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The mechanical engineering cluster in Emilia-Romagna is known worldwide for its top companies and highly specialized SMEs leaders in their respective niches and strongly oriented towards digital transformation and industry 4.0.

MAIN SPECIALIZATIONS

automotive



packaging machinery



mechanical and hydraulic components



A lifting and handling equipment



agricultural machinery



boating



Aerospace

HIGH CONCENTRATION OF EMPLOYEES



- Clust-ER Mech Mechatronics and Motoristics including research centres, companies and training institutes
- **MUNER** Motorvehicle University of Emilia-Romagna
- **BI-REX** Big Data Innovation and Research Excellence
- **EIT MANUFACTURING** Knowledge Innovation Comm.

INTERNATIONAL TRADE FAIRS

Autopromotec, E-Tech Europe, Mecspe, Mecfor, SPS-IPC-Drives, Salone del camper, Bologna international boat show, Futurmotive, and many others.



361,879 employees

(2021, source: Infocamere)

49,498 local units

(2021, source: Infocamere)

42.8 bln € export

(2022, Istat Coeweb 2021)

23.9 bln € import

(2022, Istat Coeweb)

Data processing by ART-ER

SOME BRANDS





AEROSPACE





















And many others

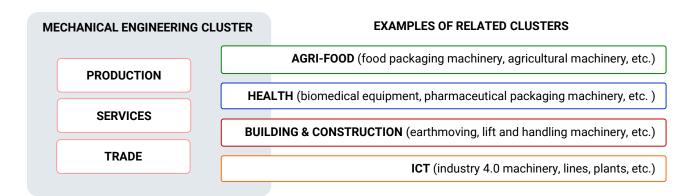




SECTORS & VALUE CHAINS

Source: Infocamere 2021 Data processing by ART-ER

Mechanical engineer is the main regional cluster being strongly related to the other key sectors, providing technologies, machinery, equipment and components



Besides 'metal products' and 'machinery & equipment', many valuable productions are sub-sectors such as sport cars, yachts, sectorial machinery, etc.

Source: Infocamere 2021 integrated with Istat Asia 2020 - Data processing by ART-ER

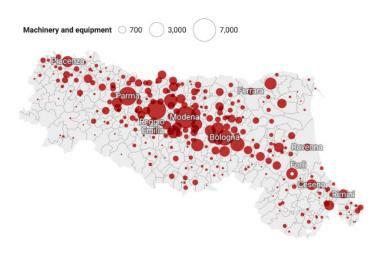
Mechanical Engineering cluster	N. Local Units	N. employed	
MANUFACTURE			
Metallurgy	474	8.785	
Metal products	13.037	78.326	
Mechanical appliances/equipment/machinery	6.205	98.878	
Electric appliances/equipment	1.662	17.621	
Electronics and precision mechanics	1.290	13.634	
Motor vehicles	662	18.905	
Other means of transport	521	5.341	
Repair and mainteinance	4.646	17.546	
Total manufacture	28,497	259,036	
TERTIARY			
Trade of motor vehicles	13.9 <mark>21</mark>	37.093	
Wholesale trade	8.451	<mark>26</mark> .510	
Services (engineering, analysis, design)	17.154	24.901	
Services (rental)	1.374	2.692	
Total tertiary	40,900	91,196	
Total for the cluster	69,397	350,232	



TERRITORY

Source: Infocamere 2021 Data processing by ART-ER

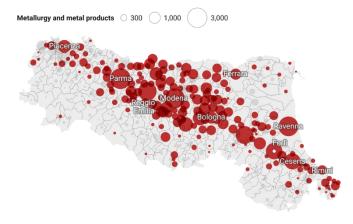
MECHANICAL INDUSTRY



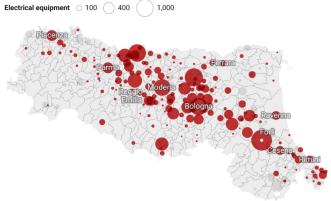
MACHINERY AND EQUIPMENT 198,754 EMPLOYEES

Spread all over the region, this macro-sector includes sectors such as Packaging Machinery (see focus in the slide 8), Hydraulic components, Lifting and handling machinery and equipment sector, Agricultural machinery, Machine tools, Machinery for the food industry.

