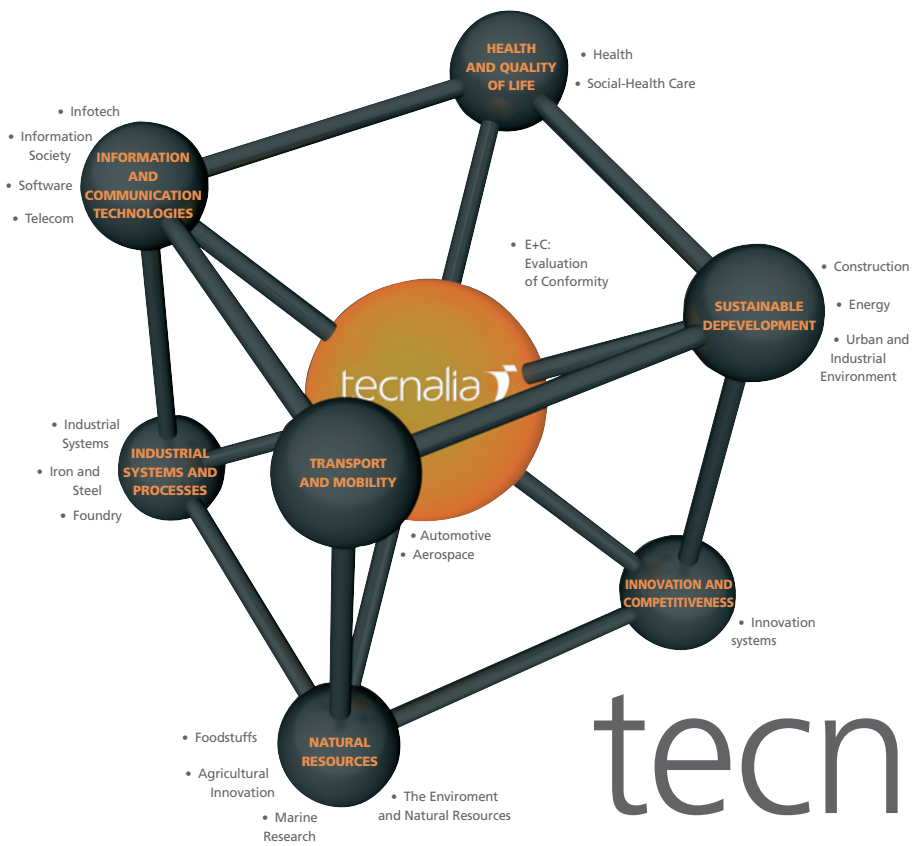


tecnalia  
Corporación Tecnológica

te+cTelecomAerospaceAgricultural  
innovationAutomotiveConstructionEnergy  
Environment&naturalresourcesFoodstuffs  
FoundryHealthcare&qualityofliveIndustrial  
systemsInformationsocietyInfotechInnovation  
systemsIron&steelMarineinnovationSoftware  
Urban&industrialenvironment





# tecnalia

**TECNALIA** is a private, independent Technology Corporation, an international benchmark in its field, whose **innovative operating model based on sectorial Business Units** generates ground-breaking Innovation in order to be the best “accelerator” for your company in its strategic R+D+i activities.

**TECNALIA** is also a **global Corporation, open to the world** to acquire knowledge, ideas, trends, talent and resources, while accompanying its partners and clients with their international projects.

**TECNALIA** is more than just an idea. It stands for a commitment to progress and well-being for all, **generating value through scientific and technological research.**

**TECNALIA** is present in the European R+D policy decision making centres:

- Member of the **Joint Institute for Innovation Policy** (with TNO, VTT and Joanneun Research).
- Member of the Executive Committee of **EARTO** (European Association of the Leading EU R&D organisations)
- Member of **EUROTECH** (a select group of the most important organisations in EARTO).

\* **TECNALIA Technology Corporation** is made up of the following Technology Centres: Azti, Cidemco, European Software Institute (ESI), Fatronik, Inasmet, Labein, Neiker and Robotiker.

