



 POLITECNICO DI MILANO



Politecnico di Milano since 1863

**The leading University in Italy for
Architecture, Design and Engineering**



The Politecnico di Milano's Logo



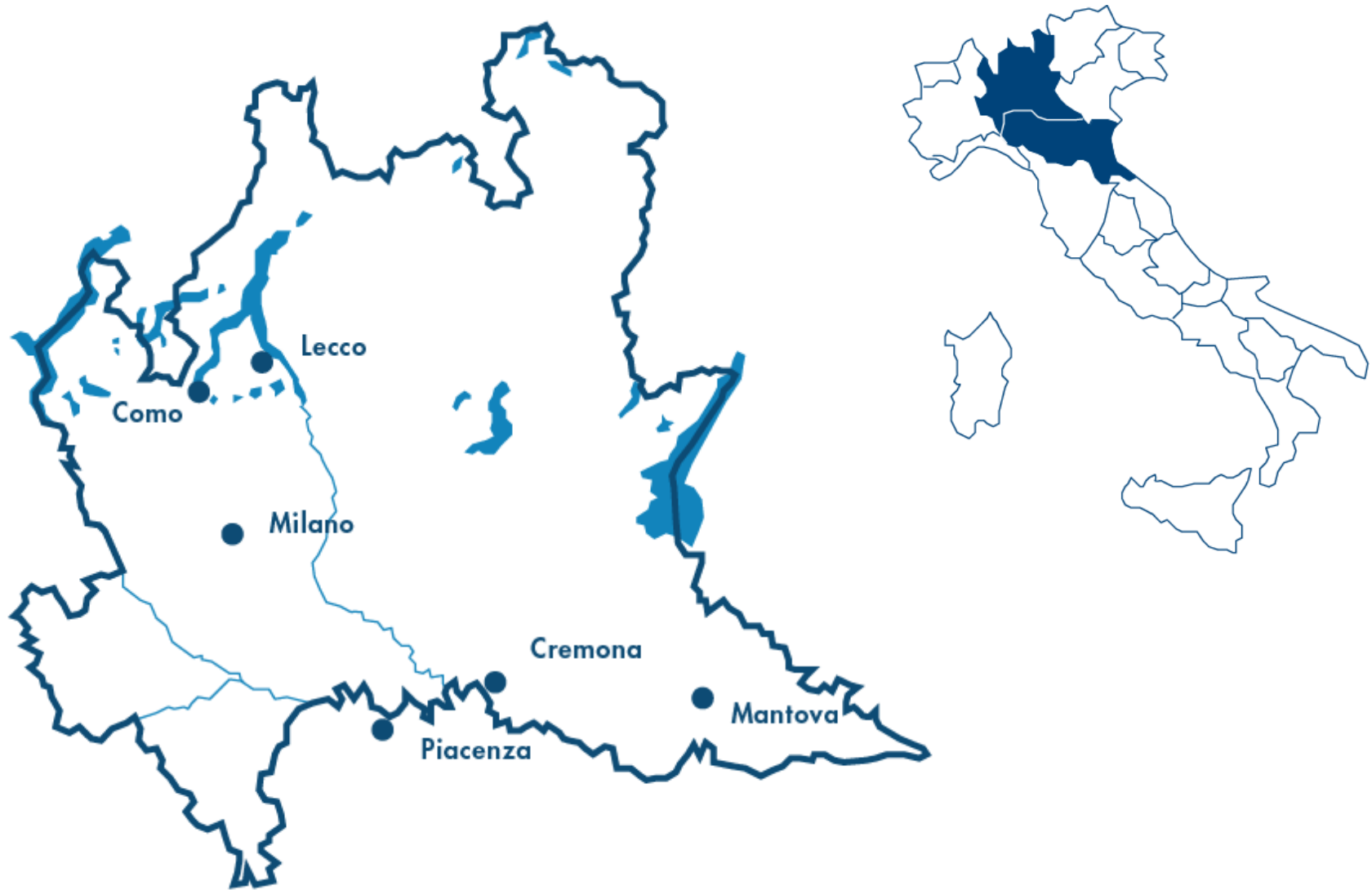
POLITECNICO DI MILANO



Detail of the Raffaello's fresco
The School of Athens, whose cartoon
(Ambrosiana Picture Gallery, Milano)
originates the logo of the
Politecnico di Milano



The Campuses of the Politecnico di Milano





Leonardo Campus is
the historical seat of
the Politecnico

It hosts the Rectorate,
central offices and
several Departments





A big former industrial area North-West of the town, with modern top laboratories such as the Wind Tunnel, LaST (Transportation Safety Laboratory), Design labs, Architectural Projects labs, beside laboratories in aerospace, mechanics and energy sectors





Technology transfer and teaching active in the sectors of e-Government, communication technologies, sound engineering, geomatics, textile and furniture technologies





Programmes in Civil, Production, Mechanical and Building/Architectural Engineering.

