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We are using AI
to advance science and engineering,
and create value for all

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Technology

An engine for dealing with
complexity

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Applications

Expanding the limits
of AI

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PROFESSIONAL CAPACITY

- A **private research SME**, spin-off of University of Seville funded in **2010**
- Headquarters in Seville in **Aeropolis** (Aerospace technology park)
- **100** engineers, mathematicians and physicist (around 60% are PhDs)
- **65+** European and national projects (with **25 coordinated** and **60 ongoing** within the H2020/HEU framework)
- **300+** international journal articles **25+** in book format
- **3** patents

SUCCESSFUL PROJECTS

Energy and Environment	Logistics	Chemical Apps	Industry & Manufacturing	Biotechnology

IDENER R&D AS A TOP-TIER PRIVATE RESEARCH CENTER

Top 20 Spanish entities (public and private) by research grant value in Horizon Europe (2021-2023)

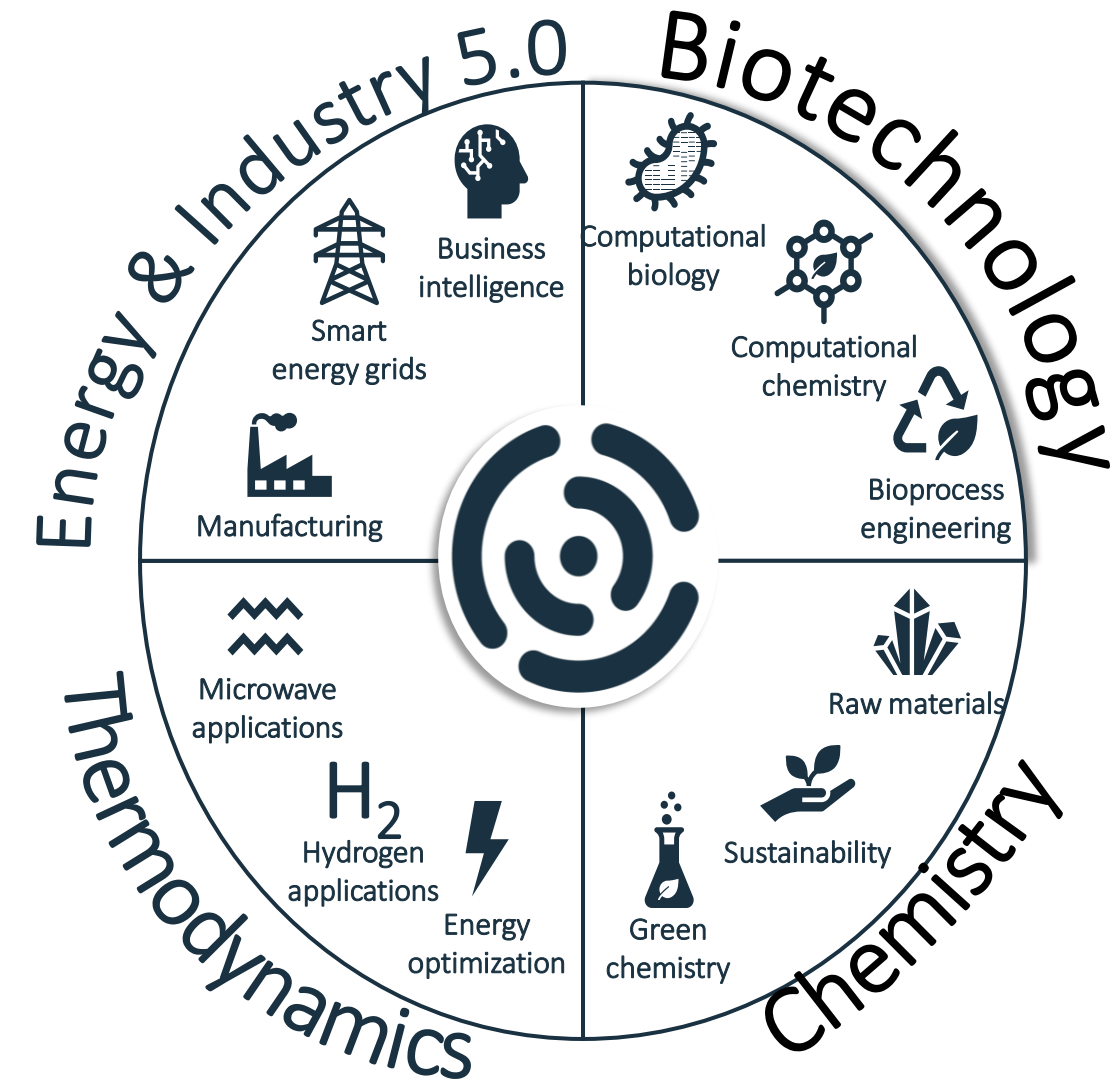
First Spanish private research center by research grant number in Horizon Europe (2021-2023)