## TECNALIA in the World:



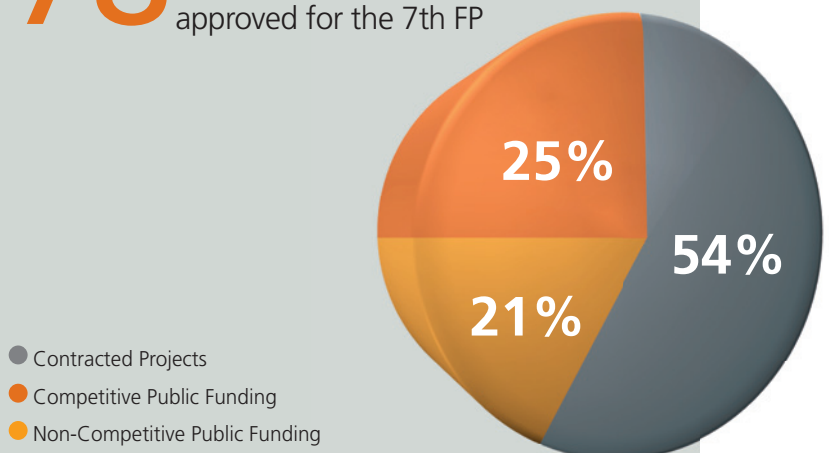
## TECNALIA in Figures:

**128,1** million  
Euros  
INCOME 2008

**1,508**  
STAFF MEMBERS

**3,800**  
CLIENTS

**78** PROJECTS  
approved for the 7th FP





# automotive

**AUTOMOTIVE** is the specialist unit of **TECNALIA** in the development of technology for future trends. Its work is aimed at the specific R+D+i needs of the market, supporting government and public bodies and transferring value to the society with innovation and technology.



## Improve the Automotive Sector own R+D+i

The qualified group of experts of the Automotive Unit of **TECNALIA** provides a powerful workforce for a true cooperation with customers, usually by means of joint working teams. This is the best way to perform the technology transfer service, to convert theoretical ideas into valuable and useful solutions and to guarantee an optimal Time-To-Market, minimising at the same time the risk for the customer in the early stages of the development.



## Support of the Administration Policies

The Automotive Unit of **TECNALIA** contributes actively to the most relevant social trends, such as CO<sub>2</sub> emissions, safety, security & confort, being an expert and independent source of advice to governments and public bodies. This helps in identifying innovation opportunities, promoting SMEs development and contributing to the Automotive Sector.

**POWERED**  
by *tecnalia*

## Innovation and Technology Transfer with Industrial Property Rights

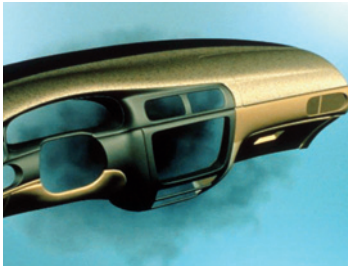
The "**Powered by TECNALIA**" Programme provides the business community with the applied research results from the different Programmes in which the Automotive Unit participates. It is the ideal solution for new product innovation. The programme is a set of R+D+i Assets and Industrial and Intellectual Property Rights, such as platforms, utilities, reference models and designs that can be used by organisations to enhance their innovation capacity.

# The R+D+i Partner in the Automotive Sector

# Research Fields

The high degree of specialization and focus in key research areas enables the Unit to respond efficiently to the demands of the Automotive Sector, in terms of capacity and speed, competence, critical mass, qualified professionals, equipment and anticipation to technological changes.

## Plastics and Composites:



### Technologies:

#### Nanocomposites:

- Dispersion by extrusion melting with nanofillers.
- Dispersion by calendering.

#### Thermoplastics:

- Casting of polyamide.
- Green composites.
- Thermoplastic Composites.
- Integrated decorating and coating for Thermoformed components.

#### Thermosets:

- Optimization of RTM/Infusion processes.
- Advanced Structural Preforms.
- Rapid curing for Thermosets.

#### NVH:

- Passive insulation materials.
- Active approach.

## Metallics Materials:



### Technologies:

#### Light Materials:

- Aluminium: Gravity Casting, Investment/Lost Wax Casting, Lost Foam, HPDC, Squeeze Casting, Plaster Casting.
- Magnesium: Gravity, Investment/Lost Wax, Lost Foam (Sand), HPDC.