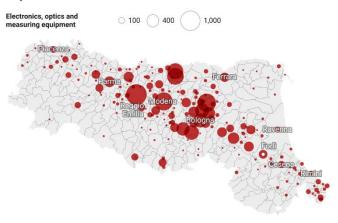
METALURGY AND METAL PROCUCTS 185,068 EMPLOYEES



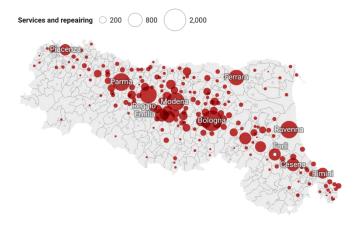
ELECTRICAL EQUIPMENT 44,610 EMPLOYEES



ELECTRONICS, OPTICS AND MEASURING EQUIPMENT 27,014 EMPLOYEES



SERVICES AND REPAIRING (TRADE NOT INCLUDED) 51,566 EMPLOYEES

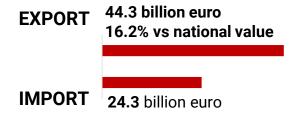


FOREIGN TRADE

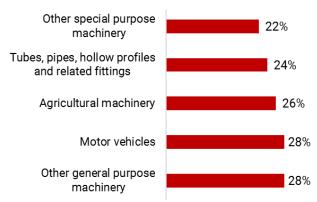
Source: Istat Coeweb 2022 Data processing by ART-ER

REGIONAL IMPORT AND EXPORT

The mechanical sectors are **strongly export oriented (exports almost double of the imports).** Balance of trade of more than 20 billion euro (exports minus imports).

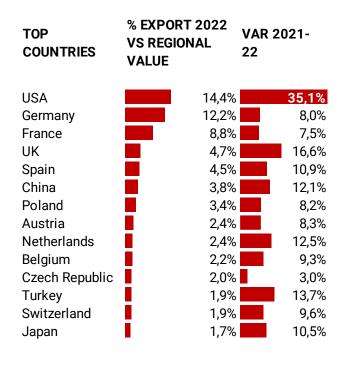


SOME REGIONAL SPECIALIZATIONS vs ITALIAN VALUE



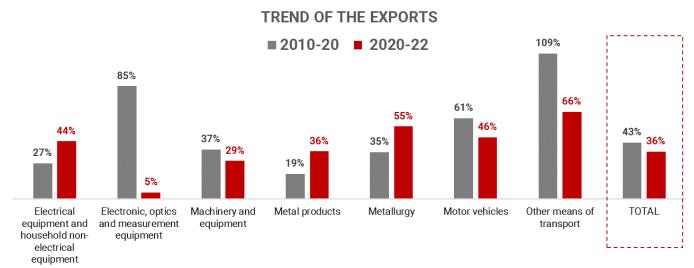
WHERE WE EXPORT

The regional value chain is present worldwide exporting in more than 180 countries. The following are just the top 14 destinations.



TREND OF THE EXPORTS

The whole mechanical engineering value chain in Emilia-Romagna shows a great resilience during the pandemic period, with a growth of +36% in the period 2020-22.



AUTOMOTIVE

Motor vohiolog and other

Source: Infocamere, AIDA Bureau Van Dijk, Istat Coeweb Data processing by ART-ER

The automotive division has made Emilia-Romagna			
world famous as the "Motor Valley". Renowned			
brands have achieved the highest levels when it			
comes to quality, luxury and performance, thanks			
also to a widespread system of excellent suppliers,			
the innovation ecosystem, and a growing			
commitment towards green mobility.			

Automotive cluster in Emilia-Romagna	Regional value	Percentage of the national value	Source
N. local units (2021)	Over 15,000		Infocamere
N. employed (2021)	Over 61,000		Infocamere
Turnover (2021)	20.9 billion euro	10,6%	AIDA BvD
Turnover of manufacturing companies (2021)	11.4 billion euro	15,2%	AIDA BvD
Export (2022)	9.8 billion euro	22,3%	ISTAT Coeweb

means of transport No. Employees - 2021	500 2,000 5,000
Piacenza	ma Reggio Modena Emilia Bologna Ravenna Faril Cesena Rimini

