

Shaping Energy



# AIGUASOL

PRESENTATION CUSTOMERS SERVICES SOLUTIONS

- Energy in buildings
- District networks and large-scale generation
- Energy policy
- Energy rehabilitation
- Energy management systems
- Net zero-energy buildings and environmental certification
- Energy intensity in industry
- Other customer-oriented products



Your partner in Energy Efficient Systems, Renewable Energy and Low Energy Buildings

#### WHO WE ARE

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**AIGUASOL** is an international energy engineering cooperative whose aim is to create indoor and outdoor spaces and to devise exceptional, comfortable and efficient systems and processes that have a positive impact on the environment.

We think that with optimum creation procedures, we can improve human experience while reducing the resources used.

On the basis of our extensive knowledge, experience, neutrality and rigor, we see sustainability as a crucial component in getting people to give their all and feel comfortable in their surrounding environment.

### WHAT WE OFFER

We make our knowledge and experience available to develop visions and ideas, integrating them and adapting them to the specific case at hand.

Our engineers, physicists and doctors are more than just experts in basic principles; their creativity permits the kind of cooperation needed to develop integrated energy concepts.

We begin our collaboration in the embryonic states, working together with all the players to reach answers with guarantees.

Our toolkit is constantly growing with the addition of new simulation models, custom software, engineering-oriented analyses and the latest in R&D, which we use to propose, implement and validate these ideas

### HOW WE DO IT

We believe that the environment is more than just a thing unto its self. Our focus explores all factors that affect users, working with dynamic solutions that adapt to the constantly changing world we live in.

Even as we develop and explore the most state-of-the-art technology, we recognize that technology is only part of the response.

We ask ourselves tough questions and take a challenge-based approach to our work, proposing ideas and developing targeted solutions.

In every project, we share our knowledge and partake in the unique experience with a single goal in mind: to increase productivity and comfort with minimal environmental impact and energy costs.

### WHERE WE ARE

### AIGUASOL is a locally based, globally active company.

We have offices in Barcelona and the Basque Country as well as a presence in Santiago de Chile, Lisbon and Bogota. The central offices cover projects throughout Europe, Asia and Africa.

## **CUSTOMERS**

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AIGUASOL, is guided by customer needs and its scope of activity. Some of our customers include.



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## SERVICES

AIGUASOL works from a variety of perspectives according to its customers' needs so as to offer appropriate solutions and optimum designs.

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### Engineering

Developing detailed solutions from the early stages through to the full project design, implementation and subsequent monitoring.

## Shaping your energy

### Software

Distributing, providing training in and maintaining simulation software and developing custom-made tools.

### Consulting

Proposing solutions and allowing for conclusive and quantifiable decision-making to achieve the desired objectives.

### R+D

Designing and marketing new technologies, methodologies and processes rooted in energy efficiency and renewable energy sources.





#### **ENERGY IN BUILDINGS**

Studies and projects in both new and existing residential buildings and all manner of large consumer tertiary buildings.



### DISTRICT NETWORKS AND LARGE-SCALE GENERATION

Feasibility, design, implementation and monitoring of district heating and cooling (DHC) systems and other large-scale energy production systems.



#### **ENERGY POLICY**

Development of energy plans, investment strategies and subsidies as well as local, regional and national regulations.



#### **ENERGY REHABILITATION**

Approaches, definition and dimensioning of energy rehabilitation activities in residential and tertiary buildings, whether a client's own investment or a third-party ESCO investment.

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#### **ENERGY MANAGEMENT SYSTEMS**

Design and implementation of smart energy management systems; optimized management, preventive maintenance, results-oriented rehabilitation and benchmarking.



#### NET ZERO-ENERGY BUILDINGS (NZEBS) AND ENVIRONMENTAL CERTIFICATION

Concept, design, implementation and monitoring of net zero-energy buildings (nZEBs), private environmental certification and public energy certificates.



