

COMPANY PROFILE

2024

Research
Projects

130

European
Projects

40

Advanced
Education

20

Employees

66

Service
Contracts

1396

Composite Materials | Polymerics | Bio-based
Modeling & Simulation | Civil Engineering
New product development | XR & Multimedia
Automation & information systems



www.cetma.it



RESEARCH AND INNOVATION FOR ENTERPRISES AND PUBLIC ADMINISTRATIONS

CETMA is an **RTO - Research and Technology organization** dedicated to both generating new knowledge (Research) and applying this knowledge in practical ways (Technology) for companies and institutions.

Founded in 1994 through a special agreement between ENEA (National Agency for New Technologies, Energy and Sustainable Economic Development) and the MURST (Ministry of University, Scientific and Technological Research), **CETMA aims to promote business innovation**, particularly in Southern Italy.

As a stable consortium, CETMA is made up by ENEA, which holds 50% of the shares, and Università del Salento (5%), that is the other public entity. Private partners are RINA Consulting, Lattanzio Kibs, Digimat, Sysman Progetti & Servizi, Axist, G.M.T., G.M.T. SUD and ASA – Azienda servizi A.N.I.M.A S.R.L. (part of the Confindustria - industrial federation).

As a **non-profit entity**, CETMA reinvests all profits into research, training, and dissemination activities.

It meets all the criteria of a research organization as defined by EU regulations. Additionally, it is a **qualified laboratory** listed in the Register of Laboratories of the MIUR (Italian Ministry of University and Research) in accordance with D.M.593/2000.

CETMA has developed expertise in **materials engineering, computer engineering, and industrial design**. By integrating these skills, CETMA operates as a multidisciplinary entity that fosters the innovation of products, processes, and services. This integrated approach supports the growth and development of the national production system and effectively addresses technological development activities. CETMA provides research and innovation services to all types of companies and institutions without distinction.

OUR EXPERTISE

The multidisciplinary nature of CETMA, combined with the diverse expertise of its members, has enabled the **development of applications across various sectors** including industrial products and components, transportation, mobility, production systems, human health and medical engineering, environment and recycling, cultural heritage, energy, and infrastructure and civil engineering.

Materials Engineering

In Materials Engineering, CETMA specializes in composite and polymeric materials, focusing on **material design and optimization, simulation of materials, components and processes, testing, structural health monitoring, process development, and prototyping.**

A particular strength lies in the **numerical modeling of advanced materials** and their manufacturing processes, as well as in material recovery through innovative recycling and reusing processes and applications of recovered materials.

Computer Engineering

CETMA's expertise in Computer Engineering includes the development of software for industrial and engineering applications, advanced visual systems using Augmented Reality (AR) and Virtual Reality (VR) technologies, robotic and automation applications, and medical and rehabilitation applications.

Industrial Design

In the field of Industrial Design, CETMA's competencies cover **all phases of Product Development**: from conceptual ideation, design, and prototyping, to manufacturing, including ergonomic and market analysis.

With **over 65 highly specialized employees**, CETMA is one of the largest private research centers in Italy not directly linked to large companies.

According to a recent survey based on CERVED data, the 40 largest private research entities in Italy primarily serve large multinational companies (generally their parent companies) and pharmaceutical companies. In proportion to its size, **CETMA stands out as one of the leading research and technology centers in Italy**, offering research and innovation services mainly to SMEs.



REVENUES

Since the beginning, it has overseen

CETMA is a project-based organization. Throughout its history, from its origins to the end of 2023, it has managed **1396 projects** with a total value of about **EUR 190 million**.

In order to acquire these projects, it had to process 3.056 proposals with a total value of EUR 471 million, so the conversion rate of proposals into contracts is 46% in terms of number and 39% in terms of value.

In order to manage the large number of projects, CETMA has adopted a series of classifications. The most important of these is between research and commercial projects (technology consultancy, contract research and knowledge transfer).

