AIGUASOL

FIRM OVERVIEW

Energy, Circular Economy and Environmental Quality

AIGUASOL TEAM

September 2020

Energy and IEQ Consultants

For BUILDINGS

For CITIES

For INDUSTRIES

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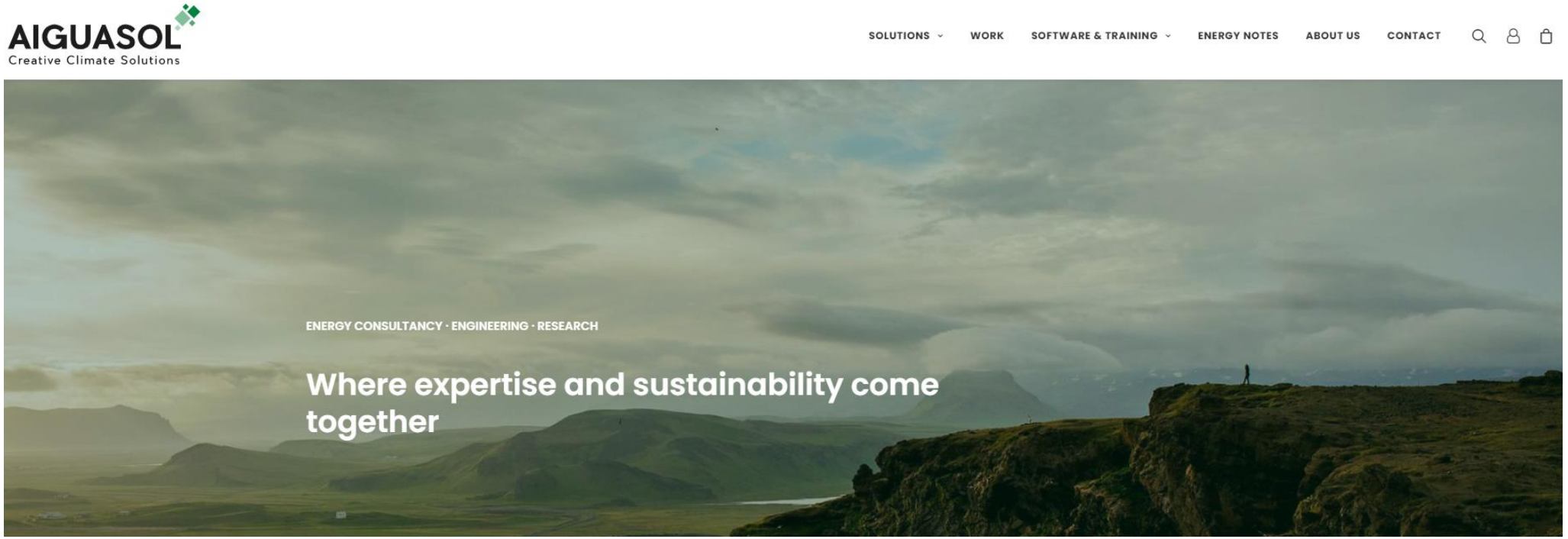
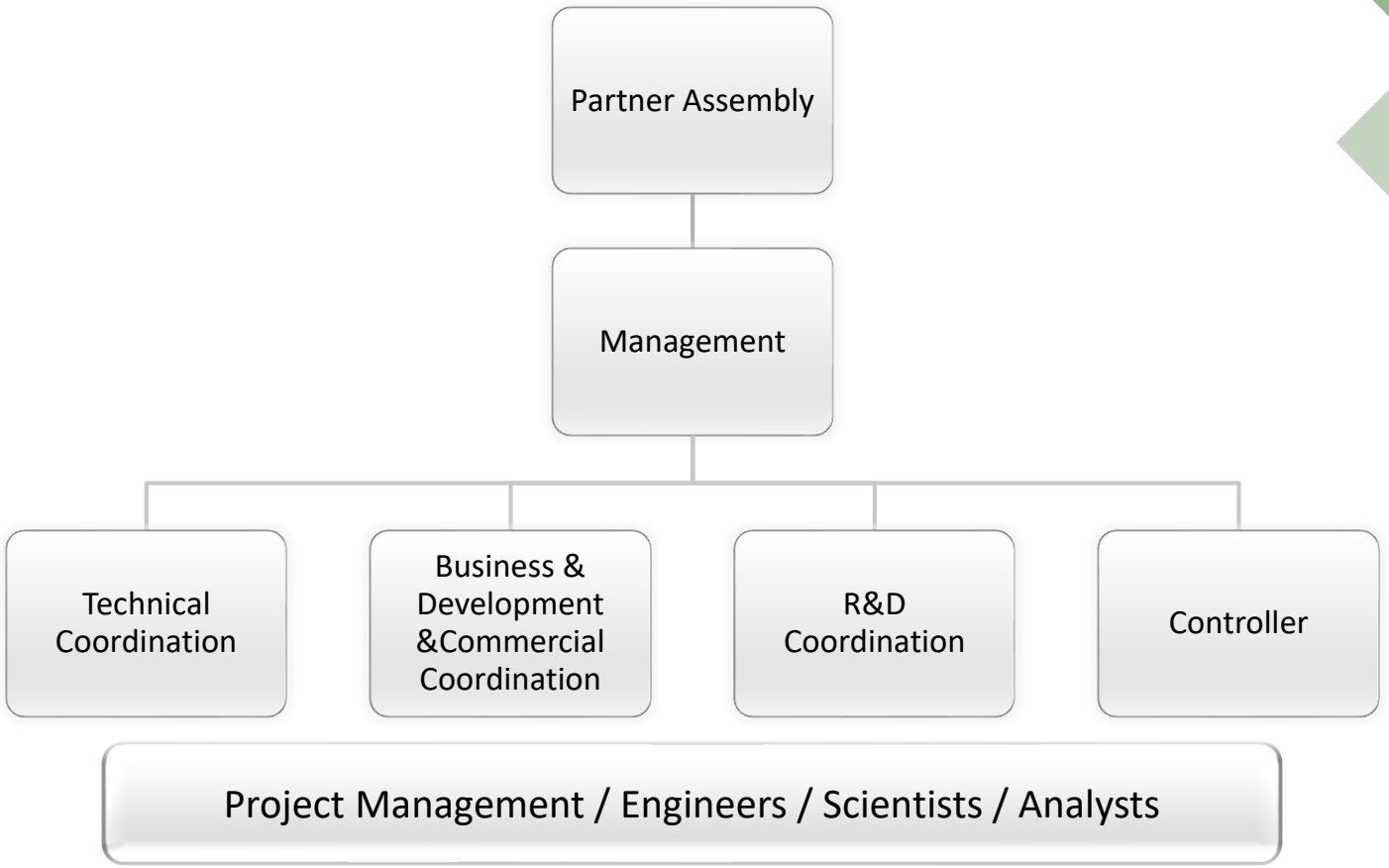


Company Organisational Structure



HQ in Barcelona and the Basque Country (Spain)

Regular activities in Europe (Portugal, France, UK, Greece), West Africa (Ghana) and South America (Chile and Colombia)

Services

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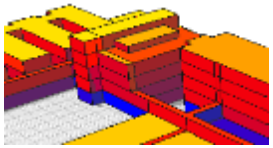


IEA SHC Task 33 and SolarPACES Task IV: Solar Heat for Industrial Processes

Consultancy and engineering in EE, RES, CE, IEQ and OEQ

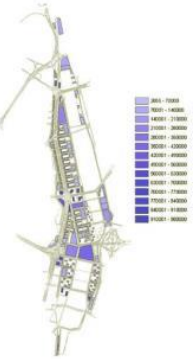
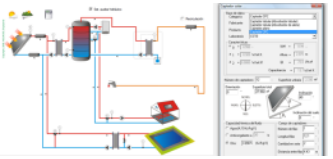
Applied R+D in energy and CE

Numerical models and software

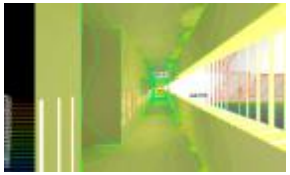
Design, implementation and follow-up of monitoring systems

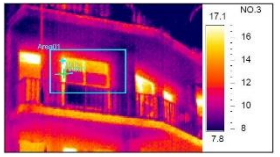










Areas of expertise

Energy in Buildings

Design of Low Energy Buildings and energy efficiency.