#### Al-MMCs:

- Infiltration (Preforms).
- Low cost: self propagating High temperature Synthesis (SHS) to produce Powder or Master Alloy.

#### Al-MMTi-MMCs:

- Based on Ti investment Casting (VAR and VIM).
- Low Cost Reinforcement: manufacturing by Self propagating High temperature Synthesis (SHS).

#### Al-MMMg-MMCs:

- Low cost: Self propagating High temperature Synthesis (SHS) to produce Powder or Mater Alloy.

#### Cu-MMCs:

- Cu plated by electroless plating deposition.
- Hot Press (Powder Metallurgy).

## Joining:



### Technologies:

#### Dismantling Adhesive:

- Polyurethane adhesives with nano encapsulated liquids.
- Release of the dismantling agent by infra-red or induction.
- Polyurethane adhesives with copper coated nano encapsulated liquids.

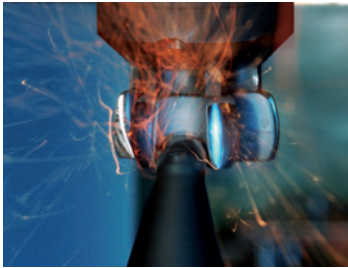
#### Conductive Adhesive:

- Epoxi adhesives with nanofillers (SWNT, MWNRS and CNF) bonding at temperature between 100°C and 200°C.
- Epoxi adhesives with nanofillers.

#### Welding of Advanced High Strength Steel:

- Spot welding.
- GTAW.
- Different filler material and welding parameters.
- GMAW.
- LBW.

## Forming:



### Technologies:

#### Incremental Rotary Forming:

- FEM simulation: forming.
- Experimental equipment in collaboration with machine manufacturers.
- FEM simulation: forming and heat transfer.

#### High speed forming:

- FEM simulation.
- Experimental: presses, capacitor bank, process control and monitoring.
- Multi impulse technology.

#### High temperature forming:

- FEM simulation.
- Experimental: presses, capacitor bank, process control and monitoring.

## Electronic Products:



### Technologies:

#### On-board Ambient Intelligence:

- Adaptive graphic Interface, usability tests
- Driver & occupants monitoring systems:
- Improving safety and comfort by using advanced sensor techniques
- Intelligent sensors & actuators networks: advanced concepts on communications, buses and SW.
- Advanced climate control systems: More efficient Heating Ventilating & Air-conditioning technologies.
- Systems for improved accessibility to vehicles: seat systems and special vehicle interior concepts for better accessible means of transport.

#### Environment and Energy:

- Alternative powertrain simulation.
- Power source integration into vehicle: Requirement of different devices to deliver the power to the road as necessary.
- Advanced energy recovery systems: New solutions to reduce fuel consumption.
- X-by wire vehicle systems: The advanced preventive safety functions.

#### Preventive safety scope:

- Cooperative Assistance System (CAS): Driving I2V cooperative communications, CAS will assist the driver reporting the traffic light ahead in his route.
- Vehicle – driver interaction: By HMI techniques, analysis to prevent accidents by detecting and avoiding distracted driving.
- Gesture intermodal interfaces detect driver's distraction and voice command will acknowledge in-vehicle systems activation.
- External perception: IR and US sensor technologies to prevent an impact by detecting an obstacle.

## Intelligent Manufacturing Systems:



### Technologies:

#### Advanced robotics:

- Advanced sensor integration.
- Special tool design and development by integrated mechatronics.

#### Laser assisted forming:

- FEM simulation: forming and heat transfer.
- Diode laser, CO<sub>2</sub> laser, Pyrometer for temperature measurement with laser power and thermal process control.

#### Laser polishing of metals:

- Diode laser, CO<sub>2</sub> laser, Pyrometer for temperature measurement with laser power and thermal process control.

#### Machine vision.

- Matrix and linear vision systems.
- Colour, B&W, laser and multispectral technologies.
- 2D and 3D analysis.
- Advanced optics and lighting systems.



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[www.tecnalia.es](http://www.tecnalia.es)