Second Spanish private research center by research grant value in Horizon Europe (2021-2023)

Most outstanding entities (public and private)

	Total	Coordinated
Agencia Estatal Consejo Superior de Investigaciones Científicas	465	153
Fundación Tecnalia Research & Innovation	152	24
Universidad Politécnica de Cataluña	129	27
Universidad Autónoma de Barcelona	105	46
Universidad Politécnica de Madrid	118	27
Barcelona Supercomputing Center - Centro Nacional de Supercomputación	108	21
Universidad Pompeu Fabra	78	44
Universidad de Barcelona	105	40
Universidad Politécnica de Valencia	114	20
Indra Sistemas, S.A.	31	5
Fundación CIRCE - Centro de Investigación de Recursos y Consumos Energéticos	56	15
Universidad de Valencia	67	27
Fundación CARTIF	56	9
Fundació Privada Clínic per a la Recerca Biomèdica	42	11
Asociación de Investigación Metalúrgica del Noroeste	50	8
Idener Research & Development, A.I.E.	37	16
Institut de Ciències Fotòniques	45	23
Fundació Eurecat	54	6
Universidad del País Vasco	79	32
Fundación Privada Instituto de Salud Global de Barcelona	30	11

DIVISIONS



Thermodynamics division is involved in the development of several Horizon Europe projects from different disciplines:

- Solar power and thermal energy storage
- Circular production processes
- Energy intensive industry
- Smart and sustainable manufacturing
- Sustainable packaging
- Robotics, AI-based automatization and Industry 5.0
- Microwave-based heating and production
- Green hydrogen technologies
- Technoeconomics and replicability
- Multiphysics computational modelling
- Integration of renewable energy and optimization
- Multidisciplinary Design Optimization
- Digital Twins and IT development