Energy Rehabilitation

Increasing the value of a property and bringing in new stakeholders.

Energy Intensity in industry

Optimization of industrial processes, process integration and renewables.

Indoor Environmental Quality (IEQ)

Development of strategies to create healthy and comfortable buildings, by incorporating Indoor Environmental Quality requirements and standards in the building's design. Specific consulting service as well as CAI and WELL certifications.

District and large energy plants

Design of district energy generation systems and renewable energies.

Energy management systems

Continuous assessment of energy efficiency in buildings, processes and facilities.

Other Customer-oriented solutions

We act as a center for energy calculations.

Outdoor Environmental Quality (OEQ)

Development of strategies to improve Outdoor Environmental Quality with a view to promoting healthy and comfortable urban environments. Implementation of monitoring and communication projects on air quality (LIQUENS).

Areas of expertise

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Energy Policy and Planning

From local ordinances to national regulations and European sectorial policies.

NZEB buildings and environmental labels

Design of Net-Zero Energy Buildings, LEED, Passivhaus certification.

Applied R&D: Solar Energy, Bioenergy, Energy Transition

Research in renewable energies and energy in building.

Integrated Holistic Approach

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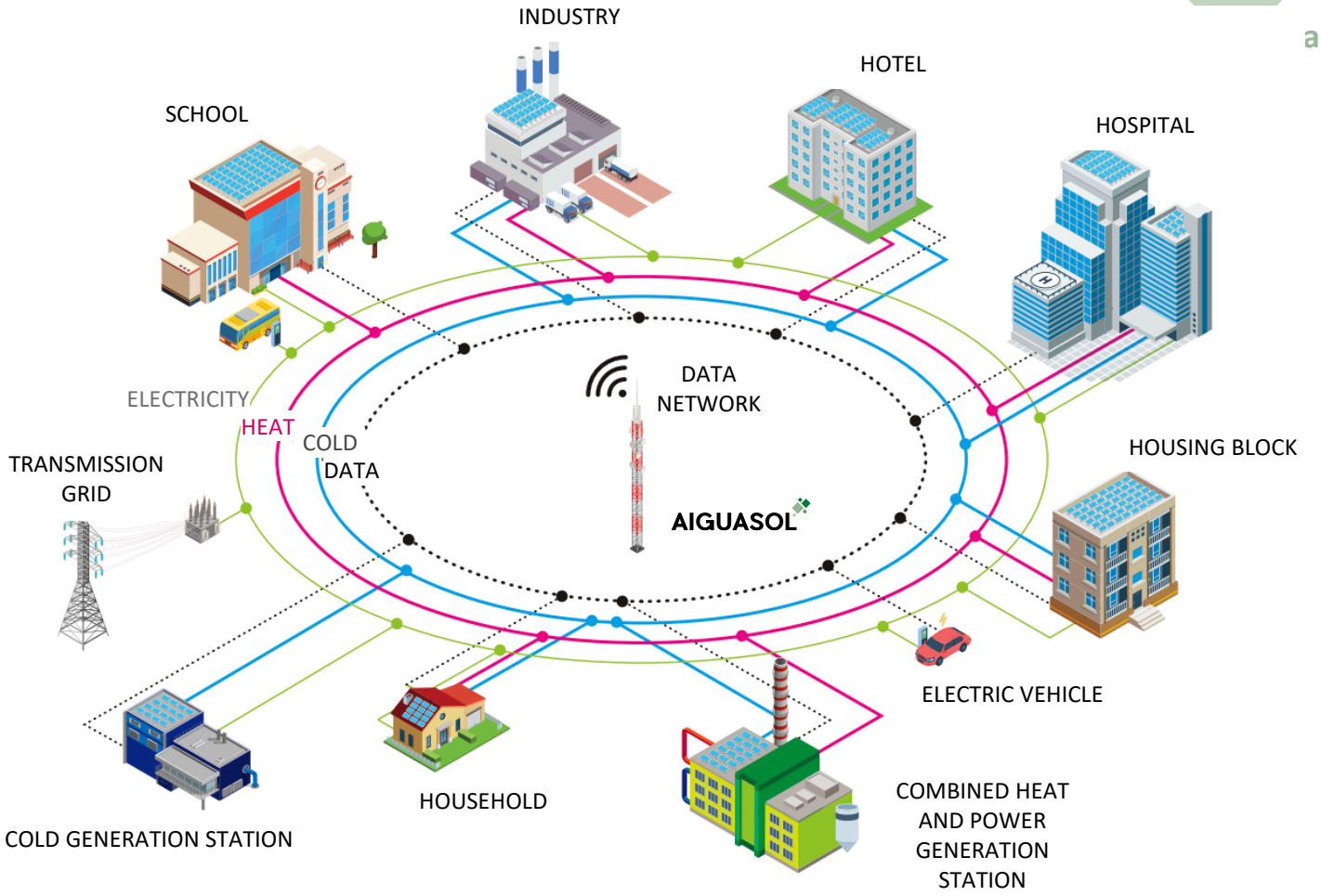
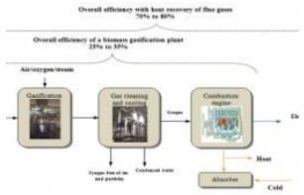
Aiguasol's approach integrates the four pillars:

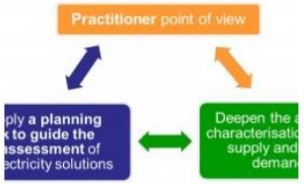
- Electricity
- Heat
- Cold
- Data



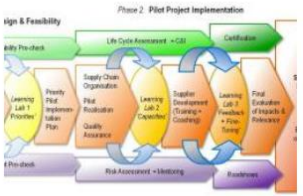
Our R&D Project References



Techno-economic feasibility analysis and modelling of small scale biomass based co-generation and tri-generation solutions



Applied research programme on small scale biomass-based solutions for community development in rural Africa



SECURECHAIN Securing future-proof environmentally compatible bioenergy chains (HORIZON2020)

PLUG-N-HARVEST, Plug-n-play passive and active multi-modal energy Harvesting systems for Self-sufficient Districts & Near-Zero Buildings

ULISES

Development of a large-scale solar collector for heat generation in mining processes

ULISES – Development of a large-scale solar collector for heat generation in mining processes

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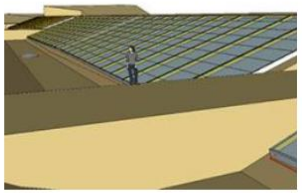
INDUS3ES – New technologies for utilization of heat recovery in large industrial systems



