



# PhD in SCIENZE E TECNOLOGIE ENERGETICHE E NUCLEARI / ENERGY AND NUCLEAR SCIENCE AND TECHNOLOGY - 39th cycle

**PARTENARIATO PNRR Research Field: OPTIMIZATION OF SOLAR BASED ENERGY CONVERSION SYSTEMS RELYING ON ARTIFICIAL INTELLIGENCE AND BIG DATA**

**Monthly net income of PhDscholarship (max 36 months)**

**€ 1500.0**

In case of a change of the welfare rates during the three-year period, the amount could be modified.

## Context of the research activity

**Motivation and objectives of the research in this field**

PE2-NEST Spoke 5 - CUP D43C22003090001  
Decreto di concessione D.D. 1561 del 11/10/2022

Concerns related to climate change are the main driving forces of the interest toward zero (or quasi zero) emission electricity production systems, based on renewable energy sources (e.g. concentrated solar power, wind, biomass, advanced photovoltaics) as well as carbon capture and sequestration.

Research activities focus on the development of innovative materials, components and devices to improve the efficiency of conversion devices in order to reduce CO2 emissions, costs and the exploitation of primary sources. Particular attention will be paid to electrical, thermal and energy conversion systems which represent the majority of primary energy consumption worldwide.

The research will be carried out within NEST Spoke 5 which focuses on development of advanced tool relying on big data and artificial intelligence for energy conversion process optimization.

For more information about activities and laboratories of the research group: [www.gecos.polimi.it](http://www.gecos.polimi.it)



<b>Methods and techniques that will be developed and used to carry out the research</b>	Research activity is theoretical and focused on simulation and optimization of complex, multienergy systems and advanced components; particularly, deep learning and artificial intelligence techniques will be considered for optimal operation of energy systems relying on variable resource as solar energy.
<b>Educational objectives</b>	The PhD candidate will work in a highly motivated and qualified large research group ranked at the top position of the Italian university system. The PhD candidate will gain experience, knowledge and skills in cutting edge technologies of the power generation and energy conversion field, with possible involvement in international and EU projects as well as in the cooperation with leading universities, industries and R&D institutions.
<b>Job opportunities</b>	This research activity will qualify the candidate for future academic and research positions, as well as for a highly qualified professional career in industries or organizations operating in the energy field.
<b>Composition of the research group</b>	5 Full Professors 7 Associated Professors 7 Assistant Professors 40 PhD Students
<b>Name of the research directors</b>	Paolo Chiesa, Matteo Romano, Stefano Campanari

<b>Contacts</b>	
www.gecos.polimi.it	
giampaolo.manzolini@polimi.it	

<b>Additional support - Financial aid per PhD student per year (gross amount)</b>	
<b>Housing - Foreign Students</b>	--
<b>Housing - Out-of-town residents (more than 80Km out of Milano)</b>	--

<b>Scholarship Increase for a period abroad</b>	
<b>Amount monthly</b>	750.0 €
<b>By number of months</b>	12



**Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information**

Educational activities: Financial aid per PhD student is available for purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences, instrumentations and computer, etc. This amount is equal to 10% of the annual gross amount, for 3 years.

Teaching assistantship: Availability of funding in recognition of supporting teaching activities by the PhD student. There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.

Computer availability: individual use.

Desk availability: individual use.

Awards: Economic awards will be recognized to the PhD candidate in case of significant contributions in the research project, subject to the evaluation of the research director. Economic awards can be up to 1500 Euro in the first year, 2300 Euro in the second year and 5000 Euro for the final year.