

# MAK21 research project funded by the CDTI is launched

The project is developed by a consortium formed by five companies from different sectors that are led by Industrias Puigjaner (DENN). These companies are DIMECO, ASAI, RISKLESS and CODESYNTAX, all of them SMEs in the Spanish business fabric. DENN and DIMECO represent the SME segment of metal forming machine tools, while ASAI, CODESYNTAX and RISKLESS will provide ICT technology such as IoT, Artificial Intelligence, augmented reality, vision and automation technologies or the security of systems and equipment.



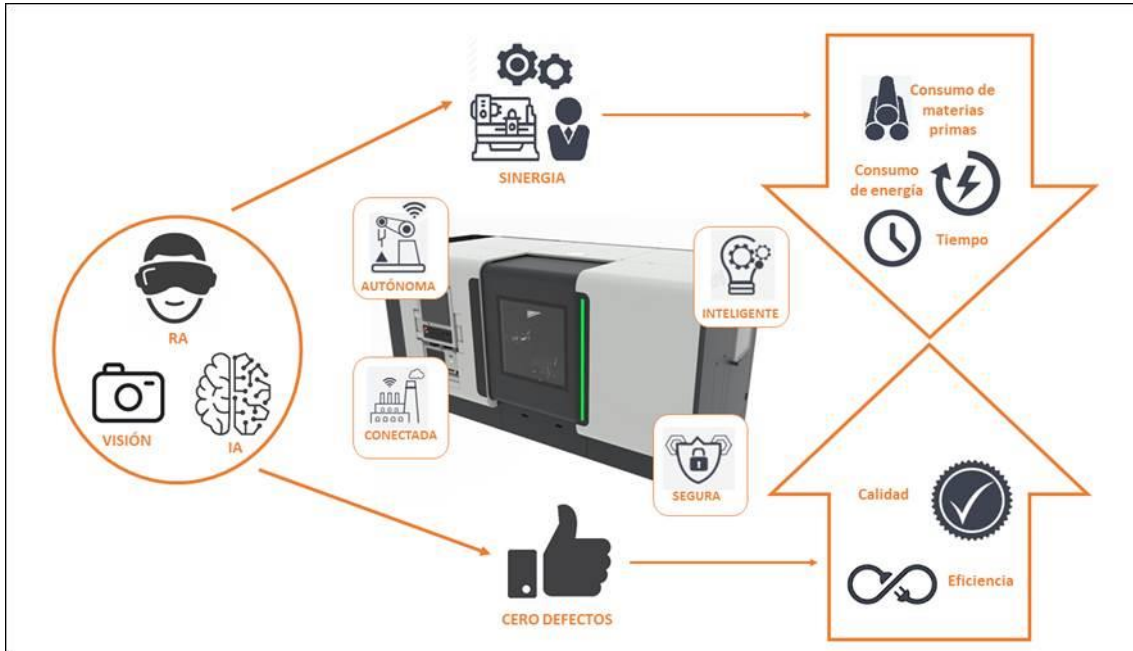
The segment of machine tool manufacturers in Spain is mainly composed of SMEs that compete at a global level. In many cases these SMEs design products or machines under an *ETO approach* ( *Engineering tone Order* ) which translates into production of non-serialized machinery, low sales volume and very high personalization. Under this approach, both the efficiency offered by the machine in operation and the response time to the client from the time the order is received are critical to the business. In the specific case of metal forming manufacturers, the time spent on the calibration and tuning of these machines is especially relevant. Not only because of the time invested, but also because of the impact it has on the correct functioning or performance of the same in the end user's facilities. In addition, in recent years and specifically after the covid-19 pandemic, sustainability and resilience requirements have been added to the efficiency criteria so that the machines and their manufacturers continue to be competitive at a global level.

The general objective pursued by this project is to develop a research strategy to provide intelligence, autonomy and resilience to the industrial equipment of the future, through the incorporation of digital technologies and increased human and machine synergies with the objective of achieving a reduction in the consumption of raw materials, energy and efficiency of manufacturing processes increasing productivity, reducing set-up times and reducing defects.

This general objective has 3 fundamental levers (in the end, three general objectives) such as that the machine carries out efficient and sustainable manufacturing; that the machine develops a bilateral

interaction with people to develop their autonomy; and that the machine is safe and resilient to threats from a cybersecurity point of view.

The object of the project can be illustrated according to the following figure:



To achieve the stated objective, the consortium will use an interdisciplinary approach that fits the paradigms of **efficiency through the digital transformation of Industry 4.0 and embraces the sustainability, human- centric and resilience drivers that Industry 5.0 adds**

The project proposes a budget of €1,790,925.00. The consortium presents a very balanced scheme for the achievement of the objectives, with a very relevant and homogeneous participation on the part of each participant (between 12% and 25%), and consistency in the traction capacity of the technology providers (52 %) and machinery manufacturers (48%). The geographical distribution is also balanced.

**This project is part of the MISSIONS program of the Centro de Desarrollo Tecnológico Industrial (CDTI) and will be possible thanks to the European funds assigned to the National Recovery and Resilience Mechanism.**



Information of the members of the consortium:

**Industrias Puigjaner** : INDUSTRIAS PUIGJANER SA(DENN) is a founded company n 1885 specialized in the design and manufacture of machines for the deformation of metals (sheet, tube and dowel) by rotation processes since more than 130 years. DENN's philosophy is based on permanent collaboration with the client to be able to know what their needs, objectives and problems are and thus focus R+D+i activities on finding specific solutions to market requirements.

**Tell me with:** Diseño, Mecánica y Construcción, SA designs and supplies turnkey production lines, which include profiling, punching, among others, to manufacture metal parts starting from coils. DIMECO provides solutions for a wide variety of sectors such as solar, electricity, logistics and construction.

The four main lines of action in Dimeco's R&D within its strategy as the main development tool are: Productivity, Flexibility, Innovation and Internationalization

**Acai:** Automatización de Sistemas y Aplicaciones Industriales, SL is a SME that positions itself in the industrial world as an engineering company specialized in the design, automation, control and supervision of processes, with more than 20 years of experience in providing advanced production systems/technologies mainly for the Automotive Sector, but also for other sectors such as appliances, aeronautics or energy.

The priority in the research and development area is the conception, design and implementation at prototype level of industrial automation solutions aimed at greater productivity and cost efficiency and lower energy consumption and waste generation.

**CodeSyntax SL :** CodeSyntax is a company founded in 2000, expert in Internet and ICT-TIC consulting and services, specialized in free software development and made up of professionals with profiles that complement each other in their work . Among its lines of activity, it develops projects related to Industry 4.0, intelligent products, intelligent processes and operations.

**Integral RKL :** Riskless Integral SL is a technology-based engineering company with an innovative nature, specialized in the analysis, identification, evaluation and mitigation of risks in real time and in the development of operational and business continuity solutions in SaaS format. Its value proposition focuses on the knowledge and background of its team, with more than 25 years working in critical infrastructure environments in safety, security and ICT aspects.