Sustainable Innovation Centre

Creating Value

ISQ HEADQUARTERS

ABOUT ISQ

ABOUT SUSTAINABLE INNOVATION CENTRE (SIC)

SIC MAIN WORKING AREAS

ONGOING PROJECTS

SIC MAIN REFERENCES

ABOUT ISQ

Founded in **1965**

headquarters in **Portugal**

30 +
SUBSIDIARIES

ABOUT ISQ

250 +
SPECIALIZED SERVICES

145 000 +
trainees

CUSTOMIZED SOLUTIONS

16
accredited laboratories

13 500 +
training courses

ABOUT ISQ

promote
R&D

400 +
R&D international projects

1.200 +
partners

build
long lasting
partnerships

CLIENT ORIENTED
10 000 + clients worldwide

1.400 employees
800 in Portugal

55% +
with degrees

TRUST IN PEOPLE

SECTORS

AEROSPACE

AUTOMOTIVE

CONSTRUCTION & INFRASTRUCTURES

ENERGY

OIL & GAS

PROCESS INDUSTRIES

SERVICE DELIVERY

TECHNICAL INSPECTIONS

ENGINEERING & CONSULTANCY

TESTING

R & D + I

TRAINING

VERIFICATION & REGULATORY

ABOUT ISQ

ABOUT SUSTAINABLE INNOVATION CENTRE (SIC)

SIC MAIN WORKING AREAS

ONGOING PROJECTS

SIC MAIN REFERENCES

ABOUT SIC

R&D UNIT

Promoting Sustainability in organizations

20 years of R&D

60 +
R&D projects promoting Sustainability

12
financial instruments

300 +
scientific publications

500 +
partners from 30 + countries

ABOUT ISQ

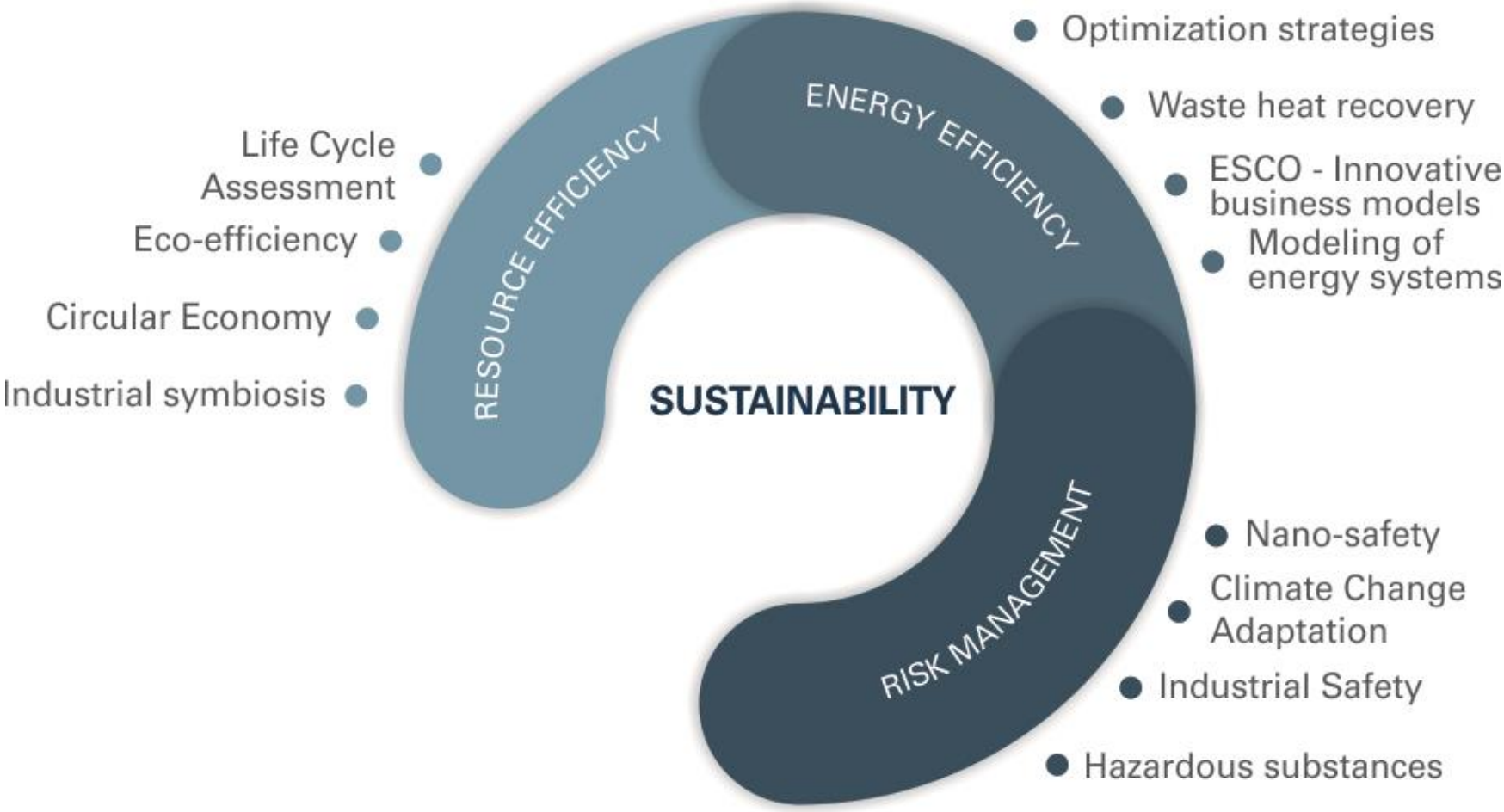
ABOUT SUSTAINABLE INNOVATION CENTRE (SIC)