New research center focusing on different topics such as civil protection, bioengineering, mechanics, photonics, electronics, surveying, metallurgy, transports, materials testing, prototyping



The Campus hosts a
Centre of Excellence for
management and production
engineering and ICT

Teaching in the fields
of environment, ICT and
mechatronics





The Campus hosts the laboratories LEAP (Laboratory for Energy and Environment), MUSP (Machine Tools and Production Systems), 1 laboratory on mechanics and 5 on architecture

Teaching and research activity developed in environmental architecture and mechanical engineering





Study programmes and research labs at the Campus are devoted to preservation, conservation and restoration of building heritage





Faculty & Students in January 2013



Architecture

Professors & Researchers

319

Students

8,742

Design

Professors & Researchers

95

Students

3,571

Engineering

Professors & Researchers

899

Students

25,914



Schools of Architecture in Italy



19% of architects graduated from Politecnico di Milano



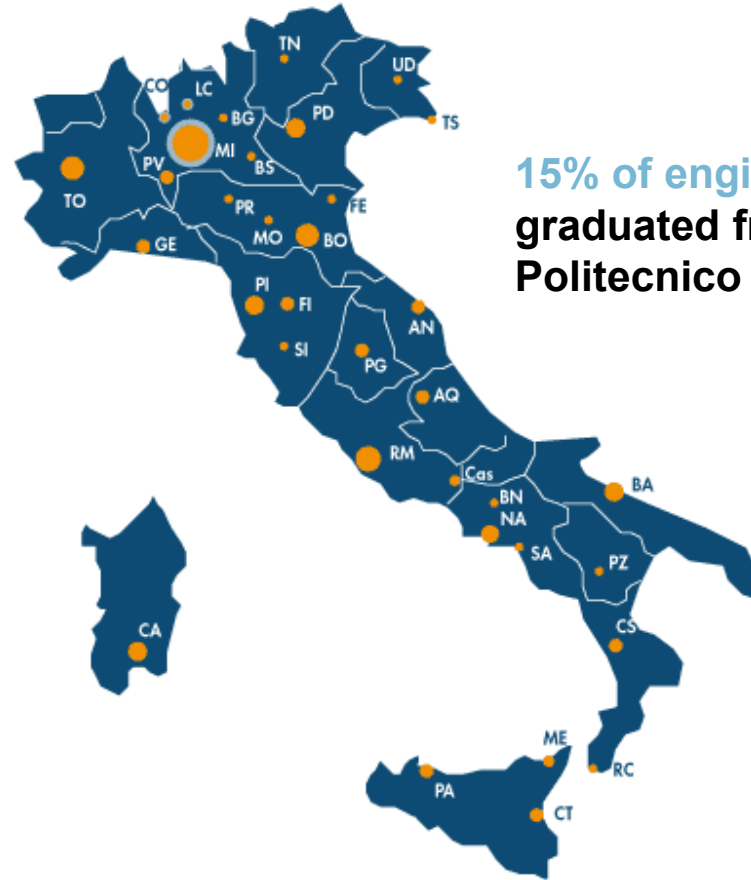
Schools of Design in Italy



41% of designers graduated from Politecnico di Milano



Schools of Engineering in Italy



15% of engineers graduated from Politecnico di Milano



Human Resources, Academic year 2013/2014



Professors and Assistant Professors	1,312
Technical and Administrative staff	1,177
PhD students	1,062
Students	38,227



International students coming from more than 100 countries

- ✓ **1513 at BSc (6%)**
- ✓ **2102 at MSc (23%)**
- ✓ **312 Ph.D. (29%)**

Specializing Master and Short post-graduation courses

- ✓ **More than 2500 students (20% from foreign countries)**



Exchange Programmes (a.y. 13/14)