Development of a large-scale solar collector for heat generation in mining processes

GrowSma

Transforming cities for a smart, sustai

GrowSmarter – Transforming cities for a smart, sustainable Europe

Pitagoras – Sustainable urban Planning with Innovative and low energy Thermal And power Generation from Residual And renewable Sources

Building energy optimization and HVAC system design for a building containing assisted living homes, a nursery school and medical center

Our Work

Factors d'èxit per a la participació en projectes Horizon

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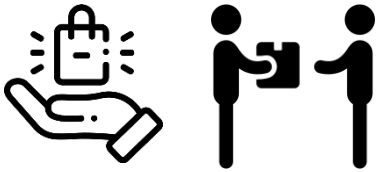
La participació en projectes Horizon és competitiva, però també molt enriquidora

Alguns factors d'èxit:

- **Aliances estratègiques amb partners acadèmics / tecnològics / industrials**
- **Propostes de valor clares i ajustades a la convocatòria**
- **Productes o Serveis especialitzats**
- **Casos d'estudi o pilotatge de solucions**
- **Assessorament i guia experta (ACCIÓ, NCPs CDTI)**



JoinEnergy JoinEnergy

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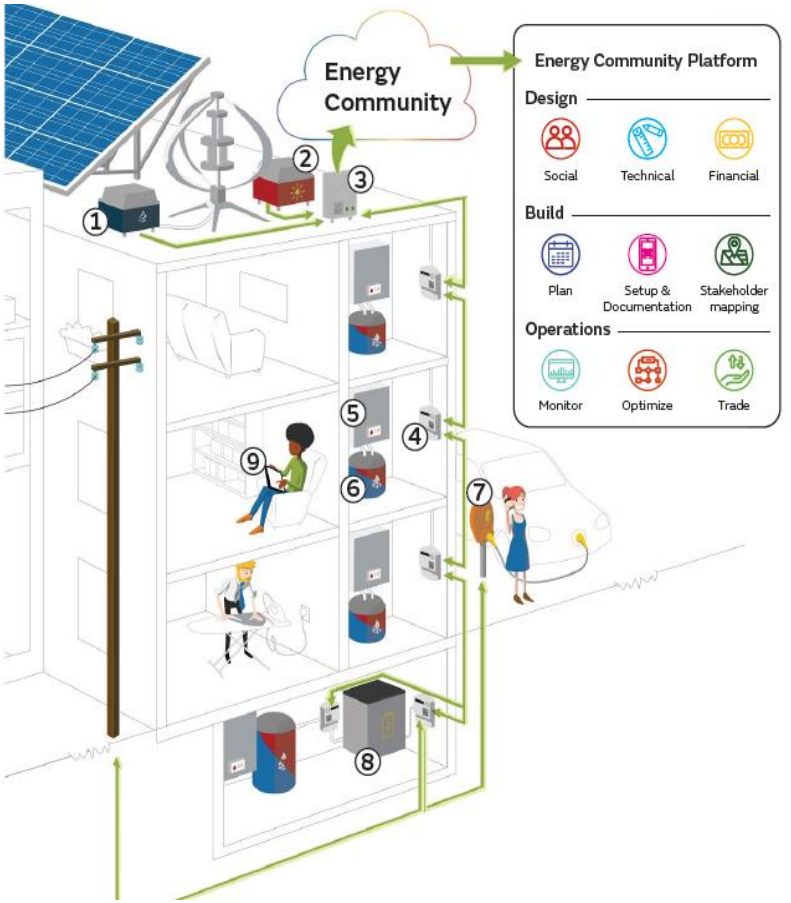
A Marketplace including several tools to facilitate – from a broad perspective – the implementation of Local Energy Communities (LEC)

It consists of 3 modules:

DESIGN module (Users' attracting and Design stage)

Technic-economic prefeasibility analysis

- Social submodule: dynamization of collective decision-making processes (e.g. for neighbour communities)
- Technical submodule: technical preliminary analysis of shared Renewable Energy installations
- Economic submodule: economic preliminary analysis of shared Renewable Energy installations



JoinEnergy JoinEnergy

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A Marketplace including several tools to facilitate – from a broad perspective – the implementation of Local Energy Communities (LEC)

It consists of 3 modules:

BUILD module (Installation stage)

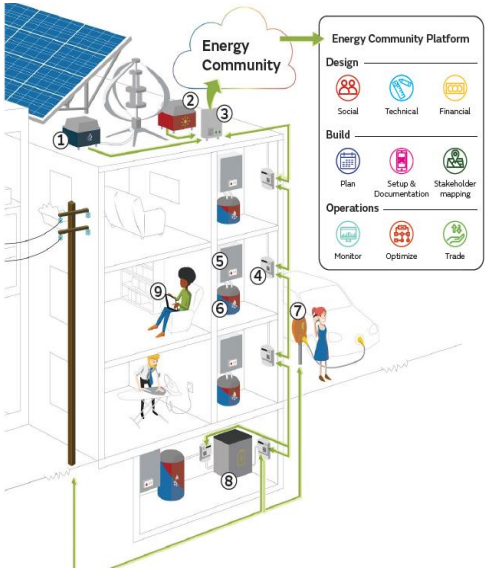
Solution implementation stage support: Installation planning and project information repository

- Acquisition (Marketplace) submodule: marketplace of suppliers, service providers, installation companies, and other relevant stakeholders.
- Financial submodule: financing alternatives marketplace, from conventional funding to crowdfunding options

OPERATION module (Use stage)

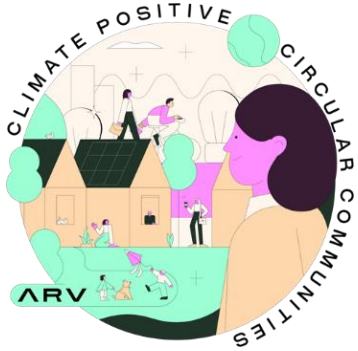
Advice / council in management, maintenance and use optimisation of the installation

- Monitoring submodule: installation continuous monitoring and display of main indicators (RE production, self-consumption share, economic savings…)
- Optimization submodule: fixed / variable distribution coefficients, installed PV power optimisation (by adding more modules, batteries…), tariffs and contracted power revision and optimisation
- Maintenance and Energy management submodule: energy billing among LEC stakeholders, anomaly detection service, RE system efficiency monitoring and maximisation, predictive maintenance features…



H2020 – GREEN DEAL ARV

The ARV Project has received recognition from the European Union in the Green Deal call for research and innovation in the concept of Climate Circular and Positive Communities.



The project brings together 35 partners from the energy sector and the construction industry from 7 European countries with performances in 6 demonstration areas in several countries (Norway, Denmark, the Netherlands, Italy, the Czech Republic and Spain). The project is led by NTNU (Norwegian Technical University) and its research center ZEN - Zero Energy Neighborhoods and has received € 20 million in EU funding. ARV has a duration of 4 years and has started in January 2022.