DIVISION EXPERTISE



**Techno-economic,
energy and exergy
analyses**



**Replicability,
feasibility and
scalability studies**



**Advanced Modelling,
simulation and
assessment at several
scales**



**Multidisciplinary
Optimization (MDO)**



**Process
Implementation
(MW, H2 apps,
clean energy...)**



**Decision
Support System
& IT Tools**

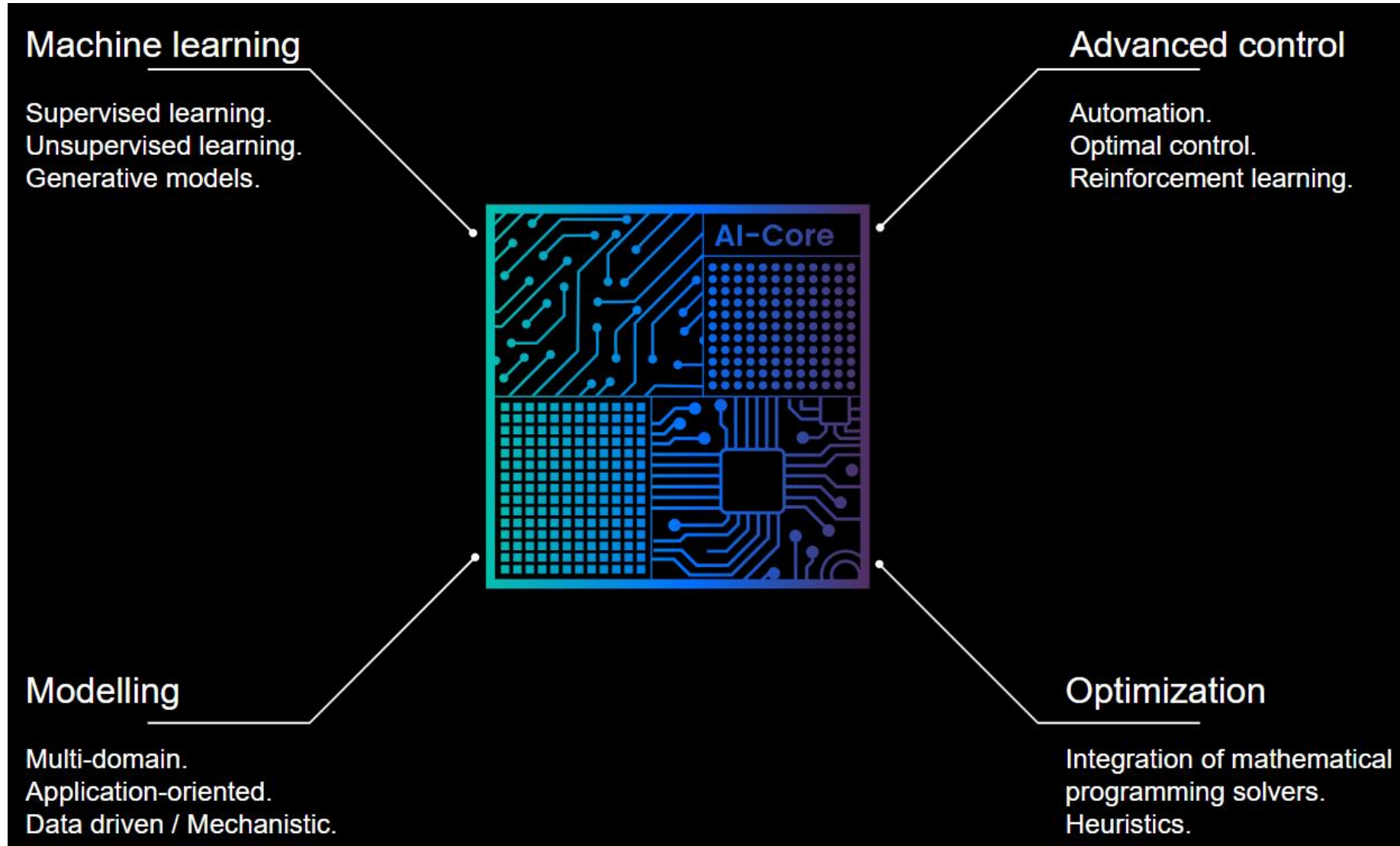


**Thermal storage
management &
Renewable solar energy
integration**



**Data analysis and
Advanced control based
on Artificial Intelligence
& Machine learning**

AI CORE



TOPICS OF INTEREST IN PRESENT CALL

HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-33: **Integrated use of renewable energy** carriers in industrial sites (Processes4Planet partnership)

HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-36: **Safe and clean processing** technologies and products (Processes4Planet partnership) (RIA)

HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-32: **Green and resilient** flexible production **processes** (Processes4Planet partnership) (IA)

HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-31: From **heat-driven processes** to the use of mechanical and electric forces (Processes4Planet partnership) (IA)

HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-37: Solving issues in **carbon-neutral iron and steel making processes** with diverse input materials of varying quality (Clean Steel Partnership) (RIA)

HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-34: **Smart integration of net zero technologies** into **Energy Intensive industries** (Processes4Planet and Made in Europe partnerships) (IA)

HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-05: **Advanced manufacturing technologies** for leadership of EU manufacturers in products for the net-zero industry (Made in Europe Partnership) (IA)