incoming | outgoing

LLP/Erasmus

732

776

incoming | outgoing

Extra EU Bilateral Agreements

342

216

incoming | outgoing

Double Degrees

115

135

incoming | outgoing

Unitech

115

135



Exchange Programmes

LLP/Erasmus

Unitech Programme

MEDes Programme

PEGASUS Network

Erasmus Mundus

T.I.M.E. Programme

Extra EU Projects

TEMPUS

Sino-Italian Campus

EU-US Atlantis



International Co-operation Agreements Effective in March 2014



Framework agreements

140

Student exchange agreements

195

PhD agreements

21

Double degree agreements

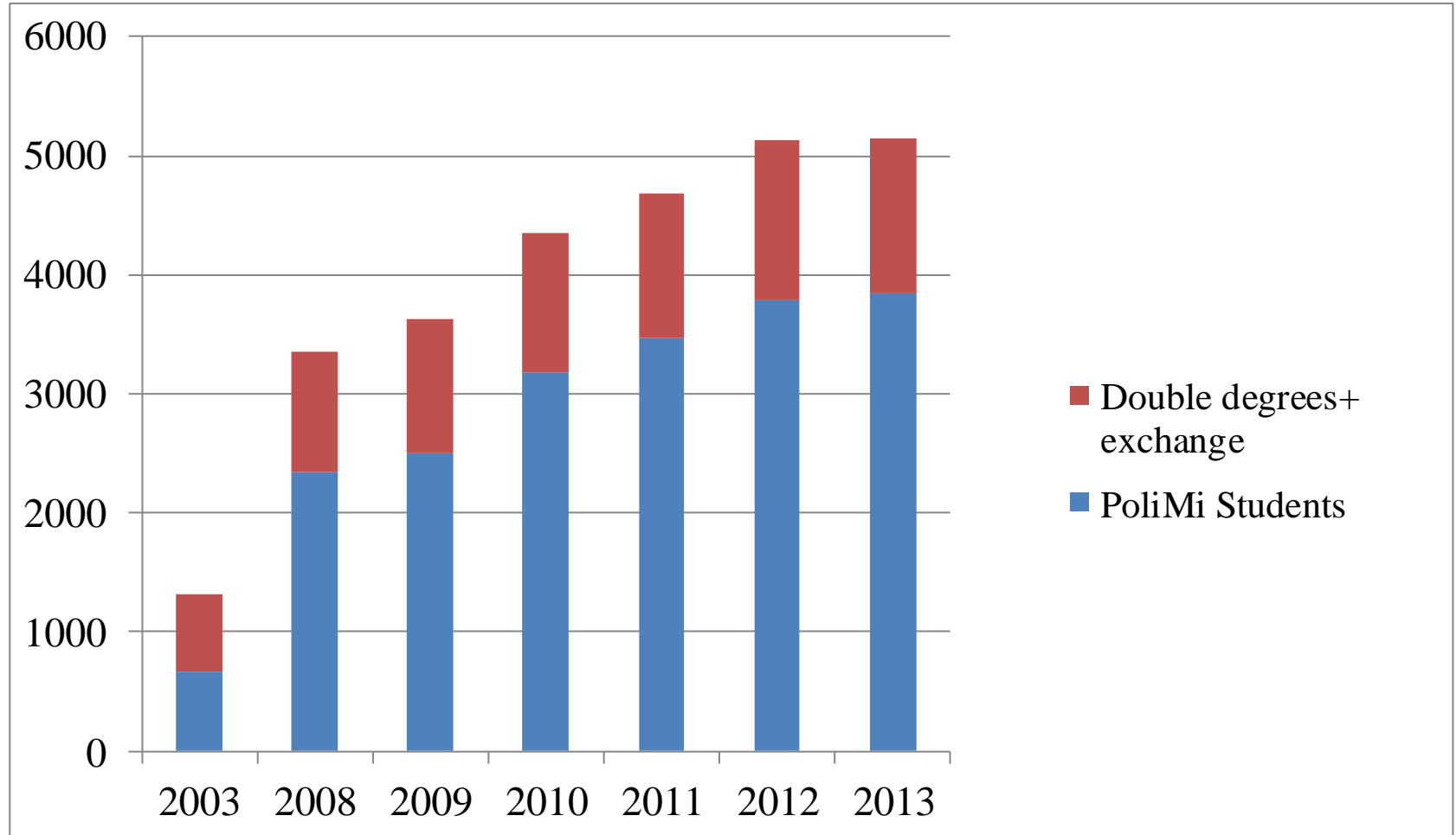
81

Totale

437



The growth of international students





The Alta Scuola Politecnica (ASP) is a school for young talents, with a passion for innovation, who wish to develop their potential in a multidisciplinary community.

ASP selects **150 students per year**, among the applicants to the Master of Science - MSc (Laurea Magistrale) programmes in Engineering, Architecture and Design at Politecnico di Milano (PoliMi) and Politecnico di Torino (PoliTo).

25% of the ASP class consists of **international students** coming from both PoliMI and PoliTo.

The ASP programme runs parallel to the MSc programs of the two institutions.

The official ASP language is **English**.



QS World University Rankings by Subject 2013-2014

	World	EU	Italy
Engineering & Technology	28	9	1
Computer Science & Information Systems	48	11	1
Civil & Structural Engineering	17	5	1
Chemical Engineering	53	13	1
Electrical & Electronic Engineering	41	11	2
Mechanical, Aeronautical & Manufacturing Engineering	30	8	1
Physics & Astronomy	137	58	7
Mathematics	54	16	1
Materials Sciences	113	31	1



QS World University Rankings in Engineering and Technology 2013-2014

Politecnico di Milano	Score	World Rank
Academic Reputation (40%)	77,6	31
Employer Reputation (30%)	88,1	9
Citations per Paper Measures productivity for the last five years (15%)	75,5	279
H-index Citations (15%) Measures both the number of papers produced and the impact of the published work	72,6	119
Overall	79,8	28



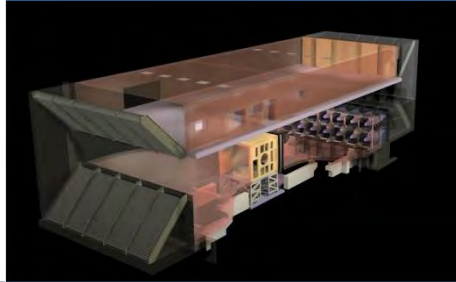
Best European universities in Engineering/Technology according to Employer evaluation (QS 2013-2014)

	Computer Science	Mechanical Engineering	Chemical Engineering	Electrical Engineering	Civil & Structural Engineering
1	Cambridge	Cambridge	Oxford	Cambridge	Oxford
2	Oxford	Oxford	Cambridge	Oxford	Cambridge
3	LSE	Politecnico di Milano	Politecnico di Milano	ETH	Politecnico di Milano
4	ETH and Politecnico di Milano	ETH	Imperial College	RWTH	Imperial College
5	Imperial College	Imperial College	ETH	Imperial College	NTUA
6	EPFL	RWTH	TU Delft	Politecnico di Milano	ETH



 POLITECNICO DI MILANO

Research and Education at the Politecnico di Milano





1963

Professor Giulio Natta receiving the Nobel Prize for his discovery in polymer science