### **ENERGY INTENSITY IN INDUSTRY**

Analysis and projects to reduce energy intensity and emissions in industrial processes and facilities.



#### **OTHER CUSTOMER-ORIENTED PRODUCTS**

Other customer-oriented solutions that require the calculation and optimization of consumption and energy costs.

### **ENERGY IN BUILDINGS**

AIGUASOL has been carrying out studies and projects in new residential and large consumer tertiary buildings (offices, hotels, hospitals, sports centers, schools, etc.) as well as those undergoing renovations since its inception.

The goals of the projects, which can include anything from concept design to execution and site management, are to reduce energy consumption, while taking into account the planned investments and working with the rest of the project team, and, in the case of existing buildings, to solve deficiencies and propose alternatives for obsolete energy systems.



## More than 700,000 m<sup>2</sup> of projects in buildings of varied uses, reducing their environmental impact and energy costs and increasing the comfort of their users.

OPTIMIZATION OF A CENTRALIZED COGENERATION SYSTEM FOR A SOCIAL HOUSING BUILDING ON BOULEVARD DE SALBURUA 2011 - Gasteiz Customer: Construcciones Sukia

ENERGY OPTIMIZATION AND FULL INSTALLATION PLAN IN THE REHABILITATION OF THE SANT PAU CENTRAL PAVILION 2010 - Barcelona Customer: ONL Arquitectura

ENERGY DESIGN OPTIMIZATION IN THE HEADQUARTERS OF COSTANERA CENTER 2013 - Santiago de Chile Customer: Costanera Center









DISTRICT NETWORKS AND LARGE-SCALE ENERGY GENERATION

AIGUASOL analyzes, design and performs site management and monitors the subsequent operations of energy generation systems in major infrastructure.

With district heating and cooling networks (DHC), we consider the types of production as well as the consumers, the potential for integration of renewable energy or use of residual energy, and timings in the investment and execution phases. This permits scaling and allows us to carry out projects that are profitable for both the public and private stakeholders.

At the proposal of developers and in research projects, we design, develop and monitor large-scale renewable and/or energy-efficient systems



After completing more than 30 district network and large-scale energy production projects in different latitudes, we have the knowledge and experience to define the conditions and ensure the success of these operations.

DESIGN AND IMPLEMENTATION OF A FRESNEL HEAT COLLECTOR FOR INDUSTRIAL PROCESSES AT THE MAFRICA MEAT PROCESSING FACILITY 2011 - Sant Joan de Vilatorrada Customer: AIRA Robòtica



DESIGN, FULL PROJECT DESIGN AND SITE MANAGEMENT FOR A NEW DISTRICT HEATING NETWORK IN OLOT 2016 - Olot Customer: Gas Natural



AWARD: 2015 HEAT PUMP CITY OF THE YEAR AWARD FROM THE EUROPEAN HEAT PUMP ASSOCIATION)

PITAGORAS - EUROPEAN PROJECT TO DEVELOP LOW-TEMPERATURE DISTRICT HEATING NETWORKS AND GENERATE POWER FROM RESIDUAL AND RENEWABLE SOURCES 2013-2017 - Various locations in Europe Customer: European Commission





### **ENERGY POLICY**

AIGUASOL collaborates in the development of local, regional and country-level energy policies.

On the basis of comprehensive energy plans or strategies linked to unique objectives, we deploy everything from sectorial models tied to the implementation of technology over a territory, investment strategies and building subsidies to specific local, regional and national regulations and master plans.



### We have developed local ordinances, targeted master plans, energy plans, national regulations and European sectorial policies that improve the quality of life of millions of people.