ARV

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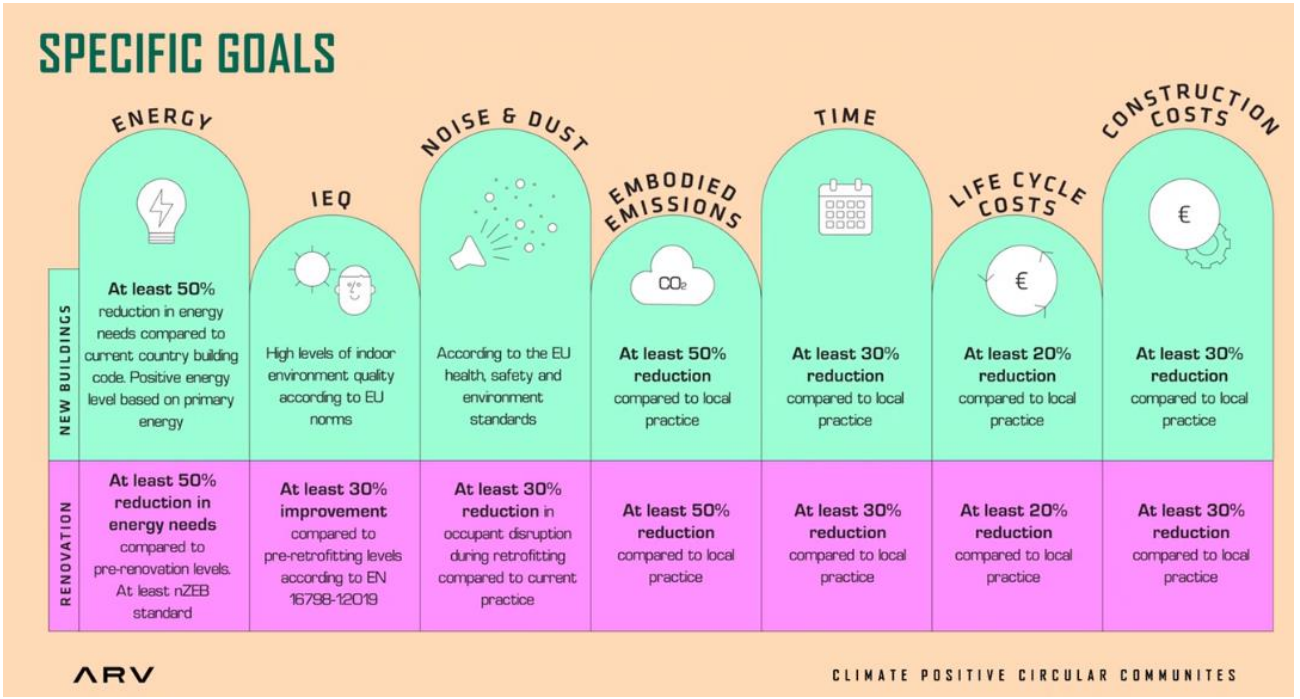
Main activities:

- Consultancy for renovation of the Gesa Building, one of the pilots in Palma de Mallorca, Spain. The project consists in implement technologies and measures that will lead to achieve the following targets.

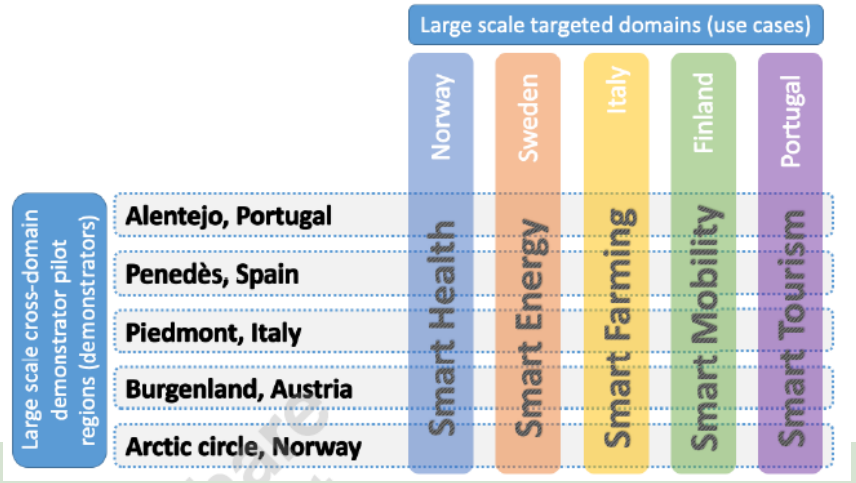


View of the main building with a curtain wall as a façade, that will be modified to incorporate BIPV.

Goals in purple for a renovation in this case

H2020 – AURORAL

AURORAL focuses on increasing connectivity and delivering a digital environment of smart objects interoperable services platforms able to trigger dynamic rural ecosystems of innovation chains, applications and services. AURORAL digital environment is demonstrated by cost-efficient and flexible cross-domain applications through large-scale pilots in five European regions. It builds on an open, API-based, interoperable and federated Internet of Things (IoT) architecture and includes a reference implementation supporting flexible integration of heterogeneous services, bridging the interoperability gap of the smart object platforms and creating markets for services in rural areas.



AURORAL

H2020 – AURORAL

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Main activities:

- Leading the large-scale demo site “Penedès wine region”
  - Demo site technical coordination
  - Development of tools and services to facilitate the energy valorisation of vine shoots pruning residues
  - Stakeholder engagement and monitoring activities performance
- Leading the User Requirements and Key Performance Indicators (KPI) definition task
- Support to business modelling and exploitation plans

H2020 – HOUSEFUL

HOUSEFUL proposes an innovative paradigm shift towards a circular economy for the housing sector. The main goal is to develop and demonstrate an integrated systemic service (HOUSEFUL Service) composed of 11 circular solutions co-created by stakeholders in current housing value chain. The HOUSEFUL Service will aim at the circular management and efficient use of water, waste, energy and material resources for all stages of European building's life-cycle.

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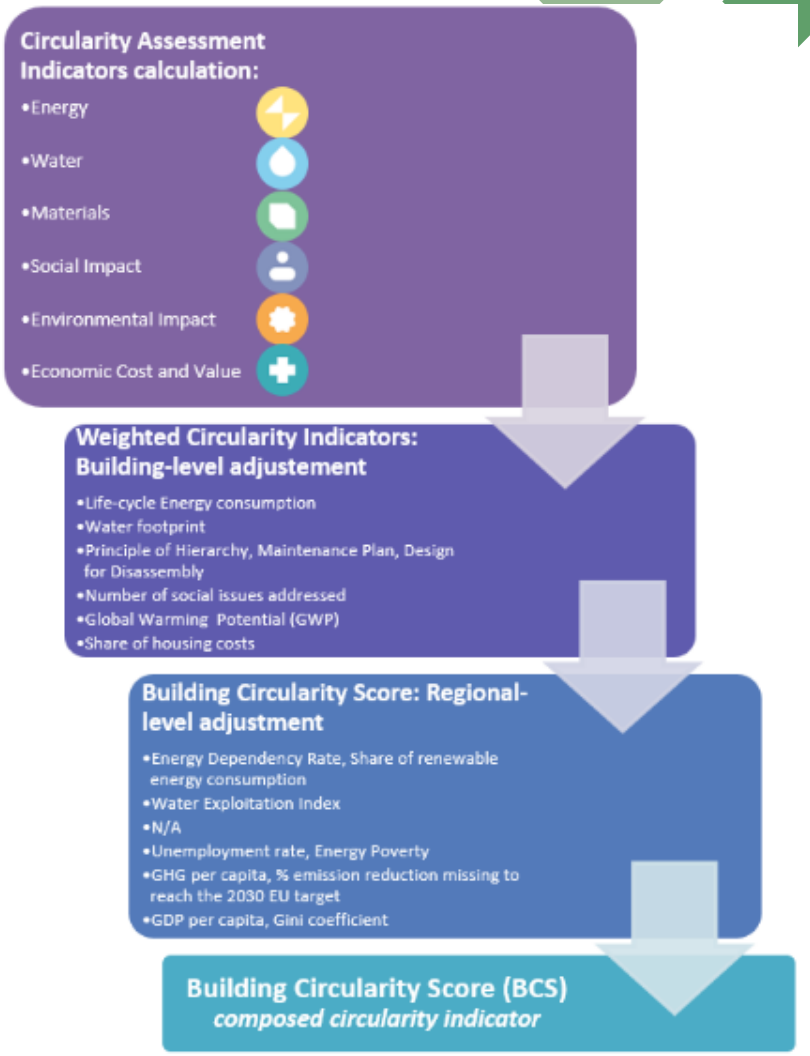
HOUSEFUL