130

independent research projects

20

higher education projects

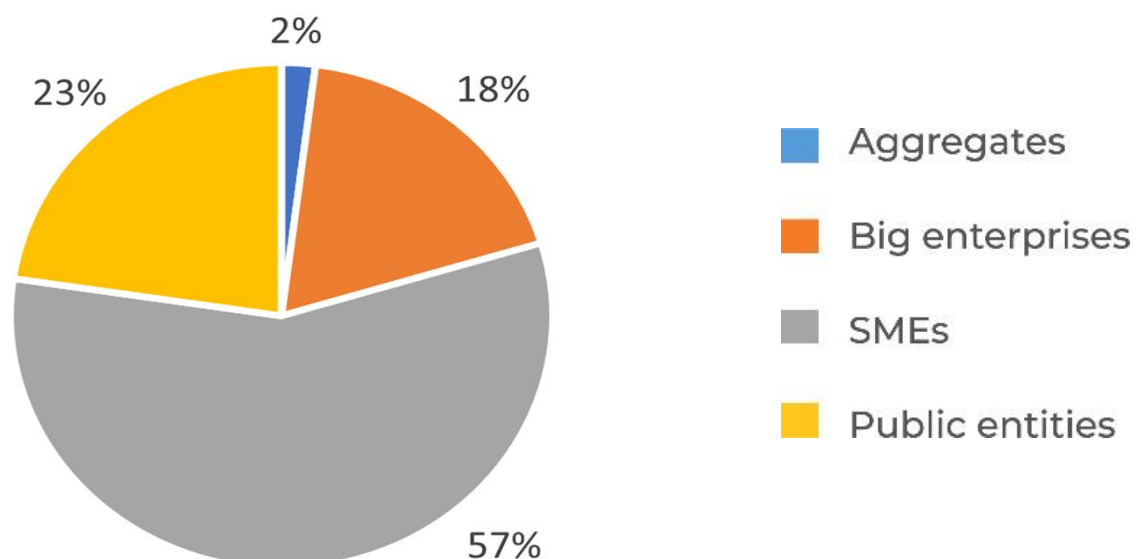
1396

commercial projects

40

European projects

TURNOVER BY ENTERPRISE SIZE IN 2023



OUR POSITIONING IN THE EUROPEAN R&D LANDSCAPE

531 partners across Europe | CETMA boasts extensive experience in collaborating with major public and private research centers across Italy and Europe, numerous Italian universities, and a multitude of small, medium, and large enterprises. CETMA is also an active member of various organizations and associations that unite regional, national, and European companies and research institutions.



EDIH | CETMA coordinates one of the European Digital Innovation Hubs funded by the European Commission and managed by DG CNECT's Digital Transformation Accelerator. It is among the European centers that can assist small and medium-sized enterprises in introducing innovative technologies



EARTO | One of the three Italian members of EARTO - European Association of Research and Technology Organizations

EUROPEAN NETWORKS



CETMA DIHSME
European Digital Innovation Hub



CETMA is coordinating **CETMA-DIHSME**, the **European Digital Innovation Hub** that delivers funded **innovation services to SMEs and public administrations** in Apulia and Basilicata regions.



Artificial Intelligence



High-Performance Computing



Cybersecurity



CETMA is partner of **Enterprise Europe Network**, Europe's largest network helping SMEs to **grow, innovate and internationalise**.