SIC MAIN WORKING AREAS

ONGOING PROJECTS

SIC MAIN REFERENCES

Main Working Areas



ABOUT ISQ

ABOUT SUSTAINABLE INNOVATION CENTRE (SIC)

SIC MAIN WORKING AREAS

ONGOING PROJECTS

SIC MAIN REFERENCES

Ongoing Projects

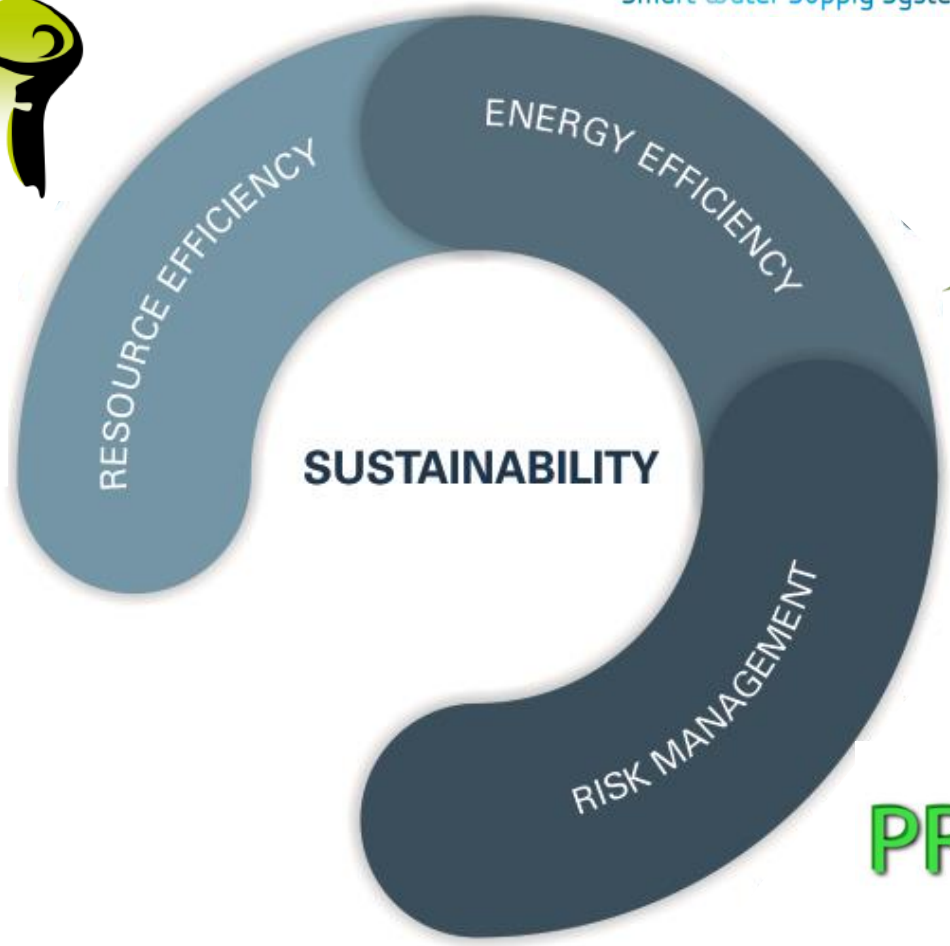
MAESTRI

WaterWatt

esa
European Space Agency

LIFE SWSS
Smart Water Supply Systems

MOEEBIUS



PROCETS

Name: Total Resource and Energy Efficiency Management System for Process Industries

Main Objective: To promote Resource and Energy Efficiency Management in the manufacturing industries and European transformation through innovative methodologies to characterize the efficiency of industrial processes, incorporating strategies of the principles of eco-efficiency, industrial symbiosis and continuous improvement throughout the organization. All these features will be assembled on a platform that is based on the Internet of Things (IoT). Its development and validation will be achieved through application in four real industrial settings across a variety of activity sectors.

ISQ Main Contribution : Coordinator
Eco Efficiency assessment methods for industrial processes based on a Life Cycle perspective

Financing Program : Horizon 2020|SPIRE 6 2015
Total budget : EUR 5,673,356.13
Start|End date : Set-2015 | Aug-2019
Website: http://maestri-spire.eu/

Name: Improvement of energy efficiency in industrial water circuits using gamification for online self-assessment, benchmarking and economic decision support

Main Objective : The improvement of energy efficiency across European industry is crucial for competitiveness. So far, the measures for improvement of energy efficiency have been directed at primary production processes. In this project, will be addressed the improvement of energy efficiency in industrial water circuits. Energy Efficiency Evaluation Platform (E3 Platform) will be developed to disseminate knowledge/know-how on energy efficiency improvements using gaming approach. The tools of E^3 Platform will be used by SMEs and large industrial producers for self-assessment and improvement of the energy efficiency in their circuits.

ISQ Main Contribution :

- Modeling of energy efficiency of industrial water circuits.

Financing Program : Horizon 2020|EE 16 2015
Total budget : EUR 1,782,000.00
Start|End date : Apr-2016 | Apr-2019

Name:

LCA of Manuf. Processes & Space Materials (1)

LCA of Space Propellants (2)

Main Objective : Development of the first LCA applied to: (1) specific materials and production processes in the aerospace industry; (2) propellants used by the aerospace industry. Creation of a database that allows environmentally model the different stages of the life cycle of these materials and processes from the extraction of raw materials to use and end of life;

ISQ Main Contribution :

- LCA development and establishment of a database.
- Ecodesign Alliance for advanced technologies.

Client: ESA

Total budget : EUR 400 000 (1) + 250 000 (2)

Start|End date (1): Set-2014 | Set-2015

Start|End date (2): Set-2015 | Jun-2016

LIFE SWSS Smart Water Supply Systems

Name : Smart Water Supply System

Main Objective : The LIFE SWSS project aims to demonstrate and disseminate an innovative management and decision-support platform for water supply systems (called a Smart Water Supply System: SWSS). The SWSS platform will be composed of five modules: Predictive, Hydraulic simulation, Assessment, Leakage, and Optimisation, which together will support the water companies in their efforts to improve energy efficiency and water efficiency. The project will be implemented on three demonstration water supply systems (AdA, AdC and AdO) under real working conditions.