Innovative circular solutions and services for the housing sector

H2020 – HOUSEFUL

Main activities:

- Leading the WP of Circularity Assessment
  - Definition of the KPIs for the building circularity assessment
  - Definition of the calculation procedures
- Development of the Energy models of the four Demo buildings (DesignBuilder)
- AIGUASOL is the technical expert responsible in the spanish demo-case.
  - Technical and engineering assessment to the Agència de l'Habitatge de Catalunya for the implementation of the circular solutions into two Demos
  - Engineering projects and installation works supervision



H2020 – Plug & Harvest

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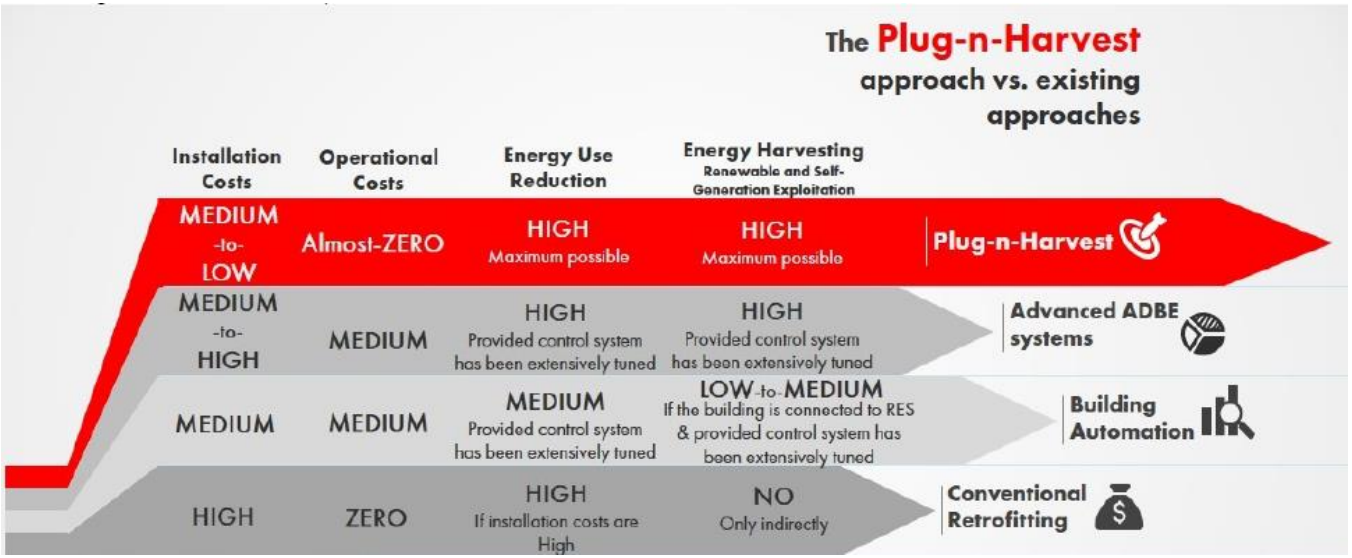
The main strategic goal of the PLUG-N-HARVEST proposal is to design, develop, demonstrate and exploit a new modular, plug-n-play concept/product for ADBE (Adaptable/Dynamic Building Envelopes) which is able to provide high (maximum possible) energy use reductions and high (maximum possible) energy harvesting from RES (Renewable Energy Sources) both at the single-building and the district scale while requiring medium-to low installation costs and almost-zero operational costs.



H2020 – Plug & Harvest

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Main activities:

- Leading the WP of Performance evaluation
  - Definition of the KPIs for the project goals achievement
  - Definition of the evaluation plan
- Modelling the façade solution in MODELICA
- Leading the WP of Business Models and Circularity
  - Development of a circularity assessment methodology. This methodology will be applied in the demonstration pilots.
  - Development of the LCAs for the current pilot scenarios and the final PnH retrofitted scenario.
  - Development of circular business models and exploitation plans for the PnH solution.
- AIGUASOL is the technical expert responsible in the spanish demo-case.

H2020 – 4RinEU

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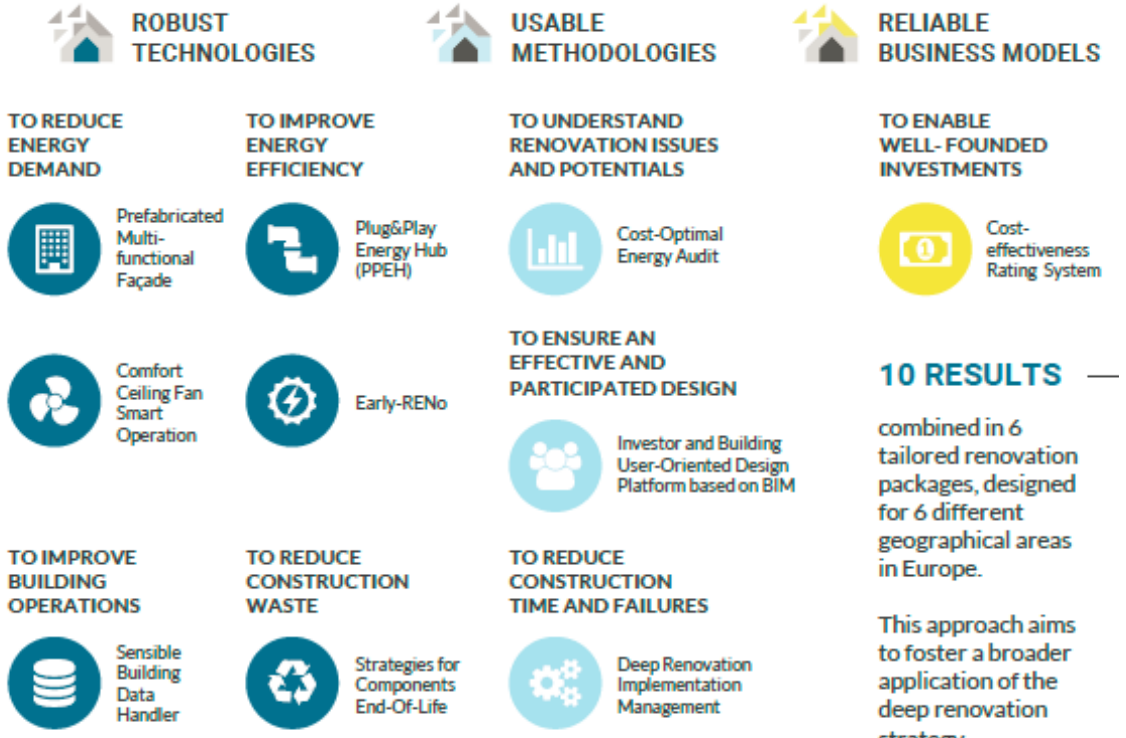
4RinEU project aims to provide **new tools and strategies** to encourage large scale renovation of existing buildings, fostering **the use of renewable energies**, and providing **reliable business models** to support their applications.