The motor vehicles and other means of transport sector shows a higher concentration of employees in the provinces of Modena and Bologna followed by Reggio Emilia and Parma

SOME TOP COMPANIES AND PLAYERS

Sport cars and bikes **Suppliers Ecosystem HPE COXA MUNER - Motorvehicle FERRARI** THPE COXA www.hpe.eu University of Emilia-Romagna www.ferrari.com motorvehicleuniversity.com/ MARELLI **MASERATI** www.marelli.com **CLUST-ER MECH** MASERATI www.maserati.com/ MARELLI MECH https://mech.clust-er.it/en/ **KOHLER AUTOMOBILI KOHLER** kohlerpower.com MOTOR WALLEY LAMBORGHINI www.lamborghini.com **LPR Srl** https://motorvallev.it/en/ Lpr www.lpr.it **DUCATI** METALCASTELLO WWW.metalcastello.com www.ducati.com Other transport vehicles **DALLARA AVL Italia** www.dallara.it AVL 300 **FERRETTI SPA** www.avl.com E **PAGANI AUTOMOBILI** www.ferrettigroup.com **FEV Italia** FeV www.pagani.com www.fev.com **ASTRA SCUDERIA ALPHA TAURI LANDI RENZO** www.astra-trucks.com scuderiaalphatauri.com https://landirenzo.com **EVOBUS ITALIA BORGWARNER № BorgWarne ENERGICA MOTOR** EvoBus www.evobus.com/ www.borgwarner.com/ www.energicamotor.com





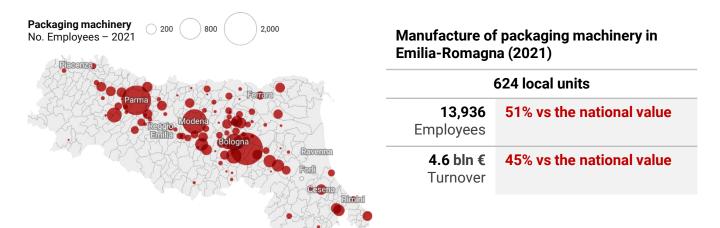
PACKAGING DIVISION

Source: AIDA Bureau Van Dijk, web Data processing by ART-ER

The packaging division is an important regional specialization composed of **design**, **manufacturing** and trade of machinery, plants, apparatus and equipment in general for packing, packaging and refilling, in addition to design services, labelling, distribution and sales.

PACKAGING MACHINERY IN EMILIA-ROMAGNA

Manufacturing and repairing of machinery for packaging represent the core sector of the regional packaging division.



The **highest concentration of people employed** is in the provinces of Bologna, Parma and Modena. Other districts in the sector are present also in the provinces of Reggio Emilia and Rimini.

SOME LEADERS IN THE PACKAGING INDUSTRY

	COMPANY	DESCRIPTION
AETNAGROUP *	AETNA GROUP S.P.A.	Produces and sells on an international level wrapping machines for fully automatic stretch film packaging, shrink wrappers, shrink wrapping machines with film thrusting systems, wrap around case packaging, taping machines.
C() esia	COESIA Group (G.D., ACMA, etc.)	Coesia is a leading international group including companies such as G.D (machines to produce and package cigarettes) and ACMA (packaging machine for products like: industrial bakery, confectionery, detergents and soaps, high-value products or dense/foaming, food and beverages).
Sustain Ability	I.M.A. Industria Macchine Automatiche	Produces packaging solutions, mainly with IMA SAFE S.R.L.and IMA FLAVOUR S.R.L for the Pharmaceutical and Nutraceutical, Cosmetic and Other, Tea and Coffee sectors.
MARCHESINI G R O U P	MARCHESINI GROUP	Produces machines for: cosmetic labelling, phial labelling, flacons, thermoformers, wallets, cartoners, vertical type cartoners, Wrapping and Overwrapping, Case packing and Palletizing.
OCM @ Moving ideas	OCME Srl	Company which specializes in the Beverage industry. It supplies complete production lines for: Beer, Mineral water, Soft drinks, Wine & liqueurs. It also focuses on FTC (Food, Toiletries and Chemicals) for which it supplies filling systems for viscous liquids, packaging and palletizing systems.
SACMI	SACMI	Produces a complete range of automatic machinery for labelling glass, plastic and metal containers for the beverage, food, detergent, pharmaceutical and packaging sectors; sorting lines, packaging and palletizing for the ceramic industry; refilling machinery.
Tetra Pak	TETRA PAK PACKAGING SOLUTIONS	Produces: containers, treatment systems (for milk and dairy products drinks, cheese, ice cream, convenience foods), refilling machines, distribution systems, assistance.





