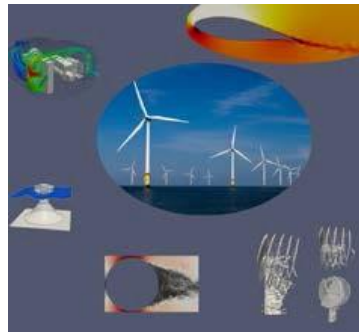
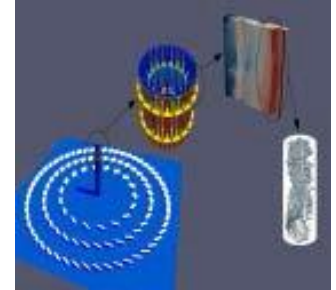




# RENEWABLE ENERGY

## SOLAR THERMAL ENERGY

- SOLAR COLLECTORS USING TIM
- RECEIVERS IN CONCENTRATING SOLAR POWER PLANTS
- THERMAL STORAGE IN CONCENTRATING SOLAR POWER PLANTS



## WIND POWER

- WIND TURBINE BLADES VIRTUAL WIND TUNNEL
- TOWER AIRFLOW INTERACTIONS IN OFFSHORE WIND POWER FARMS
- WIND TOWER NACELLE THERMAL MANAGEMENT
- NOISE ANALYSIS

## PHOTOVOLTAIC SOLAR ENERGY

- PV INSTALLATION INTEGRATION IN VENTILATED FAÇADES
- REFRIGERATION OF PV PANELS
- PV PANEL THERMAL MANAGEMENT

## OCEAN ENERGY

- OPTIMIZATION BUOY GEOMETRY DESIGN
- FLUID STRUCTURE INTERACTION BUOY WAVE
- OVERTOPPING DEVICES

# EFFICIENT USE OF RESOURCES

## ENERGY STORAGE

- SENSIBLE HEAT STORAGE TANKS
- LATENT HEAT STORAGE ACCUMULATORS (PCM)
- THERMOCHEMICAL STORAGE



## ELECTRICAL VEHICLE

- REFRIGERATION OF BATTERIES
- POWER ELECTRONICS COOLING
- AUTOMOBILE INTEGRATED ELECTRONIC COOLING
- DESIGN OF CHARGING STATIONS

## WASTE ENERGY

- THERMAL DESALINIZATION
- METAL COOLING (COPPER, ALUMINIUM)
- MELTING PROCESSES
- HEAT RECOVERY AND ALTERNATIVE HEATING IN WASHING MACHINES

## HEAT EXCHANGERS

- AUTOMOTIVE ENGINE COOLING RADIATORS
- HVAC CONDENSERS & EVAPORATORS
- ELECTRONIC HEAT SINKS
- PERFORMANCE ANALYSIS OF ENHANCED SURFACES
- ABSORPTION/ADSORPTION COOLING HEAT & MASS HEAT EXCHANGERS
- EVAPORATIVE COOLING
- FROST FORMATION EFFECTS ON HX
- BURNERS



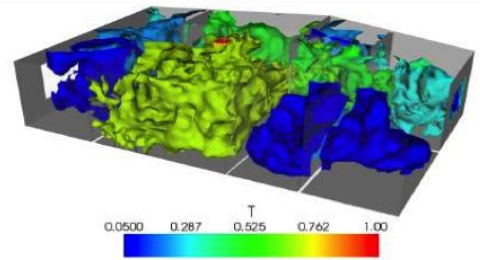
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UNIVERSITAT POLITÈCNICA DE CATALUNYA



# SMART & ENERGY EFFICIENCY in Industry, Buildings and Cities

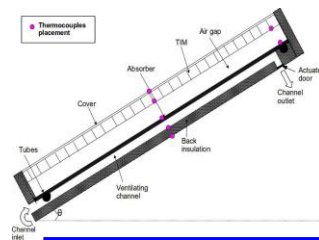
## REFRIGERATION<sub>r</sub>

- COMPRESSORS
- VALVES AND CAPILLARY TUBES
- REFRIGERATION CYCLES ANALYSIS
- VIRTUAL HOUSEHOLD REFRIGERATOR
- SORPTION REFRIGERATION LiBr/Water, Silica-Gel/Water



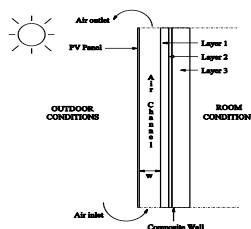
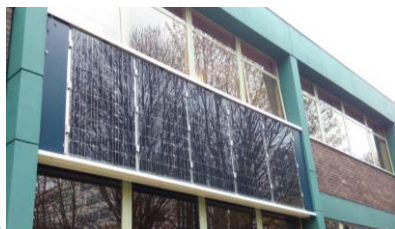
## HVAC

- DOMESTIC AND INDUSTRIAL AIR-CONDITIONING
- DIRECT AIR-COOLED LiBr-WATER ABSORPTION HEAT PUMP
- VAPOR COMPRESSION HEAT PUMP AS ALTERNATIVE HEATING
- AIR CURTAINS
- SPRAYS/EVAPORATIVE COOLING DESIGN
- FAN PERFORMANCE ANALYSIS (VIRTUAL WIND TUNNEL)



## BUILDINGS ENERGY MANAGEMENT

- WHOLE BUILDING ENERGY SIMULATION
- HEATING AND COOLING DYNAMIC DEMAND
- HEAT PUMP AND STORAGE INTEGRATION
- HVAC AND EQUIPMENT
- RENEWABLES INTEGRATION OPTIMIZATION
- HAM&VOC ANALYSIS
- THERMAL COMFORT AND INDOOR AIR QUALITY ANALYSIS
- APPLICABILITY OF NEW MATERIALS
- RETROFITTING OPTIMIZATION
- VIRTUAL TEST BENCHES FOR ACTIVE CONTROL SYSTEMS



# AERONAUTICS AND SPACE

## MORE ELECTRICAL AIRCRAFTS

- FOG FORMATION WITHIN AIRCRAFT SYSTEM
- FAN DESIGN FOR HIGH TEMPERATURE AND EXTENDED AIRFLOW RANGE WITHOUT SURGE ISSUES
- DYNAMIC SIMULATION OF ENVIRONMENTAL SYSTEMS WITH MODELICA
- HIGH PERFORMANCE AIR-COOLED HEAT SINKS FOR POWER ELECTRONICS
- MULTIVARIABLE CONTROL OF ECS

## SPACE PROPULSION

- GASIFICATION OF LIQUID PROPELLANTS UNDER CRYOGENIC CONDITIONS
- TRANSPIRATION COOLING
- COMBUSTION CHAMBER THRUSTER PROPELLANTS

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## HEALTH TECHNOLOGIES

- BLOOD FLOW INSIDE DEFORMABLE ARTERIES
- AEROSOL DEPOSITION IN THE HUMAN AIRWAYS
- ADVANCED TECHNOLOGIES FOR PATIENT-TAILORED INHALED MEDICINES



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