Growth and development



Innovation support



Foreign partner search



Access to funding



EUROPEAN PROJECTS

Accumulated funding

13.195.365 €

40 Projects

■ Participated: 32

■ Coordinated: 8



531 Collaborators

Project status

Ongoing 11

Closed 26

Unknown 2

Forthcoming 1

Average budget / project

8.080.666 €

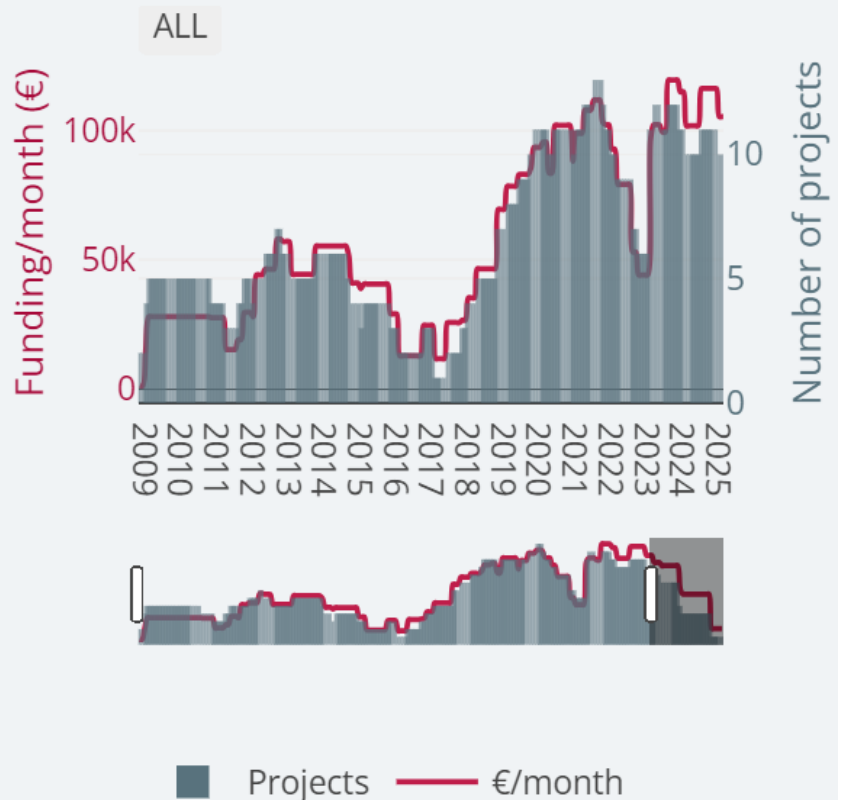
Average granted / project

347.246 €

Total granted

13.195.365 €

Projects and funding timeline



 531 collaborators





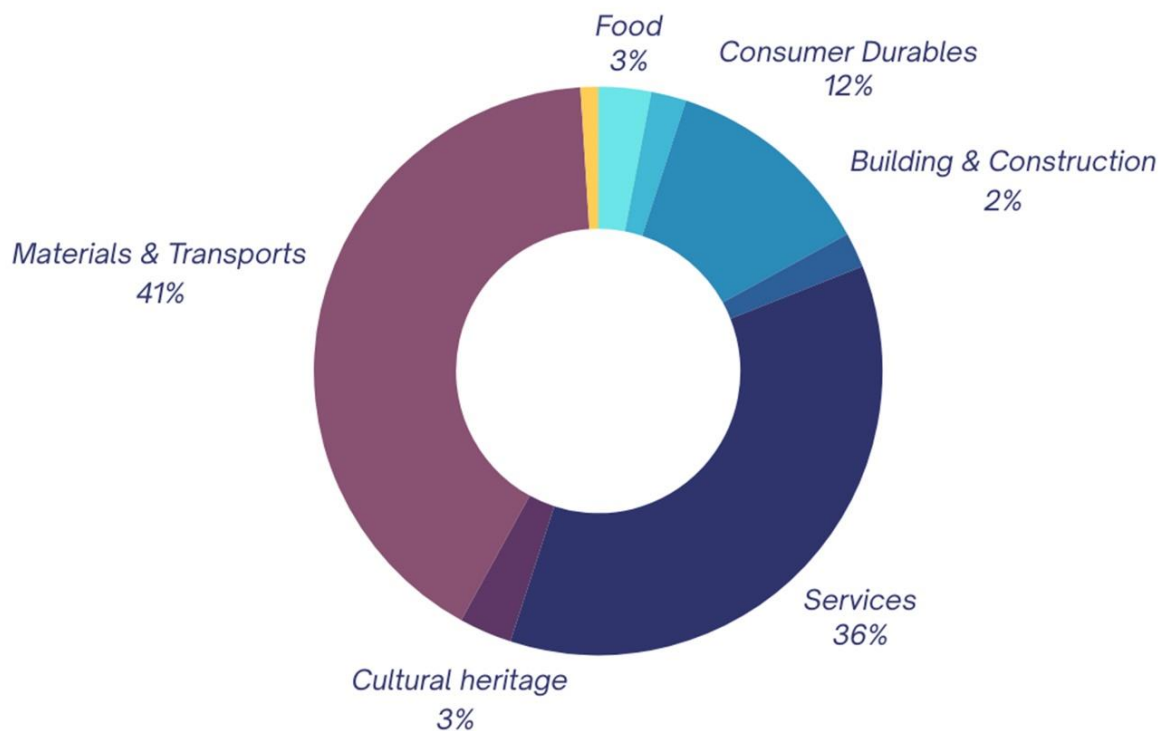
TECHNOLOGY TRANSFER

1396 TOTAL PROJECTS
3056 TOTAL PROPOSALS

127 RESEARCH PROJECTS
20 ADVANCED TRAININGS

TOTAL BUDGET €190Mln

95 TECHNOLOGY TRANSFER ACTIVITIES IN 2023



HIGHLIGHTS



Development for new products with advanced **materials** and technologies

Applied development with the most advanced **digital technologies**

Consulting and Research on **innovative materials** and processes

Product development with advanced materials

Augmented Reality for cultural valorization

Innovative solutions for **circular economy**



HEADQUARTERS

CETMA is in the “Cittadella della Ricerca” in Brindisi and it has a technical structure of about 3,500 square meters equipped with advanced instrumentation and specialized software, offices, training rooms, libraries and multimedia stations and 15 technological laboratories:

- Molding laboratory for composite and polymeric materials
- Ovens for composite and polymeric materials
- Composite materials lamination Lab
- Composite materials welding Lab
- Modelling and simulation Lab
- Non-Destructive Testing Lab
- Smart Materials and Structural Monitoring Lab
- Construction materials Lab
- Mechanical Characterization Lab
- Thermophysical Analysis Lab
- Chemical Lab
- Rapid Prototyping and Ergonomics Lab
- Electronics Lab
- Exhibit Design Lab
- Visual Technologies (VR/AR, Holography, image processing) Lab
- Virtual Reality Center (one of the largest in Europe)

An instrumental patrimony of more than 8 million euros.