ANALYSIS OF THE POTENTIAL FOR IMPLEMENTATION OF RE-NEWABLE ENERGIES FOR THE ISLAND OF SAINT HELENA 2014 - Saint Helena Customer: Government of Saint Helena



BARCELONA ENERGY IMPROVEMENT PLAN (PMEB) AND BARCELONA ENERGY, CLIMATE CHANGE AND AIR QUALITY PLAN (PECQ) 2000 - 2010 - Barcelona Customer: Barcelona Regional / Barcelona Local Energy Agency

#### ENERGY GUIDELINES FOR DESIGNING COST-EFFECTIVE, NEARLY ZERO-ENERGY BUILDINGS (NZEBS) IN MADRID 2013 - Madrid

Customer: City Council of Madrid, Activos Renta, Association of Real Estate Developers of Madrid (Asprima), Desarrollo Urbanístico de Chamartín (DUCH), Gas Natural, Institute for Energy Diversification and Saving (IDAE), Jones Lang LaSalle, LKS, Remica, Typsa, Uponor and Yesos Ibéricos





### **ENERGY REHABILITATION**

AIGUASOL analyzes, designs and implements the best energy rehabilitation options with a stress on the priority set by the customer: a net zero-energy building, an optimal cost-benefit ratio or an improvement in visual and thermal comfort.

We offer a comprehensive perspective that takes into account everything from the lighting systems to the building's façade and consumables, all the while remaining neutral about the products and services available in the market.

In large consumer buildings, the analysis of alternatives includes investment by the company itself or by third parties as an ESCO. In 2015, we founded exsergy (exsergy.com), which strives to promote investment in energy rehabilitation of tertiary buildings. When it comes to residential buildings, we participate in projects and studies seeking to make energy rehabilitation financially feasible in PPP models.



## Our experience implementing more than 20 million euros in energy rehabilitation investments allows us to assess and guide the best proposals with great efficiency.

DESIGN AND IMPLEMENTATION OF RENEWABLE ENERGY PRODUCTION FOR MONTJUÏC CASTLE 2016 - Barcelona Customer: BIMSA



GROWSMARTER - EUROPEAN PROJECT FOR THE DEVELOPMENT OF SOLUTIONS FOR TOMORROW'S SMART CITIES 2015-2019 - Various locations in Europe Customer: Gas Natural

DESIGN AND IMPLEMENTATION OF THE REHABILITATION OF THE PALACE (HEADQUARTERS) OF THE REGIONAL GOVERNMENT OF GIPUZKOA 2013 - Donostia

Customer: Regional Government of Gipuzkoa





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### ENERGY MANAGEMENT SYSTEMS

AIGUASOL designs and implements smart energy management systems in facilities, buildings, groups of buildings and industrial areas to achieve cost savings and detect investments in energy rehabilitation.

By measuring and monitoring key indicators and through the use of proprietary algorithms, we produce assessments contrasted by benchmarking, optimized operational strategies, preventive maintenance assessments and indicators for targeted rehabilitation activities. We work with commercial products and third-party freeware and develop our own custom solutions. Since 2015, we have been adapting our own platform, eeBox, for the control and optimization of freestanding buildings and groups of buildings.

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## With the knowledge and experience we have gained over more than 1,000 energy projects, we can detect key elements and apply state-of-the-art algorithms for smart energy management.

#### CHEQ4 SOLAR THERMAL SYSTEM CONTROL AND OPTIMIZATION METHODOLOGY 2012 - Spain Customer: AIGUASOL and

Solar Association of the Thermal Industry



#### SOFTWARE FOR THE DESIGN, OPTIMIZATION AND ENERGY MANAGEMENT OF SOLAR THERMAL SYSTEMS, TRANSOL 2011 – International

Customer: AIGUASOL and

French Scientific and Technical Center for Building



#### EEBOX ENERGY MANAGEMENT SYSTEM FOR MONITORING, OPERATING OPTIMIZATION AND REHABILITATION INVESTMENTS IN TERTIARY BUILDINGS

2016 - Gipuzkoa

Customer: Government of Gipuzkoa

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### NET ZERO-ENERGY BUILDINGS AND ENVIRONMENTAL CERTIFICATION

Having both designed and executed iconic buildings, AIGUASOL possesses more than 10 years of demonstrable experience with so-called net zero-energy buildings (nZEBs) and has received a variety of international distinctions for its successful implementations.

