

HEAT AND MASS TRANSFER TECHNOLOGICAL CENTER

Sr. Asensio Oliva, Centre Tecnològic de Transferència del Calor (CTTC)

ABSTRACT

The activities of the Heat and Mass Transfer Technological Centre (Centre Tecnològic de Transferència de Calor, CTTC) of the Universitat Politècnica de Catalunya-BarcelonaTech (UPC), are focussed on two key research lines. The first one is dedicated to basic investigations based on mathematical formulation, numerical (computational) resolution, and experimental validation of fluid dynamics and heat and mass transfer phenomena. Some relevant subjects in this line are: natural and forced convection ns, turbulence modelling, combustion, two-phase flow (condensation and evaporation), free surface modelling, solid-liquid phase change, radiation, porous media, numerical algorithms and solvers, domain discretization using arbitrary unstructured meshes, high performance computing (parallelisation), etc.

The second research line involves applied studies related to the thermal and fluid dynamic optimization of thermal systems and equipment. Its analysis methodology is enhanced by the achievements obtained from the above mentioned basic research line. Some of the subjects currently being investigated by the CTTC are:

- Refrigeration (vapour compression refrigerating systems, hermetically sealed reciprocating compressors, sorption refrigerating systems, etc.).
- HVAC (heating, ventilating and air conditioning).
- Active and passive solar systems (solar collectors using transparent insulation materials, building facades with transparent layers and ventilation, etc.).
- EeB (energy efficiency in buildings)
- CSP (concentrated solar power plants or solar thermal electricity).
- Thermal energy storage (sensible and phase change material).
- Heat exchangers (gas liquid compact heat exchangers for automobile radiators, evaporators and condensers, etc.).
- Wind turbines (airflow blade, full wind turbine, wind farm simulation/design, etc.).
- Aerodynamic designs.
- Etc.

For further details see www.cttc.upc.edu.