AEROSPACE



Aerospace is one of the main priorities in the development strategy of the Emilia-Romagna Region, with strong synergies with the mechanical engineering and automotive clusters in aerospace-related fields: helicopters, aircrafts, drones, composite and advanced materials, fastening elements, cubesats, nano-satellites and additive manufacturing. Big Data and Supercomputing also play a key role in many applications related to aerospace, including weather forecast, earth observation, simulation/development, VR/AR. Regional clusters related to aerospace work on applications that include health & well-being and agri-food, ranging from commercial space flights to precision farming. infoaerospace@art-er.it

SPACE ECONOMY IN EMILIA-ROMAGNA

SOME OF THE TOP COMPANIES

HELICOPTERS/ AIRCRAFTS

- CURTI
- ELYTRON AERONAUTICA
- FAMA' HELICOPTERS

ADVANCED AND COMPOSITE MATERIALS

- DALLARA COMPOSITI
- BARCELLA
- BUCCI COMPOSITES
- MAE
- NOVAC

FASTENING ELEMENT AND STRUCTURAL COMPONENTS AND SYSTEM

• POGGIPOLINI

COMPONENTS IN TITANIUM, STEEL. ALUMINIUM

• MATECAM

CUBESATS

- SITAEL
- CSHARK
- NPC SPACEMIND

ENGINES

- DIESELJET
- AERNOVA AEROSPACE
- · LUCCHI R.

PRINTED CIRCUITS BOARDS

- CISTELAIER
- REDOX

ADDITIVE MANUFACTURING

- BEAMIT
- CRP TECHNOLOGY

ADAS AND AUTONOMOUS DRIVING

HIPERT

DRONES

- DIFLY
- ITALDRON
- ZEPHYR
- CURTI

SOLUTIONS IN SPACE APPLICATIONS

- ADAPTRONICS
- HIGHFTECH
- NPC SPACEMIND
- NAUTILUS
- NOVAC and many more

EARTH OBSERVATION

- MEEO
- STUDIOMAPP
- GECOSISTEMA

HEALTH, WELL-BEING AND FOOD FOR AEROSPACE

- TECHNOGYM
- BARILLA
- GRUPPO VILLA MARIA
- gASTRONOMICA (start-up)

PROJECTS/INITIATIVES WITH REGIONAL INVOLVEMENT

- Initiative supporting space economy collaboration in Houston
- Mirror GOV SAT COM (Innovative satellite system)
- Mirror Copernicus (innovative infrastructures)
- I-CIOS (Commercial In Orbit Servicing)
- Agreement between regional government and national air force
- Regional membership in European network NEREUS

ECOSYSTEM/ COLLABORATIVE R&D

- <u>CICLOPE</u> University of Bologna Centre for International Cooperation in Long Pipe
- Clust-ER Mech FLY.ER value chain "avionics and aerospace"
- <u>Clust-ER Innovate</u>, <u>Clust-ER Health</u>, <u>Clust-ER Agrifood</u>
- <u>IR4I</u> Innovation and Research in Aerospace/Aeronautics.
- ANSER Aeronautics and Space in Emilia-Romagna.
- <u>CINECA</u> The largest Italian computing centre.
- Forli Aeronautical Technology Pole -Facilities and laboratories dedicated to training, research, experimentation
- Forum for the promotion of the regional aerospace cluster, including universities, technopoles, research centres

















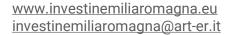














FDI - Foreign Investments

Source: AIDA Bureau Van Dijk, ART-ER/Invest in Emilia-Romagna

Some important Foreign Direct Investments (FDI) in mechanical engineering in Emilia-Romagna