CETMA is organized into two departments:

AMP - Advanced Materials and Processes

NED - New Technologies and Design



Advanced Materials & Processes Department

ADVANCED MATERIALS AND PROCESSES DEPARTMENT

The Advanced Materials and Processes Department works with partners and customers at the European, national and regional level.

The constant commitment in self-funded research projects and the interaction with industrial partners allow us to minimize the effort required for result optimization.

The Department supports companies in the processes of innovation and technology transfer through consulting activities tailored to the specific needs of the company.





COMPOSITE MATERIALS

WHAT WE DO

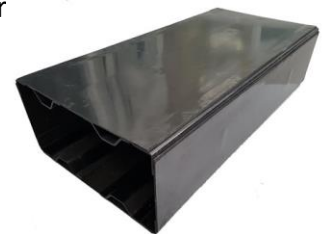
Starting from the analysis of composite materials, and through analytical and numerical models developed in more than twenty years of R&D activities, we develop advanced processes, characterized by high productivity and low costs, for high performance composite structures.

SERVICES

- Development of high productivity technologies for composites
- Optimization and development of automated processes for the Aeronautics and Transportation industries
- Design for Manufacturing and Design for Assembly of structural composite components
- Process analysis and reduction of related defects in composite structure

TECHNOLOGIES

- Continuous Compression Molding
- Compression Molding and Thermoforming
- Induction Welding for Thermoplastic and Thermosetting Composites
- RTM and SQRTM with different types of matrices and reinforcements
- VACUUM BAG of thermosetting and thermoplastic composites in autoclave and out of autoclave
- Automated fiber placement



APPLICATION SECTORS

Aeronautical and Transportation Sector

- Development of fully automated processes of thermoforming of structural components
- Development of continuous compression molding technologies for the realization of laminates and stringers in thermoplastic and thermosetting composite
- Development of induction welding processes for thermoplastic and thermosetting composites
- Development of RTM and SQRTM processes for structural components of complex geometry
- Development of innovative tanks by AFP
- Analysis of autoclave cure processes and application of corrective measures for defect reduction



INNOVATIVE MATERIALS DESIGN

WHAT WE DO

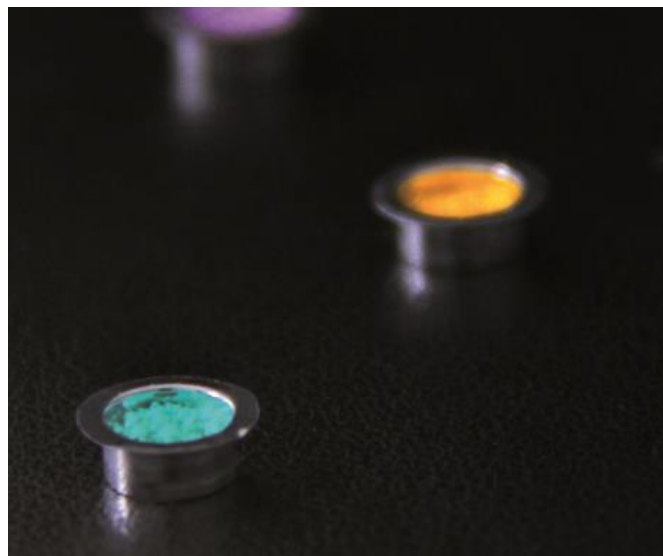
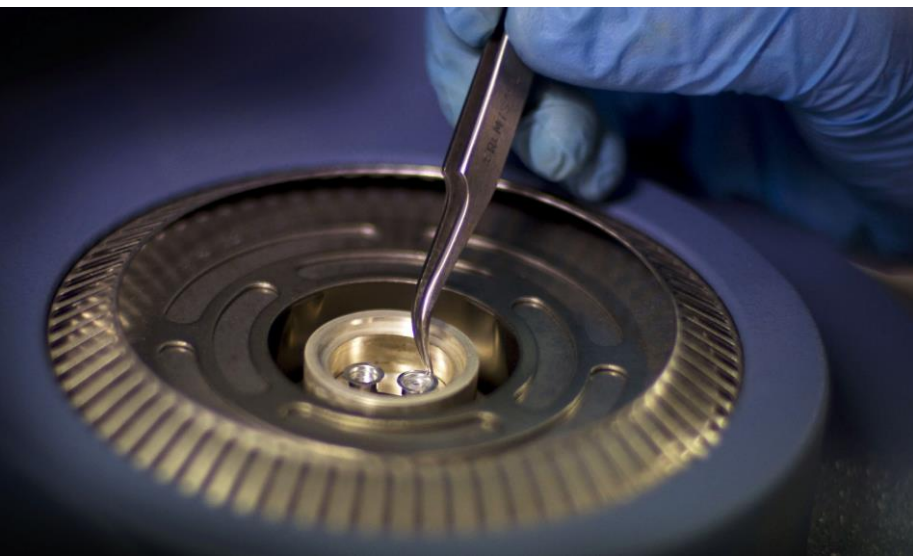
We carry out research and development activities for industry on polymer-based materials (thermosetting and thermoplastic polymers and composites, vitrimers, smart materials, bio-based materials).