4RinEU

Reliable models for deep renovation

H2020 – 4RinEU

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Main activities:

- Fine-tuning of geo-cluster subdivision at European level.
- Identification of a set of building archetypes for the identified geo-clusters.
- Definition of Building physics cases.
- Deep renovation packages and parametric models in different geo-clusters
- Business model for cost-effective deep renovation
- AIGUASOL is responsible for renovation package in the spanish demo-case

H2020 - CHESTER

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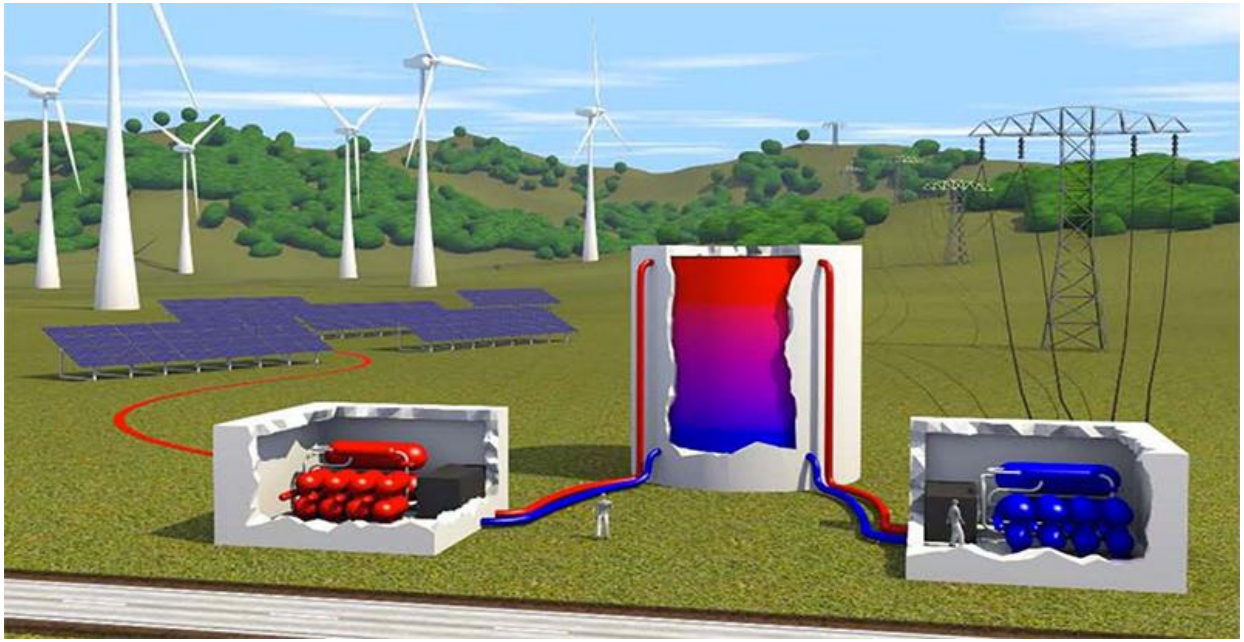
CHESTER aims to develop and validate an innovative system that allows for energy management, storage and dispatchable supply of many different RES, through the combination of an innovative power-to-heat-to-power energy storage system with smart district heating.



H2020 - CHESTER

Main activities:

- To develop detailed models of the overall energy system.
- To assess the integration of CHEST system into the smart boundary conditions of the future energy system based on the dynamic simulations. The simulations will produce a comprehensive performance analysis to allow the CHEST system integration into a smart environment.
- To develop an smart energy system to integrate CHEST system to use the energy in a cost-optimal way and provide effective flexibility services to energy operators.
- Development of a web tool for a pre-feasibility analysis of the CHESTER system.

H2020 - inteGRIDy

inteGRIDy aims to integrate cutting-edge technologies and solutions, facilitating optimal and dynamic operation of the distribution grid, fostering the stability and coordination of energy resources and enabling collaborative storage schemes within an increasing share of renewables.

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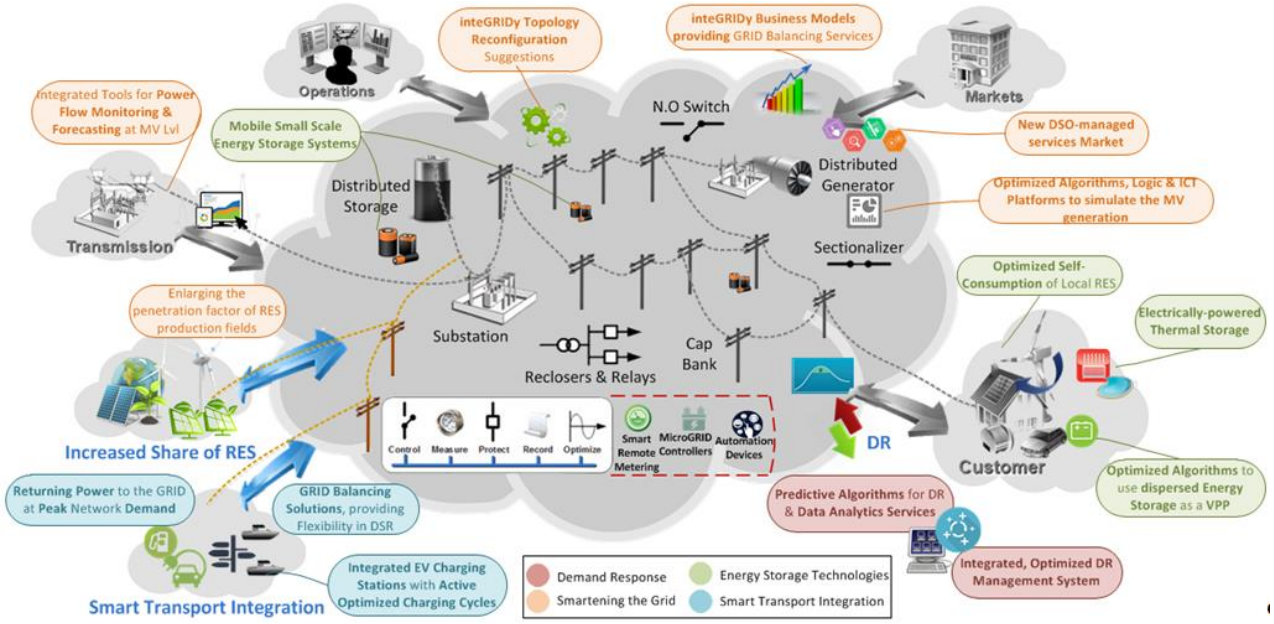

H2020 - inteGRIDy

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Main activities:

- To develop thermal-electrical models and analyze different management strategies of Demand Response (DR), considering different scenarios for DR strategies.

- To design the monitoring scheme, to develop the integrated thermal-electrical platform and to integrate it with the existing SCADA system. The platform aims to provide best operation strategies to optimize the energy system of the Sport Centre.

- Main technical partner of the demo site at Claror Cartagena Sport Centre in Barcelona, a case with a 100% electric-driven thermal system including a heat pump, PV panels and electrical storage (Li-Io batteries).