Aldo Rossi

1990 Pritzker Architecture Prize

Renzo Piano

1998 Pritzker Architecture Prize

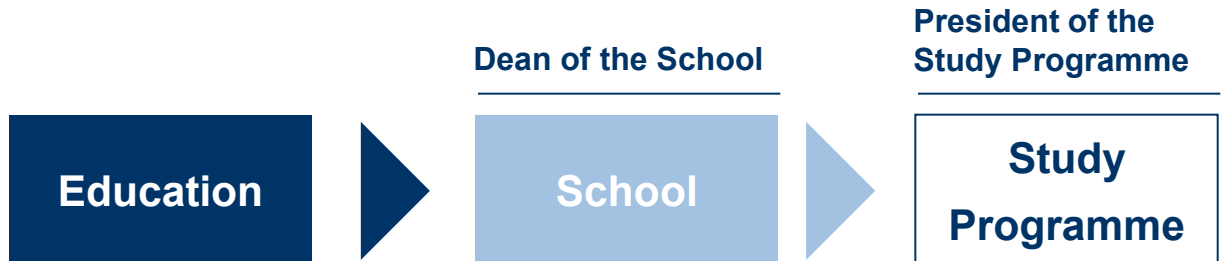




For **Research**:
Each Professor belongs to a Department



For **Education**:
Each Professor belongs to a **Study Course**
and to a **School**





The 12 Departments of the Politecnico di Milano

- Aerospace Science and Technology
- Architecture and Urban Studies
- Architecture, Built Environment and Construction Engineering
- Chemistry, Materials And Chemical Engineering “Giulio Natta”
- Civil and Environmental Engineering
- Design
- Electronics, Information and Bioengineering
- Energy
- Management, Economics and Industrial Engineering
- Mathematics
- Mechanics
- Physics

- Architecture, Built Environment and Construction Engineering
- Architectural, Urban and Interior Design
- Aerospace Engineering
- Bioengineering
- Design
- Electrical Engineering
- Energy and Nuclear Science and Technology
- Environmental and Infrastructure Engineering
- Industrial Chemistry and Chemical Engineering
- Information Technology
- Management, Economics and Industrial Engineering
- Materials Engineering
- Mathematical Models and Methods in Engineering
- Mechanical Engineering
- Physics
- Preservation of Architectural Heritage
- Structural Seismic and Geotechnical Engineering
- Urban Planning, Design, and Policy

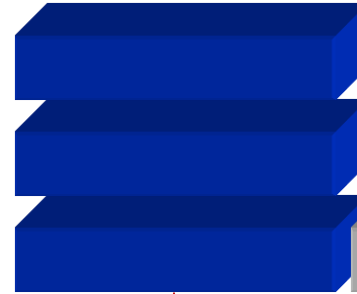


The Italian Educational System

3rd level

Dottorato Di Ricerca

Ph.D.



**II Level
Master**



2nd level

Laurea Magistrale

Master of Science



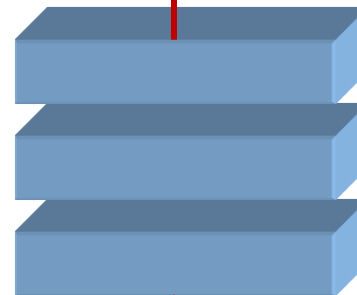
**I Level
Master**



1st level

Laurea

Bachelor



13-year education





26 Bachelor of Science Programmes

2 **Double Degree Programmes**
with the Tongji University

35 Master of Science Programmes

1 **Joint Programme**
with the University of Genova

4 **Double Degree Programme**
with the Tongji University



- Aeronautical Engineering
- Architecture
- Architecture-Architectural Design
- Automation and Control Engineering
- Biomedical Engineering
- Building and Architectural Engineering
- Chemical Engineering
- Civil Engineering
- Civil Engineering for Risk Mitigation
- Computer Science and Engineering
- Design & Engineering
- Design for the Fashion System
- Electrical Engineering
- Electronics Engineering
- Energy Engineering
- Engineering Physics
- Environmental and Geomatic Engineering
- Environmental and Land Planning Engineering



- Interior Design
- Management Engineering
- Management of Built Environment
- Materials Engineering and Nanotechnology
- Mathematical Engineering
- Mechanical Engineering
- Nuclear Engineering
- Product Service System Design
- Space Engineering
- Telecommunication Engineering
- Urban Planning and Policy



Joint program of Politecnico di Milano and Politecnico di Torino

A **school for young talents** who want to develop their **interdisciplinary capability** for leading and promoting innovation in the fields of engineering, architecture and design (Master of Science programmes)

150 promising students each year

They receive, at the end of their studies, **the ASP diploma and the laurea magistrale from both institutions**



CAREERSERVICE
POLITECNICO DI MILANO

EVENTI,
WORKSHOP,
INIZIATIVE
e SERVIZI

80% within 4 months

(independently of degree and type of graduation)

■ DESIGN AND ARCHITECTURE

- professionals
- companies with less than 10 persons
- trend: interest of medium companies dealing with Design and furniture
- international architect studios



■ ENGINEERING

- medium and big companies in all the sectors
- trend: ICT, Mechanics, Energy, Consulting, Banks

10% go to foreign countries (USA, Europe, China)

60% MSC are 25 year old or less

The number of women engineers is growing



The evaluation process (peer review) started in march 2007

82 Evaluators coming from 53 foreign Institutions

39% of the professors belongs to groups evaluated:
Good at international level

The overall evaluation of the research in Politecnico di Milano results:
Good at international level

