

Napoli, Italy.LCE-06-2017

Nardini works as an Associate Professor at the Dipartimento di Ingegneria Industriale e dell'Informazione, Seconda Università degli Studi di Napoli, Napoli, Italy.

His research activities are in Thermal Sciences and Heat Transfer. In particular: active solar systems; passive solar systems; heat conduction in solids irradiated by moving heat sources; natural and mixed convection in material processing and in thermal control of electronic equipments; thermal characterization of nanofluids, heat transfer with porous media; forecast of Energy consumption.

The more recent research activities are in the:

1. analysis of active and passive solar systems: experimental evaluation of thermal performances of active solar components in a heat pump plant; experimental of thermal performance of passive non-capacitive solar collectors; theoretical analysis of vapor-compression refrigeration systems with new refrigerant fluids. Within the Elioslab Project, funded by Italian Department of University and Research, a solar receiver for high temperature applications is under design. The numerical and experimental study was carried out with the cooperation of other research groups. Enhancement heat transfer techniques, such as baffles in channels and nanofluids were investigated. The storage system of the thermal energy delivered by the afore mentioned receiver were also under investigation. The aim of the SEEM project (Solar Eco-efficient Envelope Model), founded by the Italian Department of Environment, is the energy efficiency and the energy conversion in electricity and heat from renewable sources integrated on building's facades, particularly with regard to commercial ones. Solar chimney effect was used in order to heat the air in the chimney. The air drives a component, such as a wind turbine, installed in the chimney to generate electricity. The research activity dealt with thermal optimization of the chimney performance. The research was carried out by means both a numerical and experimental investigation. The effect of channels aspect ratio, radiative properties of opaque and transparent walls was studied taking into account solar radiation characteristics.
2. heat transfer enhancement: numerical and experimental investigations on impinging jets, extended surfaces, porous media, swirl flows also in presence of nanofluids.
3. natural and mixed convection in open ended cavities: experimental investigations on natural and mixed convection of air in inclined and horizontal channels with secondary motions which determine three dimensional effects; evaluation of correlation and optimal geometrical configurations of vertical, inclined and horizontal channels and open cavities; numerical analysis of different geometrical configurations of vertical, inclined and horizontal channels and open cavities in steady-state or transient regime and laminar flow; thermal design and control of electronic systems. In the investigation on convergent channels the study has been extended on combined effect of heat conduction on natural and mixed convection; investigation of natural and mixed convection in open ended cavities filled with a porous medium.
4. heat conduction, numerical and analytical evaluation and analysis of linear and non-linear problems in solids with moving or stationary heat sources such as laser and electron beams;

He is author of 233 publications.

Topics

LCE-06-2017.:

New knowledge and technologies

LCE-07-2016-2017.:

Developing the next generation technologies of renewable electricity and heating/cooling

EE-04-2016-2017.:

New heating and cooling solutions using low grade sources of thermal energy

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