CYCLE OF SEMINARS

PRESENTATIONS BY

PROFESSOR SYLVIE LORENTE

VILLANOVA UNIVERSITY, U.S.A.

THERMAL MANAGEMENT WITH FOCUS ON ELECTRONICS AND DATA CENTRE COOLING

and **ENERGY STORAGE SOLUTIONS: ISOTHERMAL COMPRESSION/EXPANSION**

WHEN: Monday 11th May 2026, from 10.00 to 12.00

WHERE: Sala Giunta DIN (School of Engineering, via Risorgimento 2, first floor, Department DIN – Fisica Tecnica) and online on MS Teams

DISTRICT SCALE ENERGY MANAGEMENT WITH FOCUS ON RENEWABLE ENERGY NETWORKS

WHEN: Tuesday 12th May 2026, from 10.00 to 11.00

WHERE: Sala Giunta DIN (School of Engineering, via Risorgimento 2, first floor, Department DIN – Fisica Tecnica) and online on MS Teams

PUBLICATION STRATEGIES and **APPLICATIONS TO RESEARCH FUNDING AGENCIES**

WHEN: Wednesday 13th May 2026, from 10.00 to 12.00

WHERE: Room 7.7 (School of Engineering, via Saragozza 8-10) and online on MS Teams

IN ADDITION: **ISA - INSTITUTE OF ADVANCED STUDIES LECTURE**

HIERARCHICAL FLOW STRUCTURE, FROM THERMAL MANAGEMENT TO BOTANIC AND HEALTH SCIENCE

WHEN: Tuesday 19th May 2026 from 17:30 to 19:00

MORE INFO AND BOOKING: **ISA Lecture**

ISA Visiting Professor

SYLVIE LORENTE is the inaugural William M. Brown ’84, ’87 Endowed Chair Professor in Mechanical Engineering at Villanova University, PA, USA, since June 2024. She is the Senior Associate Dean for Research & Innovation in the College of Engineering.

She is a member of the Academia of Europaea, and a member of the Scientific Council of the European Research Council.

She is a member of the editorial boards of several highly recognized international journals.

Sylvie has a passion for flow architectures, and works on thermal design, energy storage, vascularized structures, porous media, biological flow networks, urban design and organizations.

She is the author of 7 books, 10 book chapters and 230+ peer-reviewed international journal papers. She is listed among the top 2% most cited scientists worldwide since 2017.

DETAILED CONTENTS

- **THERMAL MANAGEMENT WITH FOCUS ON ELECTRONICS AND DATA CENTRE COOLING**

  The latest advances with emphasis on two-phase flow will be discussed, showing how evaporation cooling allows control of the thermal behavior of high-power electronics. The design of the entire network to minimize losses will be explored.

ENERGY STORAGE SOLUTIONS: ISOTHERMAL COMPRESSION/EXPANSION

Compressed Air Energy Storage (CAES) is a promising solution for large-scale energy storage; yet, heat generated during the air compression phase and heat needs during expansion prevent CAES from being largely adopted. The potential of integrating Phase Change Material (PCM) inserts to overcome these thermal inefficiencies will be explored in order to mitigate the temperature rise and therefore improve thermal management.

- **DISTRICT SCALE ENERGY MANAGEMENT WITH FOCUS ON RENEWABLE ENERGY NETWORKS**

  Urban buildings represent a major source of energy demand worldwide, positioning them as critical elements in strategies aimed at effective energy transformation. The implementation of local renewable energy solutions and energy-autonomy models is becoming increasingly relevant. The seminar will compare individual renewable energy solutions to centralized ones and stress the importance of energy storage.

- **PUBLICATION STRATEGIES**

  Beyond the sadly known ‘publish or perish’, the discussion will emphasize the importance of ethical behaviours in publishing strategies. From AI-generated papers and reviews to paper mills, the audience will be engaged to reflect on the importance of impactful research.

APPLICATIONS TO RESEARCH FUNDING AGENCIES

The European Union created a wonderful research funding mechanism more than a decade ago: The European Research Council (ERC). The intent of this seminar is to demystify the ERC, discuss applications, and review criteria. The importance of bottom-up research to create innovation will also be emphasized.