H2020 – Indus3es

Indus3Es SYSTEM is aimed to recover and revalue non-recovered low-exergy surplus heat in energy intensive industrial processes. Indus3Es System will upgrade low temperature waste heat streams to process heat streams at higher temperature levels and then use them in internal industrial process, reducing primary energy consumption of the industry.

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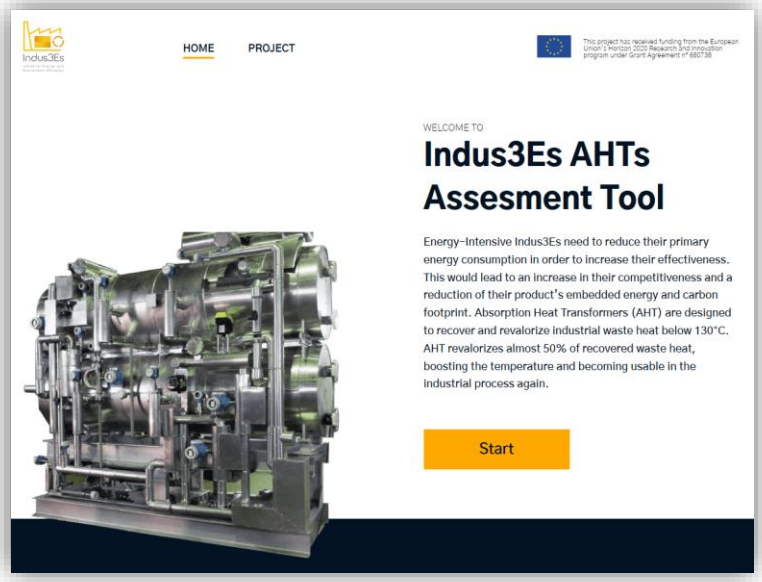

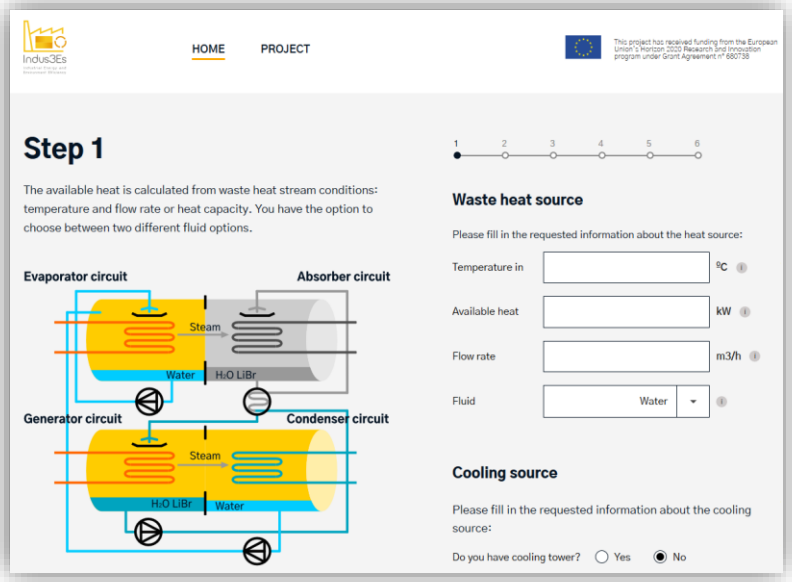

H2020 – Indus3es

Main activities:

- Evaluation of operation configurations for the absorption heat transformer (AHT) to maximize energy recovery while ensuring financial sustainability.
- Detailed engineering design of the integration system for the AHT at the petrochemical facilities of Tüpras in Turkey, including civil, piping, electrical and lighting aspects of the system.
- Design and programming of a monitoring and control system of the AHT and the integration system. Set up an online platform accessible by all project partners to monitor the operation and performance of the AHT system throughout the project duration.
- Support during implementation, commissioning and early operation stages is scheduled for early 2019.

H2020 – RenewIT

The main objective of the RenewIT project is to develop a simulation tool to evaluate the energy performance of different technical solution integrating RES in several European climate regions.

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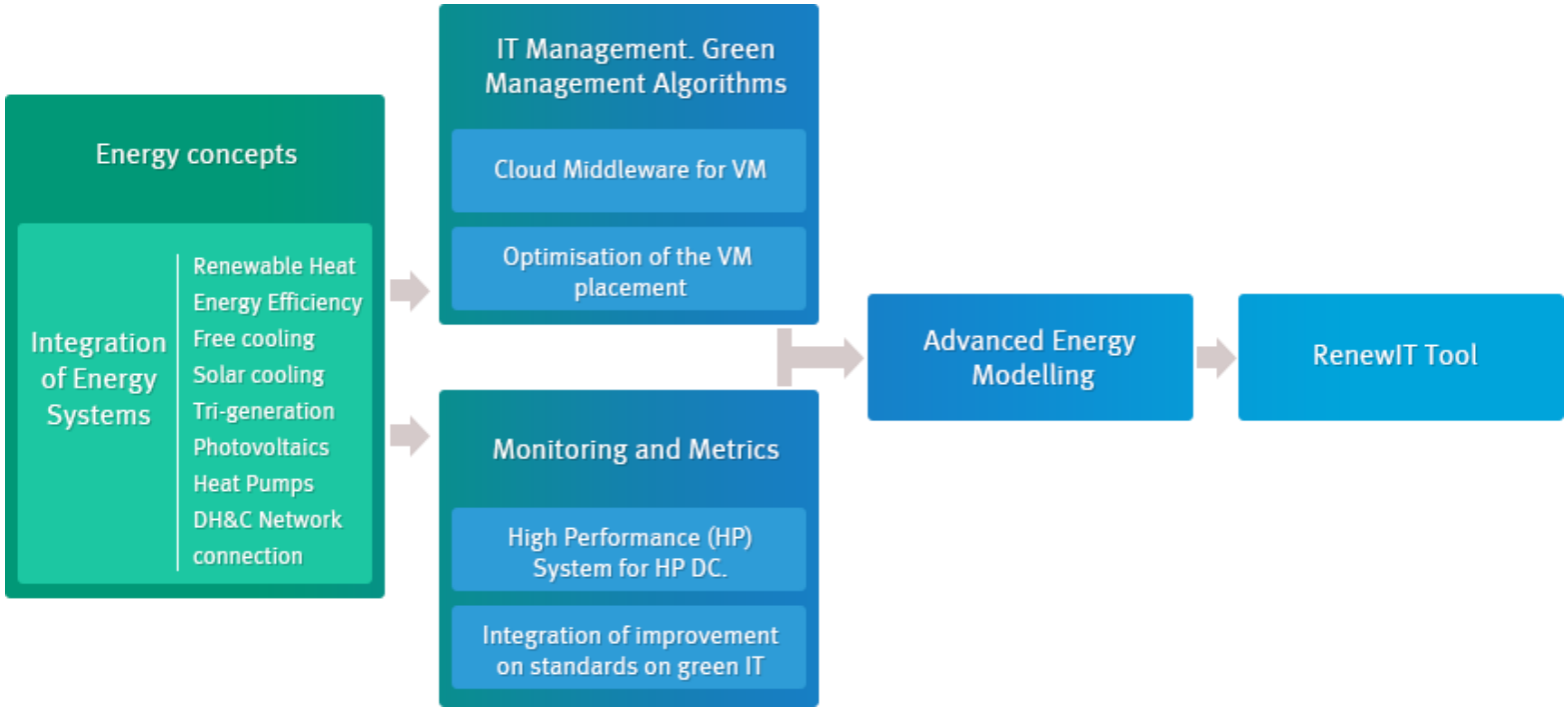

H2020 - RenewIT

Main activities:

- To develop advanced concepts for RE supply of DC
- To develop advance energy models
- RenewIT tool

Interreg - NANOSEN

Development and field validation of low cost & low energy consumption nanosensor systems for real-time air quality monitoring, under EU Interreg Sudoe grant program.