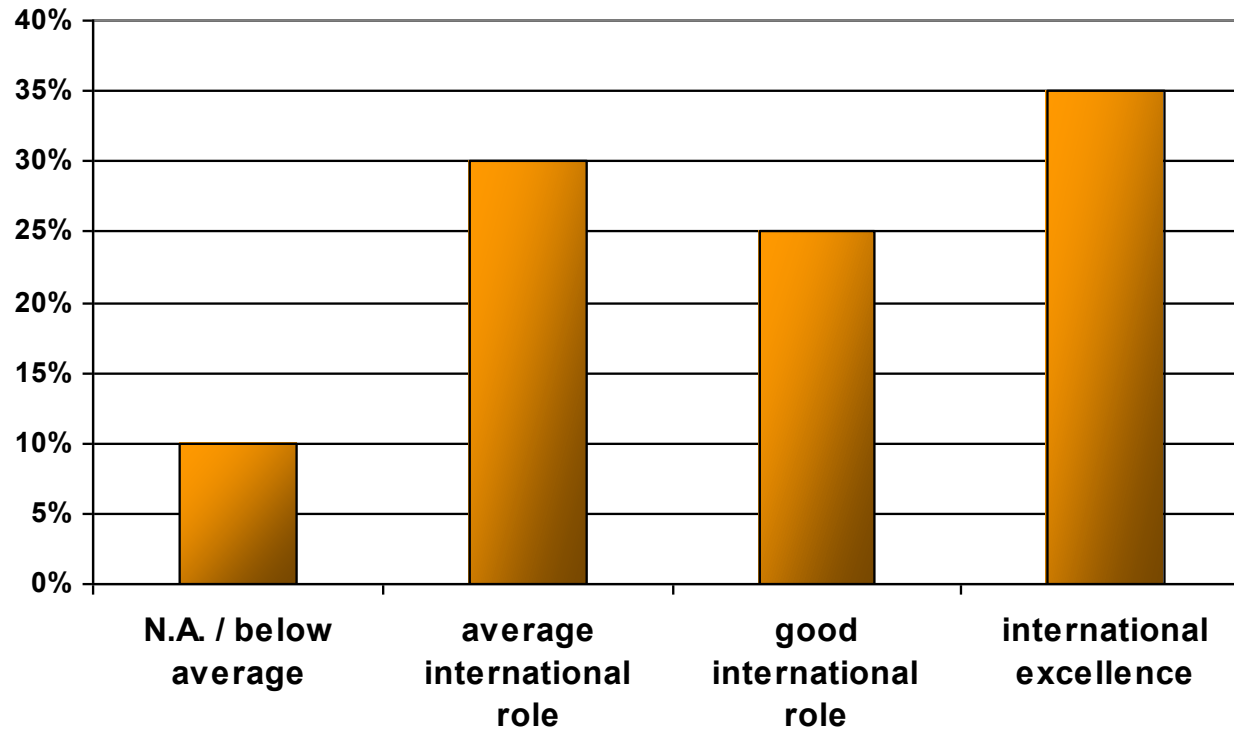


Professors and Researchers were evaluated as follows:

- 497 belong to group evaluated excellent at international level
- 284 belong to group evaluated good at international level
- 372 belong to group evaluated average at international level
- 41 belong to group evaluated below average at international level



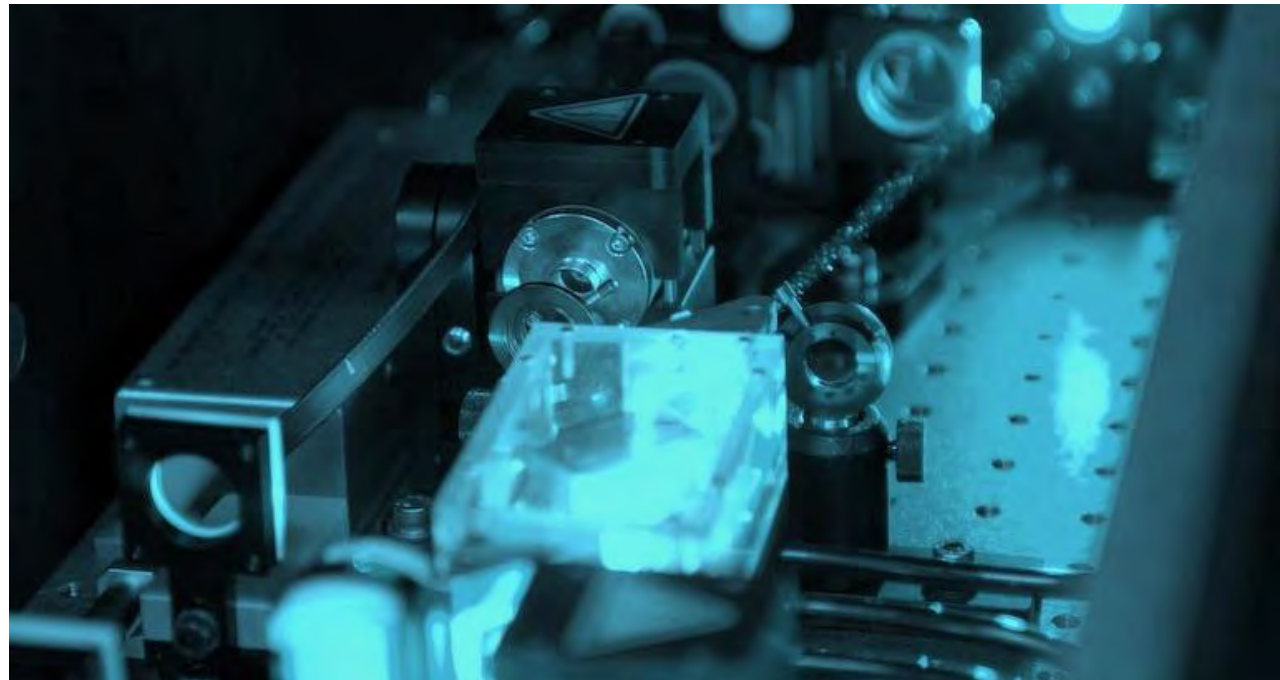
Research evaluation: Distribution of results of research groups