ISQ Main Contribution: Coordinator

- Assessment of pumping systems;
- Development of the optimization algorithm

Financing Program : LIFE
Project budget : EUR 1,389,800
Start|End date : Set-2015 | Aug-2018

MOEEBIUS

Name: Modelling Optimization of Energy Efficiency in Buildings for Urban Sustainability

Main Objective: MOEEBIUS introduces a Holistic Energy Performance Optimization Framework that enhances current modelling approaches and delivers innovative simulation tools which deeply grasp and describe real-life building operation complexities in accurate simulation predictions that significantly reduce the "performance gap" and enhance multi-fold, continuous optimization of building energy performance as a means to further mitigate and reduce the identified "performance gap" in real-time or through retrofitting.

ISQ Main Contribution :

- Development of innovative business models;
- IAQ modeling, investment analysis, measurement and verification;

Financing Program : H2020 | EeB 07 2015
Project budget : EUR 6,036,000
Start|End date : Nov-2015 | Apr-2019
Website: http://www.moeebius.eu/

PROCETS

Name: PROtective composite Coatings via Electrodeposition and Thermal Spraying

Main Objective : The PROCETS project will took advantage of the use of nano-particles for production of composite coatings with superior properties compared with the existing coatings ofhard cromium produced by electroplating or to Co-WC produced by thermal spray (both have extremely negative health and environmental impact) . These novel nano-particles will be incorporated into existing production lines after appropriate modifications, and will combine flexibility and mass customization abilities, restrict environmental and health hazards and finally be available at acceptable cost.

ISQ Main Contribution :

- Development of LCC and LCA.
- Risk assessment & management of pilot lines,.
- Safe by Design of nano-materials.

Financing Program : Horizon 2020 | NMP-PILOTS-2015
Total budget : EUR 6,976,666.13
Start|End date : Nov-2015 | Apr-2019

ABOUT ISQ

ABOUT SUSTAINABLE INNOVATION CENTRE (SIC)

SIC MAIN WORKING AREAS

ONGOING PROJECTS

SIC MAIN REFERENCES

Life Cycle Assessment (LCA)

On-going projects:

- LCA of **Manufacturing Processes and Space Materials** for European Space Agency (ESA)
- LCA of **Space Propellants** for ESA
- LCA of **products based in natural stone for floorings and coverings** for LSI STONE

10 years + experience

20 + projects

Circular Economy

Concept Development

ELECTROVALUE – "*Electric and Electronic Eco-assembly Alternatives for the Valorisation of the End-of-life Products in the Recycling Market*" – LIFE (**ISQ coordinator**)

Improvement of the recycling market for the electrical and electronic equipment (EEE) through the recovery and reuse of EE components, by adopting sustainable waste management practices and "valorisation" of end-of-life concepts.

Product Development Support

OILPRODIESEL – "*Integrated Waste Management System for the Reuse of Used Frying Oils to Produce Biodiesel for the Municipality Fleet of Oeiras*" – LIFE (**ISQ coordinator**)

Development of an integrated system for the collection of used frying oils (UFO) produced by the domestic sector, and use it to produce biodiesel to fuelling the vehicle fleet of the Oeiras Municipality.

Development of Tools

MAESTRI – "*Total Resource and Energy Efficiency Management System for Process Industries*" – H2020|SPIRE 6 2015 (**ISQ coordinator**)

Develop methods and tools to identify and simulate appropriate consumption patterns and waste flows. Adopt a new industrial symbiosis approach on a product value-chain perspective and adopt real time metering for energy and resource flows by IoT concept.