COMPANY	INVESTOR	COUNTRY OF ORIGIN	TYPE OF BUSINESS
	METAL	PRODUCTS	
EVIOSYS PACKAGING ITALIA Srl	TITAN HOLDINGS COÖPERATIEF U.A.	Netherlands	Metal packaging for food industry
CISA Spa	ALLEGION PLC	Ireland	Lock, cylinders, keys and other security solutions
	ELECTRONICS, OPTICS A	ND MEASURING E	QUIPMENT
TEKO TELECOM Srl	HENRY CLAY BLVD. ANNEX LLC / JMA WIRELESS	USA	Communication systems
MARPOSS ITALIA Spa	MARPOSS AG	Switzerland	Precision equipment. Inspection, measurement and process control solutions
	PUMPS, HYDRAULICS AND RE	FRIGERATION SYS	STEMS DIVISION
EMERSON AUTOMATION SOLUTIONS FINAL CONTROL ITALIA SrI	EMERSON ELECTRIC CO	USA	Valves, actuators and regulators
BUCHER HYDRAULICS Spa	BUCHER INDUSTRIES AG	Switzerland	Manufacture of other pumps and compressors
	AUTOMATION AND INDUS	STRIAL MECHANIC	CS DIVISION
PHILIP MORRIS MANUFACTURING & TECHNOLOGY BOLOGNA	PHILIP MORRIS INTERNATIONAL	USA	Industry 4.0
TETRA PAK	TETRA LAVAL HOLDINGS B.V.	Netherlands	Machinery and mechanical equipment
BERCO	THYSSENKRUPP AG	Germany	Undercarriage solutions for earthmoving machinery
AMADA ITALIA SrI	AMADA HOLDINGS CO., LTD.	Japan	Manufacture of other machinery and equipment (incluse parti e accessori)
CFT Spa	ATS CORPORATION	Canada	Solutions covering the entire production process of Food and Beverage
	TRANSPORT VEHICLES	AND THEIR COM	PONENTS
DUCATI / LAMBORGHINI	VOLKSWAGEN (FAMILIEN PORSCHE/PIECH)	Germany	Motorcycles / Automotive
MASERATI	STELLANTIS N.V.	Netherland	Automotive
MANITOU ITALIA SrI	MANITOU B.F.	France	Machinery and mechanical equipment
TOYOTA MATERIAL HANDLING	TOYOTA INDUSTRIES CORPORATION	Japan	Material handling equipment
AVL Italia Srl	AVL List GmbH	Austria	Power Train System Engeneering
BORGWARNER SYSTEMS LUGO Srl	BORGWARNER INC	USA	Electrified vehicle products
LOMBARDINI Srl	THE KOHLER FAMILY	USA	Engines
FERRETTI Spa	GOVERNMENT OF CHINA	China	Luxury yacht shipyard
META SYSTEM	SHENZHEN DEREN ELECTRONIC CO.,LTD.	China	Automotive Electronic Design
ENERGICA MOTOR COMPANY Spa	IDEANOMICS, INC.	USA	Electric motorcycle
GOLDONI KEESTRACK Srl	PFH	Belgium	Tractors
DANA MOTION SYSTEMS ITALIA Srl	DANA INCORPORATED	USA	Mechanical transmission products
C.I.A.P COSTRUZIONE ITALIANA APP. DI PRECISIONE Spa	HONDA MOTOR LTD	Japan	Gearboxes and motorcycle gears



INTERNATIONAL FAIRS



AUTOMOTIVE SECTOR		
3	AUTOPROMOTEC www.autopromotec.com Automotive Equipment and Aftermarket Products	Where: Bologna Key figures: 75,141 professional exhibitors (2022)
E-TECH EUROPE 2023	E-TECH EUROPE www.e-tech.show The automotive electrification industry	Where: Bologna Key figures: more than 3,300 specialized visitors (2023)
FUTUR MOTIVE LEGISLALES	FUTURMOTIVE www.futurmotive.com Energy and ecology transition and new business model for the automotive industry	Where: Bologna Key figures: integrated in Autopromotec in 2022
IL SALONE DEL CAMPER	SALONE DEL CAMPER <u>www.salonedelcamper.it</u> Caravanning and tourism en plein air	Where: Parma Key figures: more than 100,000 exhibitors (2022)