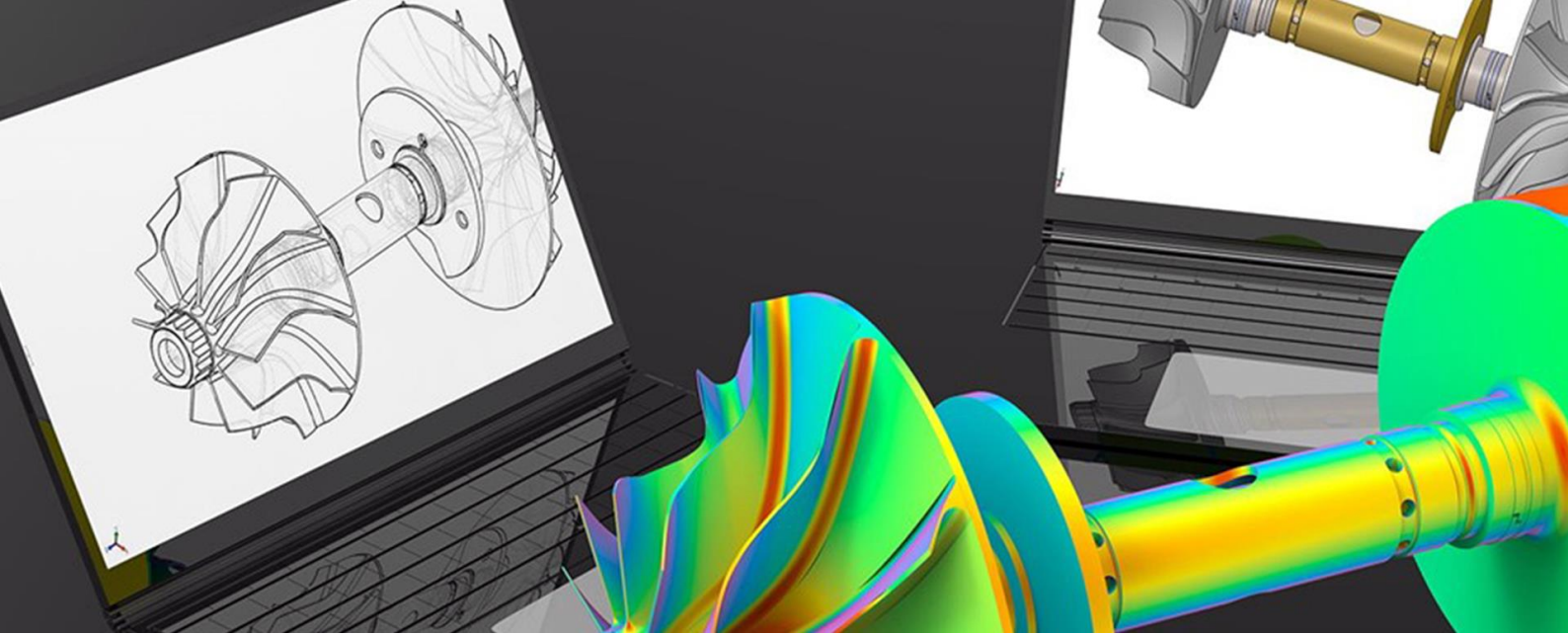
SERVICES

- Product/process development for polymer-based materials from renewable, fossil and recycling sources
- Design and execution of chemical, physical and mechanical tests on polymer-based materials
- Development of tailored polymeric formulation
- Development of recycling processes and of the application of the recycled materials

APPLICATION SECTORS

Automotive | Aeronautical | Footwear | Packaging | Furniture | Hydrogen





MODELING AND SIMULATION

WHAT WE DO

We carry out research and development activities in the field of modeling and simulation and we offer advanced services for companies thanks to the most innovative and reliable CAD and CAE (Computer Aided Engineering) technologies.

The numerical analysis is supported, where necessary, by experimental tests (at laboratory and pilot scale), control and monitoring activities.