Efficient use of Resources

Methodology Development

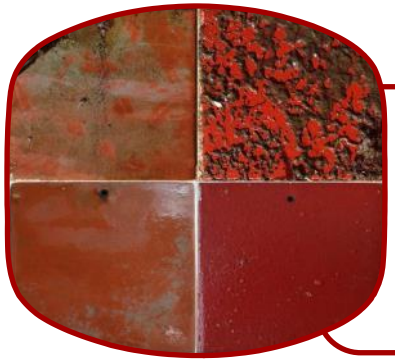
PRODUTECH-PSI – *"New products and Services for Manufacturing and Process Industry"* - QREN

Development of an innovative methodology for the characterization, evaluation and improvement of eco-efficiency of products and processes with a view to creating business opportunities (ecoPROSYS©).

Concept Demonstration

ECOTRAIN – " Innovative Cork Composite solutions for the new generation of Very High Speed Trains" – QREN

Development of new eco-efficient, lightweight and comfortable cork composite components for the next-generation of high-speed trains, aiming at increase thermal and acoustic comfort, reduce weight and optimise energy consumption.



Product Development Support

FOUL-X-SPEL – *"Environmentally Friendly Antifouling Technology to Optimise the Energy Efficiency of Ships"* – FP7

Research and develop an alternative for poisonous antifouling coating consisting in extensive research biochemical and chemical research to find a new paint more efficient for antifouling purposes.

Energy Efficiency

Process Efficiency

LIFE SWSS —" *Smart Water Supply System*" – LIFE (**ISQ coordinator**)

Development and demonstration of an innovative management and decision support platform (SWSS) to decrease the energy consumption, GHC emissions and water leakage in water supply systems.

Process Efficiency

MOEEBIUS – " *Modelling Optimization of Energy Efficiency in Buildings for Urban Sustainability*" – H2020

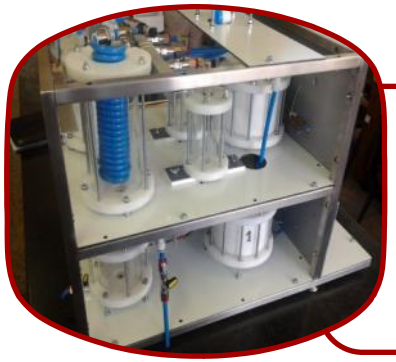
Holistic Energy Performance Optimization Framework that enhances current (passive and active building elements) modelling approaches and delivers innovative simulation tools.

Methodology Development

EFICARE —" *Model Performance Monitoring of Maintenance Management, Energy Efficiency and Indoor Air Quality*" – QREN

Development of an innovative integrated methodology for analysing the performance of health facilities, focuses on the quality of maintenance services that ensure indoor air quality and energy efficiency.

Low Carbon Energy



Concept Demonstration

SYM —"*Methanol Production by water electrolysis and graffiti electrolytes*" – QREN

This project designed and built a pilot methanol production unit, to be developed and upgraded to a full industrial scale. The process of syngas production originated patent request, by the low cost of its production.

Concept Demonstration

DEMOWFLOAT – *"Demonstration of the Windfloat technology"* – FP7

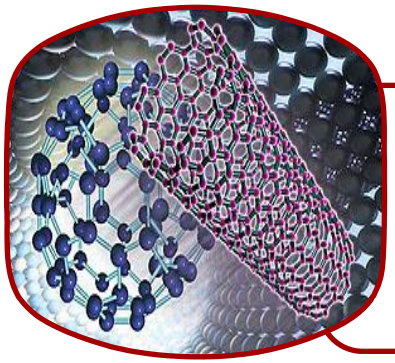
Testing of a floating wind turbine for installation in deep water (WindFloat®) performance, operation, maintainability, reliability and feasible grid integration, with an impact on availability of the system and, on the cost of produced energy.