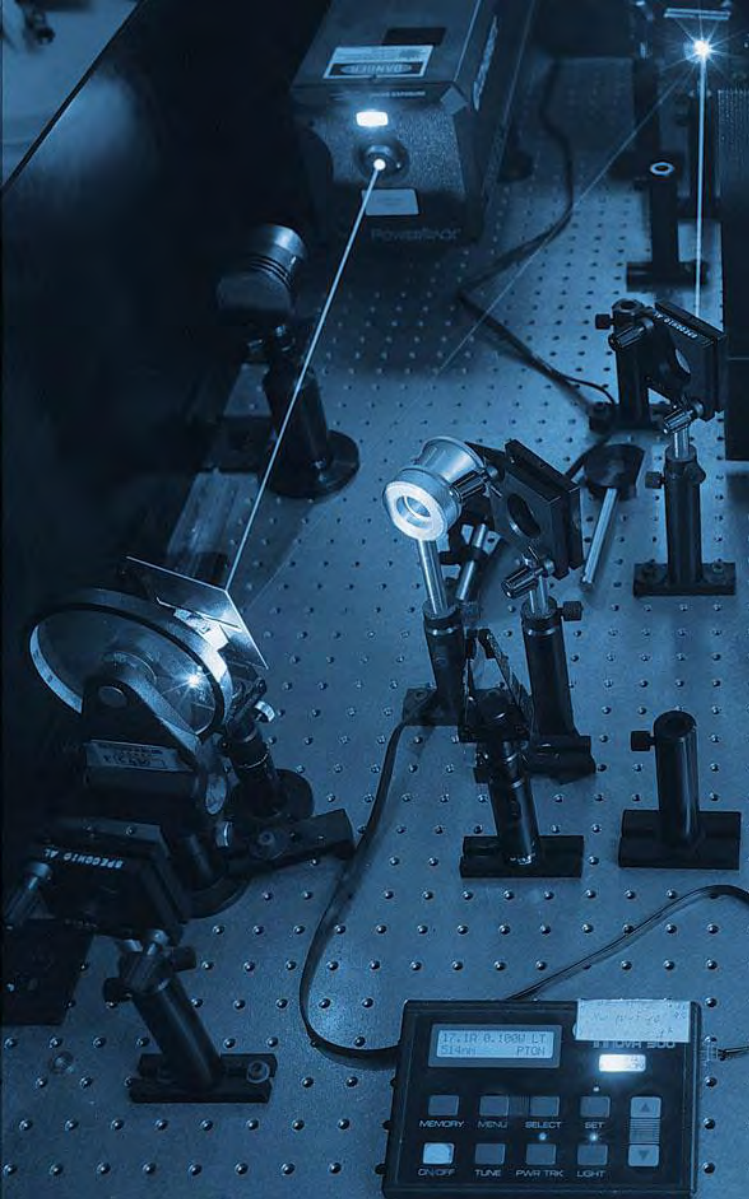


Research Areas

- Aeronautics and Space
- Architecture and Urban Planning
- Biotechnology and Health
- Built Environment, Infrastructures
- Chemistry, Materials and Nanotechnologies
- Citizens, Enterprises and Governance
- Cultural Heritage
- Design
- Environment
- Energy
- Industrial Products and Processes
- Information Society Technologies
- Mathematics
- Physics
- Transport



Participation in the Research Programmes of the European Union



In the **Seventh Framework Programme for Research and Technological Development**, Politecnico di Milano played the role of **COORDINATOR** in **25** research projects **PARTNER** in **176** research projects, and in **4** cases played the role of Host Institution in ERC Projects.

The Institution was also involved in the **Sixth Framework Programme for Research and Technological Development** with more than **112** research projects approved by the European Commission.



Research Projects: total funding obtained under the Sixth Framework Programme

<i>STRUCTURES</i>	<i>number projects</i>	<i>%</i>	<i>projects amounts</i>
Electronics and Information	36	31,0%	€ 11.869.980,00
Mechanics	19	24,7%	€ 9.456.313,00
Chemistry Materials and Chemical Engineering "Giulio Natta"	9	9,6%	€ 3.669.999,84
Energy	8	6,5%	€ 2.479.617,00
Bioenergy	4	5,8%	€ 2.201.921,00
Aerospace Engineering	8	5,3%	€ 2.016.208,00
Physics	4	7,2%	€ 2.744.733,00
Management, Economics and Industrial Engineering	4	4,1%	€ 1.577.209,00
Hydraulic, Environmental and Surveying Engineering	3	1,5%	€ 570.650,00
Structural Engineering	3	1,4%	€ 553.630,00
Research and Technological Area	2	0,3%	€ 107.288,00
Nuclear Engineering	2	0,6%	€ 248.151,00
Industrial Design, Arts, Communication and Fashion	2	0,6%	€ 222.334,00
Architecture and Planning	4	1,0%	€ 386.118,00
Building and Environment Sciences and Technology	4	0,3%	€ 124.930,00
	112		€ 38.229.081,84



Self-financing of Politecnico di Milano amounts to 70 million per year. About half comes from competitive tenders, half from technology transfer.

Taking into account the contributions by Fondazione Politecnico, consortia and spin-offs supported by Politecnico the amount exceeds 110 million per year.