OTHER TRADE FAIRS WHICH INVOLVE COMPANIES FROM THE VARIOUS MECHANICAL SECTORS

EIMA INTERNATIONAL - www.eima.it Agricultural Machinery

CIBUS TEC - www.cibustec.it Exhibition of Technologies for Food Industry

MACFRUT - <u>www.macfrut.com</u> Plants, technologies and services for the production, conditioning, marketing and transport of fruit and vegetables

GEOFLUID - www.geofluid.it Exhibition & Conference of Technology and Equipment for Prospecting, Extracting and Conveying Underground Fluids

H20 – Accadueo - <u>www.accadueo.com</u> Technologies for treatment and distribution of drinking water and wastewater treatment

SIGEP - www.sigep.it The Dolce World Expo

SAIE - www.saiebologna.it Exhibition of new building industrialization and land use

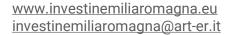
REMTECH - <u>www.remtechexpo.com</u> Remediation Technologies (including CHEMTECH on chemical innovation)

COSMOPACK - www.cosmoprof.com Various components of the cosmetics production chain

R2B - <u>www.rdueb.it</u> Research to Business is the first international exhibition about Research and Higher Skills for Innovation in Italy aimed at fostering cooperation between advanced research and industry









INNOVATION ECOSYSTEM

HIGH TECHNOLOGY NETWORK



MECH "Mechatronics and Motoristics Clust-ER", association of public and private organisations: companies, research centres and training institutions.

HIGH TECHNOLOGY NETWORK

Laboratories – Mechanics Materials Platform

LINK - DISCOVER INDUSTRIAL RESEARCH IN 'MECHATRONICS AND MATERIALS'



- CIRI AEROSPACE
- CIRI MAM
- CNR-ISSMC
- CNR-NANO S3
- CNR-STEMS FE
- DAL Digital Automation Lab
- DTM
- ENEA-TEMAF
- F.M. Lab
- GHEPI Lab
- HFT Highftech Engineering srl
- HTS Hypertec Solution S.r.l.
- IL SENTIERO INTERNATIONAL CAMPUS
- INTERMECH-Mo.Re.
- <u>ISTITUTO GIORDANO</u>
- LIAM
- MechLav
- MISTER Smart Innovation
- MUSP
- NANOPROM CHEMICALS
- NCS Lab
- REI Lab
- STZ
- TRLab

S3 - SMART SPECIALISATION

RESULTS OF THE REGIONAL SMART SPECIALISATION STRATEGY S3 (updated December 2021)

- · 2,162 funded R&D projects,
- . 1,128 M€ of total investment
- 436 M€ of public funds
- 999 new researchers

UNIVERSITY AND TRAINING

MASTER	Where and Link
Motorvehicle University of Emilia-Romagna (MUNER)	Bologna and Modena
DEGREE COURSES	University and link
Engineering	Bologna, Ferrara, Modena and Reggio Emilia, Parma, Piacenza
COMPETENCE CENTER	Where and Link

BI-REX , Big Data <u>Bologna and Emilia-Romagna</u> Innovation and Research

Excellence

HIGHER TECHNICAL TRAINING

Who and What	Where and Link
Higher Education and Technical raining (IFTS) - Mechanical Systems and constructions	Emilia-Romagna (only IT)
ITS MAKER FOUNDATION - Higher Technical Institutes in Mechanics, Mechatronics, Automotive, Packaging	Bologna, Forlì, Modena, Parma, Piacenza, Reggio Emilia, Rimini
Foundation FITSTIC, INDUSTRY 4.0	Emilia-Romagna (IT)

ENTREPRENEURAL ASSOCIATIONS

Who and What	Where and Link
ACIMAC Ceramics	Modena (only IT)
UCIMA Packaging and Packing	Modena (only IT)
Associazione Meccanica	Bologna (only IT)
Club Mechatronics - Unindustria	Reggio Emilia

INNOVATION CENTER

Who	Link
DEMOCENTER Foundation - including	Modena
institutions, associations, banks, businesses	(only IT)

KNOWLEDGE INNOVATION COMMUNITY

EIT MANUFACTURING. ART-ER, Universities of Modena & Reggio Emilia and Parma as core partners - Website

INTERNATIONAL TALENTS



<u>Click for more info on mechatronics and</u> <u>automotive - internationaltalents.art-er.it</u>