✓ **Circular production processes**

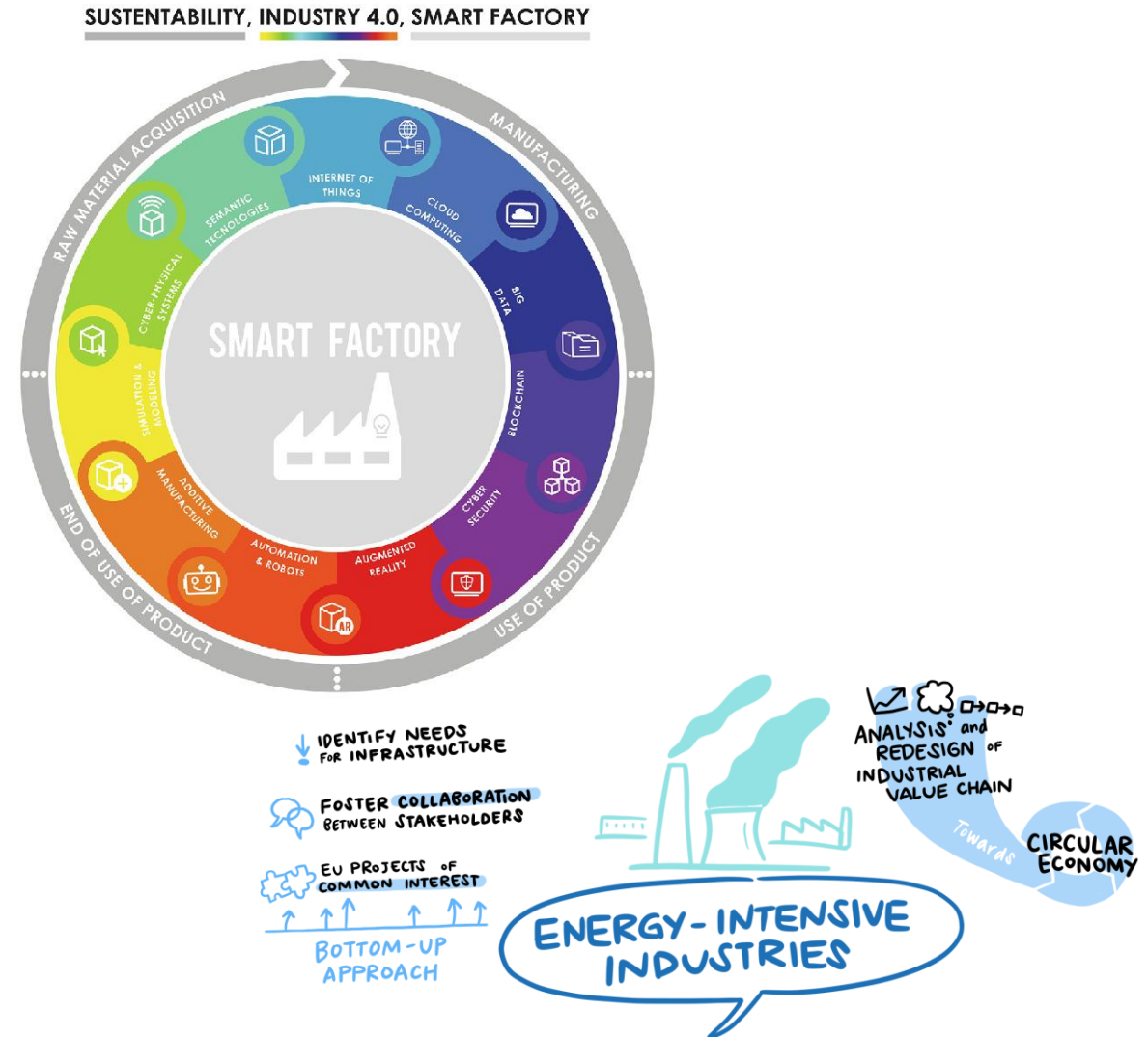
✓ **Smart and sustainable manufacturing**

✓ **Energy intensive industry**

✓ **Integration of renewable energy and optimization**

SPECIFIC EXPERTISE

- ✓ **Circular production processes:** IDENER develops innovative **circular production strategies** focused on **lifecycle analysis**, **waste valorization**, and **process re-engineering**. These strategies enhance material reuse, minimize resource inputs, and close energy and material loops in industrial systems
- ✓ **Energy intensive industry:** IDENER provides **optimization solutions** via **advanced energy modeling**, **process intensification techniques** or **AI-driven control systems** that reduce operational costs and environmental impact, supporting the transition to a greener industrial base.
- ✓ **Smart and sustainable manufacturing:** IDENER develops **smart manufacturing systems**, combining sustainability with Industry 5.0 technologies such as **predictive analytics** to **intelligent automation**.
- ✓ **Integration of renewable energy and optimization:** IDENER specializes in **integrating renewable energy sources into industrial processes**. By **optimizing energy flows**, **storage systems**, and **hybrid configurations**, IDENER ensures the highest efficiency and reliability.





Thank you for your time
and attention

Contact

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