SERVICES

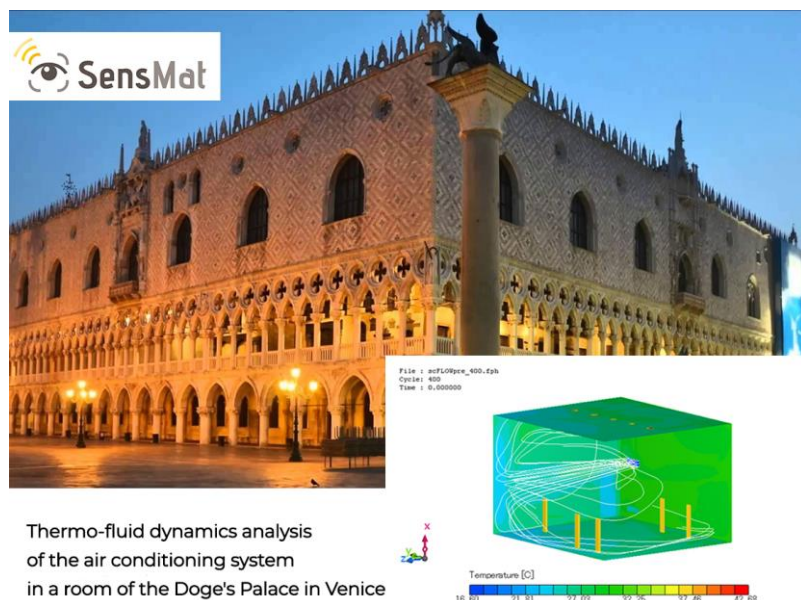
- Numerical modeling of complex physical phenomena (multi-phase systems, fluid-structure interaction, impact/crash/explosion analysis, multi-physics thermo-structural, thermo-fluid-dynamic, electromagnetic simulations)
- Development and validation of numerical-experimental methods for the study of physical and mechanical behavior of polymers and composites
- Virtual testing of composite materials and components
- Process analysis (induction welding, autoclave, infusion, compression molding, additive manufacturing)
- High performance computing (HPC) and interfacing with immersive visualization