↓ Laboratories and centres of excellence



WIND TUNNEL

One of the most advanced laboratories in the world for tests on aerospace system aerodynamics and wind effects structures

L.a.S.T.

Laboratory for the Safety of Transport



Laboratories and centres of excellence



MOX

Mathematical modelling and scientific computing.

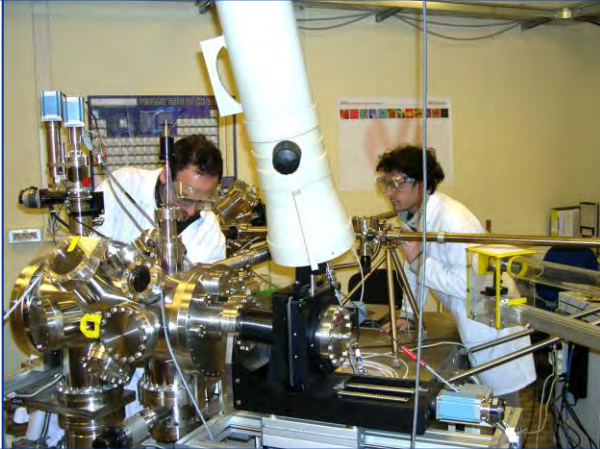
Application to several academics and industrial realities



CUSBO

Centre for Ultrafast Science and Biomedical Optics.

Seat of a Large Scale Facility, accessible to European researcher



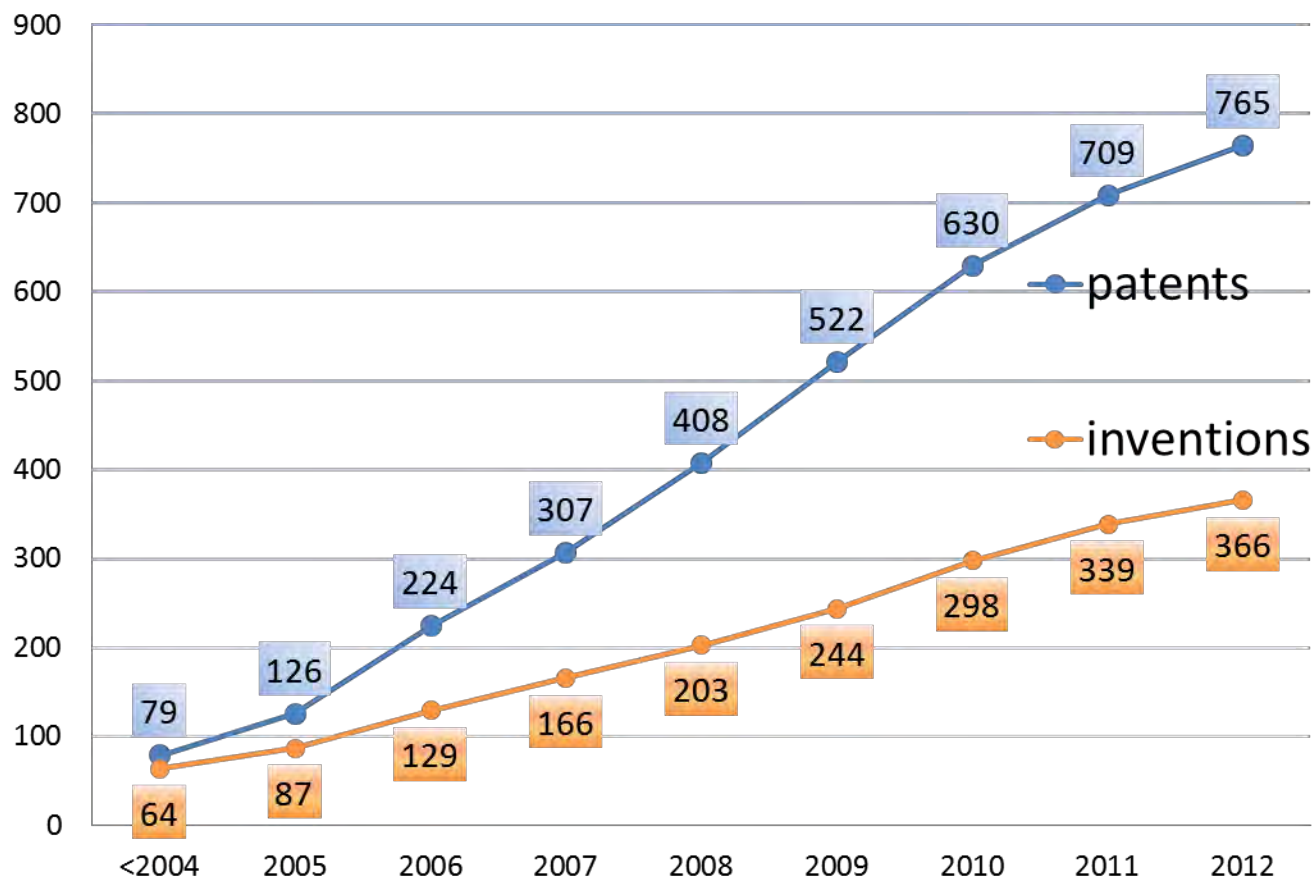
NEMAS

Nanoengineered Materials and Surfaces.