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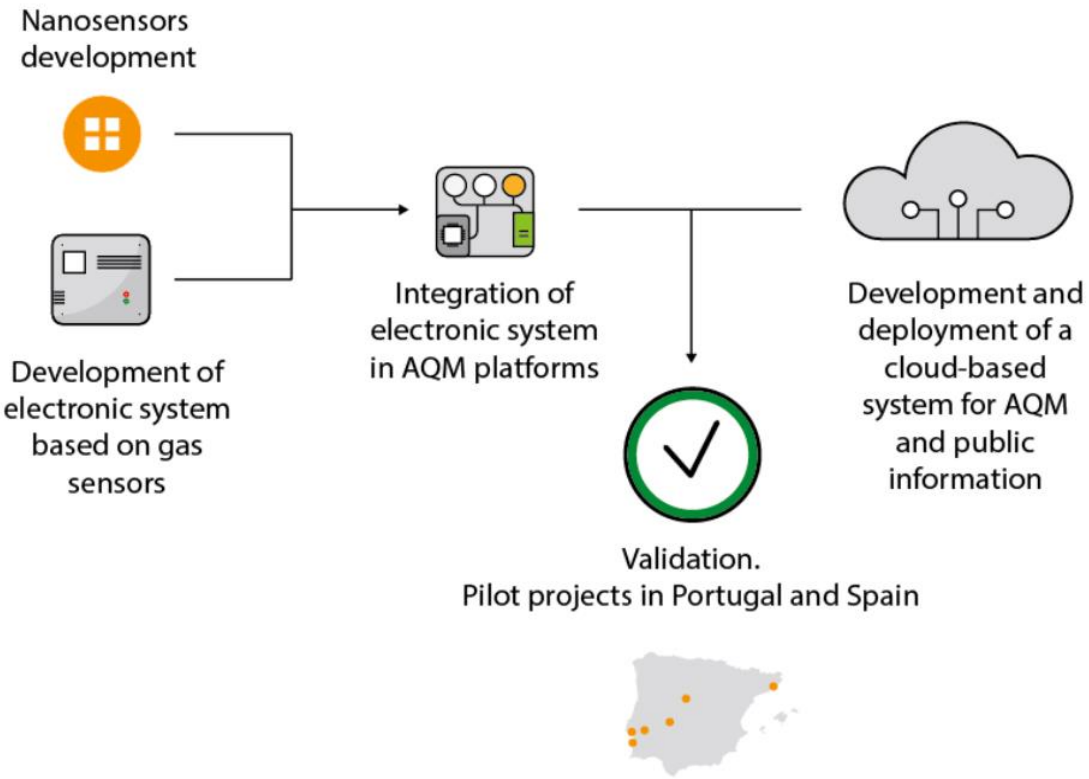

Interreg Sudoe
NanoSen-AQM

Interreg – NANOSEN

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Main activities:

- Deployment of a cloud-based system for AQM and public information.
- Dissemination tasks

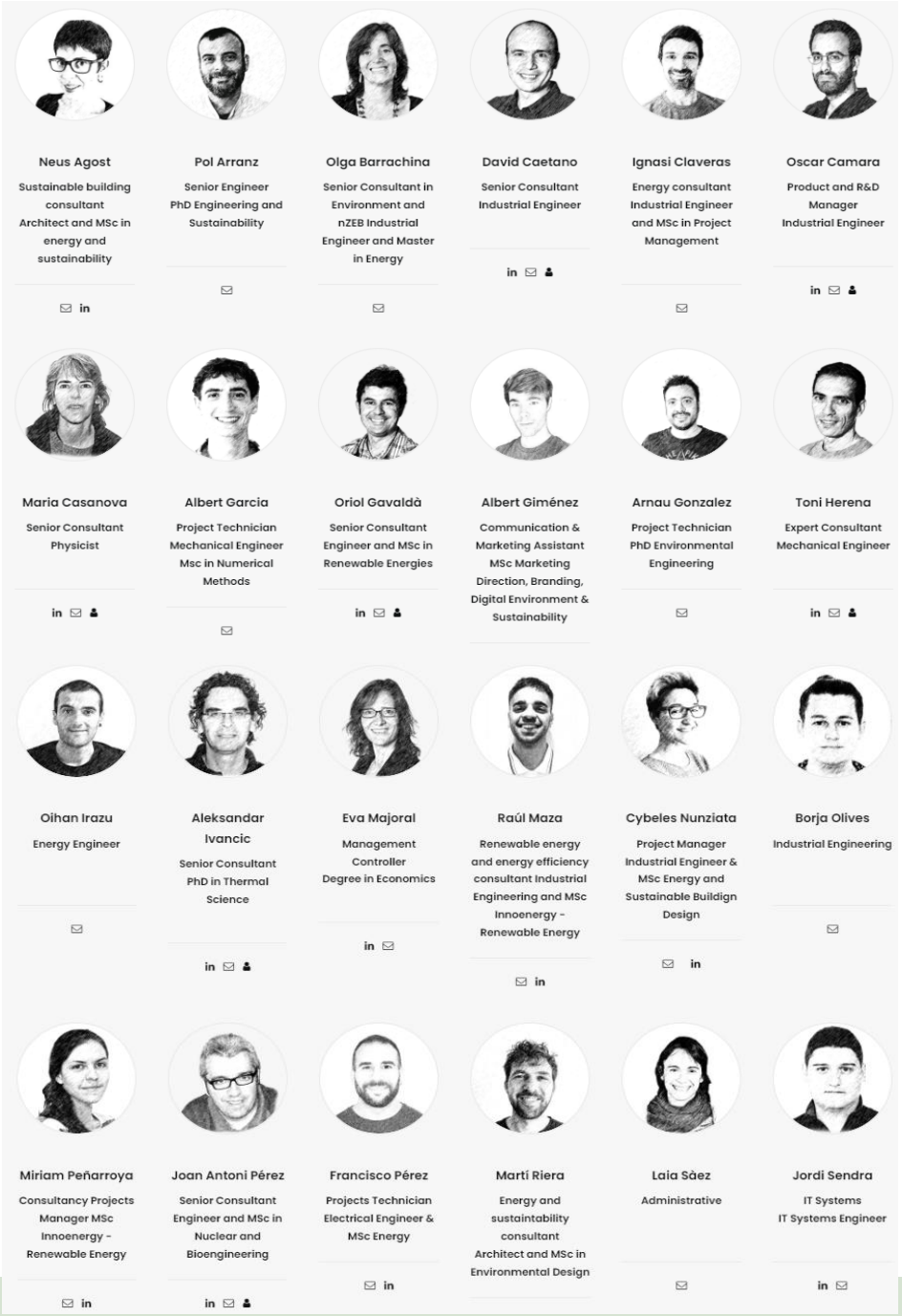
Our team

Multidisciplinary

International

Multilingual:

- English
- Spanish / Catalan / Basque
- French
- Portuguese
- German
- Serbo Croatian / Bosnian



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