In parallel, we were involved in the development and implementation of public certification for groups of buildings and have helped with the application and validation of private environmental certification for individual buildings, including certification of a general nature (LEED, BREEAM, DGNB, HQE, ISO50.001, etc.) and industry-specific certifications (Travelife, GreenStar, etc.).



With more than 90 success stories, we helped define the concept of zero-energy building and how to inform the public, evaluating the most appropriate certification in each specific case.

> HVAC SYSTEM DESIGN, OPTIMIZATION AND IMPLEMENTATION AND ADVICE AND CALCULATIONS FOR LEED GOLD CERTIFICATION FOR A NEW CHARMEX COMPANY BUILDING 2015 - Getafe

Customer: Charmex Internacional



BUILDING ENERGY OPTIMIZATION AND HVAC SYSTEM DESIGN FOR A BUILDING CONTAINING ASSISTED LIVING HOMES, A NURSERY SCHOOL AND MEDICAL CENTER 2010 - Barcelona Customer: European Commission - Municipal Housing Board



BUILDING ENERGY OPTIMIZATION AND HVAC SYSTEM DESIGN FOR THE BENASQUE PEDRO PASCUAL SCIENCE CENTER 2008 - Benasque Customer: CSIC



AWARD: 2011 ISOVER EUROPE ENERGY EFFICIENCY AWARD FOR THE MOST EFFICIENT TERTIARY BUILDING IN EUROPE

### ENERGY INTENSITY IN INDUSTRY

In order to increase the competitiveness of industry while shedding light on specific activities, AIGUASOL analyzes, proposes and implements production alternatives that reduce energy consumption and associated costs.

By analyzing process integration, designing targeted production and transformation systems and managing cross effects, we bring forward specific solutions for a range of different industries, from food and agriculture to construction materials and civil works.



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> ENERGY OPTIMIZATION IN PRODUCTION PROCESSES AT FAUSTINO WINERY 2011 – Álava Customer: Faustino



ENERGY DIAGNOSIS AND IMPROVEMENT STRATEGIES IN THE ASPHALT PRODUCTION PROCESS 2016 - Lleida Customer: Sorigué



INDUS3ES - EUROPEAN PROJECT ON USING RESIDUAL HEAT TO OPTIMIZE INDUSTRIAL PROCESSES 2016-2020 - Various locations in Europe Customer: European Commission





### OTHER CUSTOMER-ORIENTED PRODUCTS

Using our deep knowledge of the energy sector and advanced calculation tools, AIGUASOL designs applications and carries out specific customer and productoriented analyses and training.

Considering different technologies and the prevailing legal frameworks and local conditions, we conduct, upon request, analyses and validations of specific technologies and solutions, whether for scaled implementation, to help others with their design or to demonstrate their commercial and legal advantages.



## With product characteristics or service conditions as a basis, we have designed applications for testing regulations, legalizing technologies, selling solutions or scaling systems.

VALIDATION OF THE IMPACT OF INTERNAL DOME CONDITIONS ON ERROR DEVIATION IN MEASUREMENTS FOR A TELESCOPE DESIGN 2012 – Javalambre Customer: Scwuartz-Haumond

OPTIMIZATION IN THE DESIGN OF UNDERGROUND PARKING LOTS TO MEET HEALTH-BASED VENTILATION REQUIREMENTS BASED ON NATURAL RENEWALS 2015 - Cartagena de Indias Customer: Arias-Serna-Saravia Arquitectos

VALIDATION OF CONTOUR CONDITIONS FOR THE DESIGN OF INFLATABLE HANGAR MODELS 2015 - Multiple locations Customer: Buildair









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