Centre of Excellence coordinated by four different Laboratories of the Politecnico Di Milano



Inventions and patents

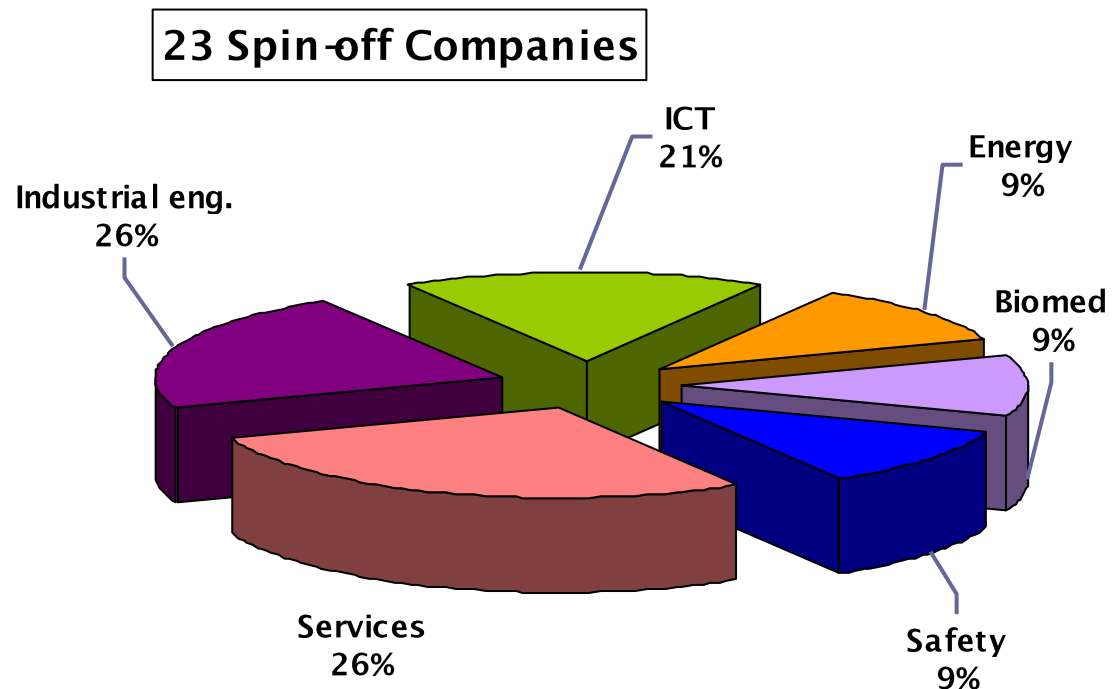




A look to spin-off companies

Politecnico di Milano is partner of **23** spin-off companies acting in different industrial sectors.

The other partners are professors of Politecnico, young graduates, in many cases industrial companies interested in cooperating and developing new products.





The Acceleratore d'Impresa (University Incubator)

- supports incubated start-up companies in the draft of their business plan, business development, fund raising, education
- networks with finance, business and industry specialists
- fosters international relations with other incubators and universities worldwide.

In 2010 the number of Start-ups hosted within the Incubator is 18. Since its creation, in the year 2000, 53 start-ups have been activated.



The Chair Solvay Solexis at Politecnico di Milano Fluor and Fluorinated Materials Chemistry (2004-2014)

- Chemical laboratories for research funded by Solvay
- Training of Solvay Solexis technical personnel
- Joint patents Politecnico-Solvay
- Scientific publications
- International congress Organisation:
 - Milano 2006 and 2008
 - Boston 2007
 - Washington 2009

Vacuum line for manipulation of fluorine gas



Examples of Joint Labs

- **Joint Research Center on Energy**

Industrial partners: A2A, ABB, ANSALDO ENERGIA, EDISON/EDF, ENEL, ENI, SIEMENS, SIRAM, WESTINGHOUSE.

- **Joint Research Center on Railways Transports**

Industrial partners: ABB, ANSALDO BREDA, BOMBARDIER, FS (Trenitalia and RFI).



CONSORTIA - Some of the Consortia involved in research activities



CEFRIEL - Technology transfer in the ICT sector



MIP – School of Management Consortium for innovation in the management of enterprises and public administration



POLI.DESIGN - Consortium for continuing education, applied research, promotion and publishing in the domain of design.



A “light” instrument of Politecnico di Milano in partnership with important Companies (Founder Partners)

It aims to:

- promote applied research
- share innovation with businesses and public administrations
- foster education
- sustain university / industry joint initiatives;
- develop international projects
- stimulate the creation of new technology-oriented companies



Polisocial: Social Responsibility (at) PoliMI

POLISOCIAL engages students, faculty, administration and staff in local and international initiatives aimed at strengthening a culture of public engagement and social responsibility.

Scope of activities

Social PORTAL Building cross-scale partnerships with nonprofit organisations, institutions, and universities that are active in the social development field.

Social AWARDS Initiating grants and awards for socially relevant actions and studies promoted by junior researchers and students.

Social TRAINING Creating new opportunities for apprenticeship and on-the-job training in the fields of community and international development.

Social PROJECTS Promoting and supporting action-research and e-learning initiatives based on a dialogue with NGOs, local institutions and communities.

Social EDUCATION Expanding the scope of education through public outreach, and university capacity building projects in Developing Countries.

Lines of work

Poli4People Education and community engagement for social innovation.

Poli4Development Research and technological innovation for Development.





Final consideration Politecnico di Milano

Social Responsibility
Quality
Outstanding Teaching
Scientific Research
Passion for Innovation
and Transversal Partnerships

**are our driving forces
for promoting research and innovation
to prepare future professionals and citizens
to meet the new social challenges leading to
global development**

..... continuous never lasting learning process.....

Thank you for your patience!

