technical Physics aimed at improving energy efficiency in buildings, environmental conditioning, energy savings, and building safety, including historical and collective use buildings and infrastructure.</p> <p>Within the scope of building thermophysics and energy certification, specific activities include:</p> <ul style="list-style-type: none"> Building energy analysis Building thermophysics Energy certification Integrated thermal systems for energy efficiency in buildings Proposals for possible interventions on systems and materials for improving energy efficiency Measurement of thermophysical quantities Energy consumption forecasts Conditioning and environmental control techniques Systems for energy conversion from alternative and renewable sources Air quality Building safety (fire safety, systems, sustainability, etc.) Use of nanofluids, porous materials, metal foams, and ceramics in thermal systems.