Process Efficiency

RELOTEMP —"*Reuse of low-temperature heat (<350°) for the reduction of CO^2-impact of the steel industry*" – RFCS

Reduction of energy consumption and CO2-emisssions of the steel industry by the reuse of waste low temperature heat (LTH) with T<350ºC in typical production processes (coke plant, sintering plant, BF, steelmaking, rolling mill and coating).

Safety of Nanotechnologies



Regulation Support

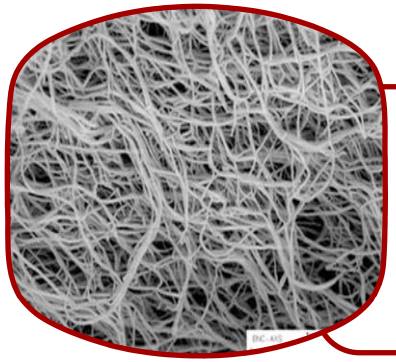
NANOREG – *"A common European approach to the regulatory testing of Manufactured Nanomaterials"* – FP7

Assistance to regulators and legislators on Environmental Health and Safety issues of Manufactured Nano Materials, by linking them to a scientific evaluation of data and test methods.

Product Development Support

PROCETS – *"PROtective composite Coatings via Electrodeposition and Thermal Spraying"* – H2020

To deliver more environmental friendly materials, on protective coatings, via thermal spray and electroplating methods, covering a wide range of applications such as automotive, aerospace, metal-working, oil and gas and cutting tools industries.



Product Development Support

NMC – *"Conception of New Cellulosic Materials for development in advanced applications"* – QREN

Evaluation of environmental and economic performance and parameterization of the production process of nanocelluloses and silanes in the interest of being used in advanced applications.

Environmental Technologies

Methodology Development

TRESOR– *"Technique for remediation of steel-works polluted sites"* – RFCS

Development of a system that forecast the fate of environmental pollutants across steelwork sites and analyse the effectiveness of various remediation technologies (washing, thermal treatment and bioremediation) from both technical and economical points of view.

Concept Demonstration

WWTREAT– *"WWTreat, Waste Water Treatment Improvement and Efficiency in Small Communities"* – LIFE (**ISQ coordinator**)

Development of WWTP auditing models. Demonstration of power supply remotes WWTP with renewables energy. Development of a Lab Pilot Plan (8m³/h) to study and improve wastewater treatment of full scale WWTP.

Methodology Development

ASEMIS– "Assessment of emissions and impact of steel production processes – RFCS

Explore spatial patterns of lichens conductivity in order to identify the impact of the industrial studied areas. To study the spatial distribution of chemical elements determined by INAA technique.

Platforms and Partners

TÉCNICO LISBOA
Sheffield Hallam University
DECHEMA
ALSTOM
ArcelorMittal
TEGOPI
INDÚSTRIA METALOMECÂNICA, S.A.
ISEL
INSTITUTO SUPERIOR DE ENGENHARIA DE LISBOA
universidade de aveiro
BFI
esa
AMORIM
AMORIM CORK COMPOSITES
edp
galp energia
UNIVERSITY OF CAMBRIDGE
isep
instituto superior de engenharia do porto
SINTEF
Portucel
HEMPEL Estd 1915
POLITECNICO DI TORINO
LEAN ENTERPRISE INSTITUTE POLSKA
Vestas
LNEG
MCG
mind for metal
National Technical University of Athens
inegi
Instituto de Engenharia Mecânica e Gestão Industrial
tecnalia
Inspiring Business
asplan viak
ÁGUAS DE PORTUGAL
Fraunhofer
ATB
HYPERTECH
energy labs
КАПЕ
CRES
DEMOKRITOS
NATIONAL CENTER FOR SCIENTIFIC RESEARCH
ISMB
Istituto Superiore Mario Boella
REPSOL
LIDERGRAF
SUSTAINABLE PRINTING
Nano Engineering & Consulting

THANK YOU

WWW.ISQ-GROUP.COM