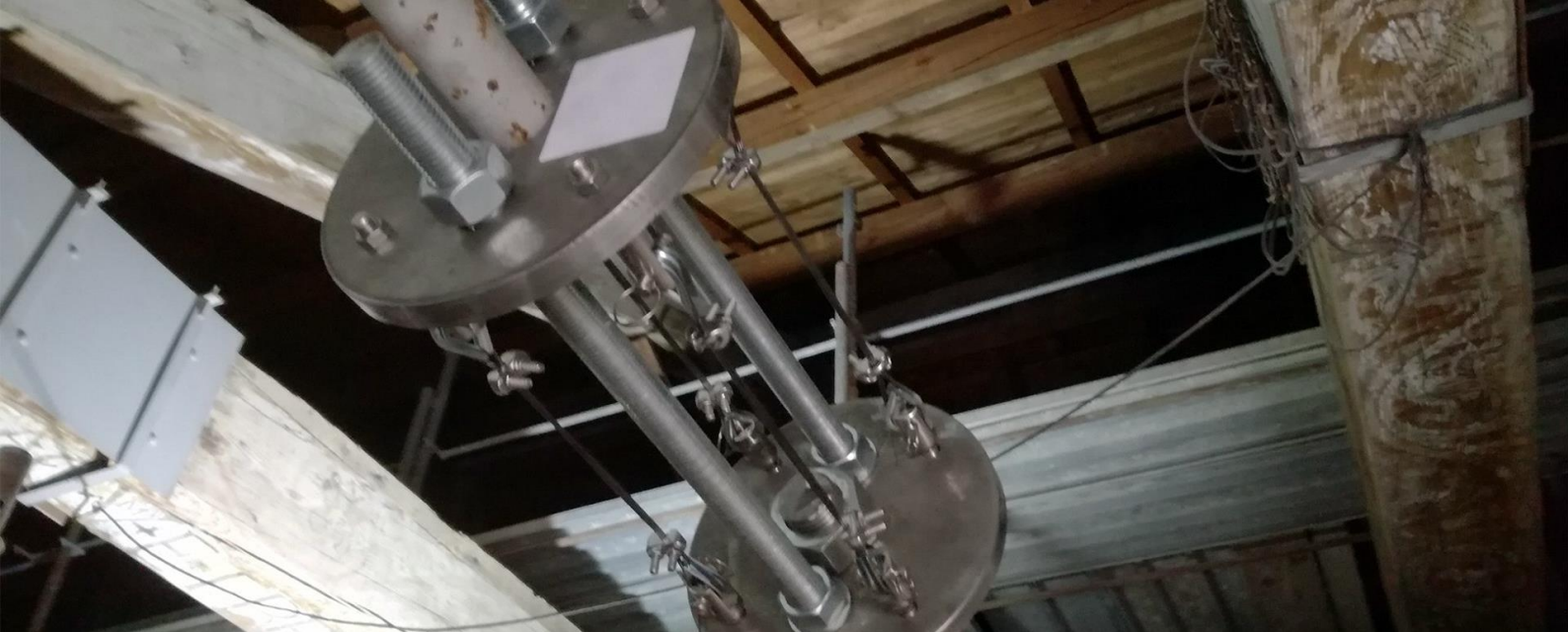
APPLICATION SECTORS

Aeronautical | Automotive | Industrial plants | Security | Environment

MODELING AND CALCULATION CODES

- CATIA and SolidWorks: 3D CAD design software
- MSC-Software: General purpose suite for linear and non-linear analysis
- LS-Dyna: Dynamic analysis (impact/crash/explosion)
- DIGIMAT: multi-scale material modeling technology
- Moldex3D: the world leading CAE product for the plastic and composite manufacturing industry





CIVIL ENGINEERING

WHAT WE DO

We offer advanced services for businesses and develop innovative solutions for sustainable construction in a circular economy perspective and for the resilience and durability of buildings, architectural assets and civil structures and civil infrastructures.

SERVICES

- Development of eco-innovative materials and components for buildings
- Design, installation and management of structural monitoring systems with optic fiber and traditional sensors
- Design and execution of diagnostic campaigns with non-destructive techniques
- Design and execution of chemical, physical and mechanical characterization campaigns on construction materials

EUROPEAN PATENTS

- AntisiSMA: Anti-sismic device with shape memory alloys (SMA) for pushing structures. [EP24506B1].

APPLICATION SECTORS

CONSTRUCTION:

Concrete, masonry and wood buildings, sustainable construction, recycling, energy efficiency of buildings and installations

CIVIL STRUCTURES AND INFRASTRUCTURES:

Roads, bridges, viaducts and dams

CULTURAL HERITAGE:

Historical and architectural value buildings, fixed and mobile works of art, archaeological excavations





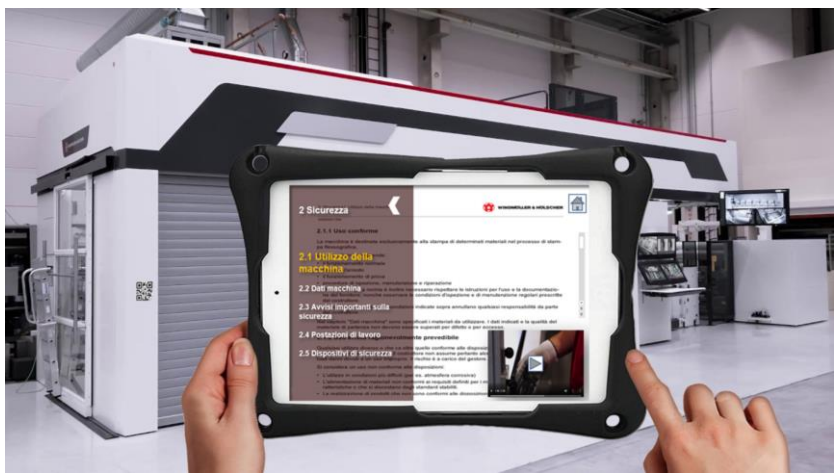
CETMA

New Technologies and Design Department

NEW TECHNOLOGIES AND DESIGN DEPARTMENT

The New Technologies and Design Department conducts applied industrial research to innovate products, services and processes, developing software at different levels of programming: from the control and automation of devices, to the management of knowledge ones to software for advanced human/computer interfaces based on immersiveness, interactivity, virtual reality and augmented reality development.

The goal is to achieve product excellence that integrates product design engineering with digital technologies (augmented reality, virtual reality, virtual systems), to help companies to improve processes and increase their business through the most performing, effective and environmentally friendly solutions.





VIRTUAL, AUGMENTED REALITY AND MULTIMEDIA

WHAT WE DO

We carry out research and development activities aimed at the implementation of advanced visual and multimedia systems, including virtual and augmented reality techniques.

The area has skills and experiences in the field of virtual interaction, production of multimedia content, development of mobile and desktop software and applications, in image processing and in the design of interactive exhibits.

