

**IDENER**

Optimización orientada a la sostenibilidad S.L.  
Sevilla, Spain

**ABOUT**

IDENER is a research SME that investigates in the multidisciplinary field of Computational Science and its application to the optimization of systems and processes in key areas: Industrial Technologies; ICTs; Biotechnology; Energy; and Resource and Raw Materials Efficiency.

This approach results in a high added value that sharpens the competitive edge of complex systems by providing improvements in performance and cost effectiveness. To that end, IDENER integrates concepts from four interrelated and complementary areas: Mathematical Modelling and Simulation; Multidisciplinary Design Optimization; Control Engineering; and Software Engineering. Within Industrial Process Applications area, main contributions are: Multidisciplinary Design Optimization (MDO), process modelling and simulation, tools for effective decision making and public engagement through the integration of knowledge and decision support frameworks (algorithms) and fostering of resource efficiency through digital systems.

**EXPERTISE**

IDENER services along the Raw Material Value Chain are:

- **Design of experiments:** The company has a fully equipped laboratory for metal extraction and electrodeposition tests: spectrophotometer, potentiostat-galvanostat, reaction carousel, etc. The experiments are planned under a Design of Experiments approach in order to holistically analyse the interactions of all main variables considered at a time with the aim of saving costs, resources and time, and to increase the precision of results.
- **Multidisciplinary Design Optimisation (MDO) based engineering:** MDO is a field of engineering that focuses on the use of numerical optimization for the systems and equipment design that involve a number of disciplines or subsystems (e.g., thermodynamics, mechanics, fluid dynamics, etc.), and using MDO allows to study the performance of the discipline's interactions. By solving the MDO problem early in the design process and taking advantage of advanced computational analysis tools, the design cycle can be improved, and the time and costs reduced. It also allows a concurrent design of control strategies, and an aligned engineering with the operational aspects.

- **Digital twins:** The multidisciplinary team of the company holds an extensive background in modelling and simulation. This way, there are extensive capabilities to produce digital representations of the systems of interest aimed to the design and testing phases prior to the physical production. Digital twins have a large potential not only to improve design, operation and maintenance but also to predict environmental impacts. Detect production bottlenecks and scale-up processes.
- **Other contributions to the area:** Knowledge improvement on the availability of raw materials, alternatives for CRMs, tools for effective decision making, public engagement, and communication and dissemination activities.

**FACILITIES & SERVICES**

Apart from laboratory equipment, the company holds the license of several software useful for the activities described above as for example Design Expert, Matlab or Simulink.

**MORE INFORMATION**

Website: [www.idener.es](http://www.idener.es)

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