

## SEMINÁRIO

9 de Maio, 18h00 – 19h00, sala 5.4.20

# "Smart strategies for energy and resource efficient systems"

New efficiency challenges and innovative tools  
in industry, agriculture, water, and energy.

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Within the framework of the Sustainable Development Goals, the technological progress and the investment in infrastructure and innovation are crucial drivers of economic growth and development, along with new job creation. Additionally, these are also key drivers to address the environmental and sustainability challenges, represented mostly by energy and resource efficiency. The new industrial revolution, is driven by new-generation information technologies such as, **the use of digitalization, cloud computing, IoT, smarter sensors** can be powerful tools to monitor and manage various real-time parameters, ranging from operating conditions, to equipment status, as well as **advanced visualization** techniques regarding the industrial floor and real time planning. This directly allows to for the diagnosis of system and the identification of the productivity, inefficiencies, and failures. Moreover, **advanced data analytics** can also support operators in making highly complex decisions by analysing vast amounts of data in short periods of time, helping troubleshoot equipment or even take corrective actions in emergency events, including to predict events allowing to perform predictive maintenance or change the system behaviour for enhanced operation. The digital methods also encompass the possibility to model and **simulate systems** or supply chains, allowing to test operational scenarios virtually, and search for **optimal solutions** of process control or planning.



Technological Research and Development is one of ISQ's core activities, supporting all the services provided worldwide. During the last 20 years, ISQ has acquired a considerable experience in participation and management of European R&D projects (more than 400 projects). This seminar aims to present a brief overview of several challenges encountered in the current projects of ISQ, where it aims to develop methods and tools for the assessment and improvement of resource and energy efficiency and mitigation of risks as well as advanced intelligent digital methods, combining modelling, predictive analysis, machine learning and optimization algorithms to support decision-making processes.

Key words:

- Resource efficiency • Earth Observation • Circular Economy • Optimization • Data analytics • Predictive maintenance • Virtual Reality (VR/AR) • Industry 4.0

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