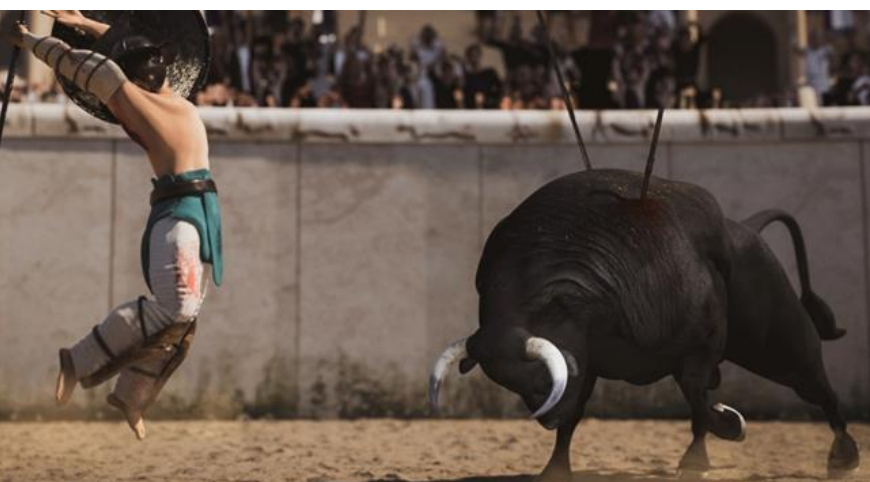
SERVICES

We offer 360° services on the entire production chain of visual systems for cultural and industrial applications, from consulting to the realization of products and services:

- Relief and digital twin of buildings, monuments, natural areas, and archaeological sites through advanced 3D scanning techniques, aerial photogrammetry, and underwater surveying;
- Translation of projects and contents into BIM (Building Information Modeling) standard format;
- 3D data treatment and optimization of digital content for Web3D, VR, AR, and BIM.
- Applications in virtual, augmented, and mixed reality for entertainment, education, and tourism;
- Edutainment and serious games for mobile devices, web, and virtual reality platform

APPLICATION SECTORS

Cultural Districts | Cultural Heritage | Industry 4.0 | Entertainment and communication Industry





INFORMATION SYSTEMS & AUTOMATION

WHAT WE DO

Operating under the ISO 9001 quality regime, we carry out applied research activities in the field of digital technologies and provide services for product and process innovation, using the most advanced information and communication technologies.

We develop customized digital solutions for the industrial and service sectors, such as tracking, distributed monitoring with advanced sensors (IoT), Decision Support System, Smart system integration.

SERVICES

- IT systems for home care for elderly people and people with reduced mobility
- IT systems for goods and people tracking (RFID, NFC, barcode)
- Dashboards for Distributed Monitoring (IoT) through advanced sensor integration systems and optical fiber
- Dashboards for advanced statistics based on Big Data and Data Mining
- Integration systems with Control Systems and Devices (IoT)
- Monitoring software for Home/Buildings Automation and Energy Efficiency
- Decision Support System based on Artificial Intelligence Algorithms
- Process Analysis and Reengineering (BPR)

APPLICATION SECTORS

INDUSTRY AND SERVICES

- Industry 5.0 | Smart city | Medical industry | Precision agriculture | Home automation | Energy efficiency





NEW PRODUCT DEVELOPMENT

WHAT WE DO

We carry out research and development activities for those who intend to invest in innovation and differentiation of their range of products/services, both in terms of improvement of existing products and in the generation of radically new products.

A team of engineers, designers and innovation managers supports companies in the definition of the corporate identity by developing design-oriented products through the most advanced CAD/CAE technologies.

SERVICES

- Mentoring & Training: support in developing industrial products
- Intellectual Property Protection analysis and Design Registration
- Design Management: Strategic Design, Benchmarking, Technology scouting, Design Trend Research
- Concept Design: industrial product planning & architecture development, customer/user needs & product specs identification, concepts generation, selection and validation
- Engineering: 3D CAD modelling, CAE/CAM, Design for Manufacturing & (dis-)Assembly, production drawings, production cost optimization
- Design for Environmental Sustainability: Life Cycle Design (LCD), Life Cycle Assessment Analysis (LCA)
- Communication materials: product technical communication using illustrations, animations and interactive 3D, user and maintenance manuals drafting, photorealistic renders.
- Prototyping: rapid prototyping, pre-production series, rapid-manufacturing, rapid-tooling
- Ergonomic Design, Analysis & Validations of products in physical and virtual environment, Usability Tests, User Interface (UI) & User Experience (UX) Design



APPLICATION SECTORS

INDUSTRY AND SERVICES

- Medical Design
- Packaging Design
- Lighting Design & Interior Design & Furniture
- IoT & Consumer Products
- Textile, Apparel & Footwear
- Industrial Applications & Production Lines





OUR CUSTOMERS



OUR STAKEHOLDERS





CETMA

