



PhD in INGEGNERIA ELETTRICA / ELECTRICAL ENGINEERING - 38th cycle

**PARTENARIATO PNRR Research Field: MACHINE LEARNING (ML) TECHNIQUES FOR
MODELING ELECTRICAL SYSTEMS IN INDUSTRIAL APPLICATIONS AND ENERGY
EFFICIENCY MONITORING**

Monthly net income of PhDscholarship (max 36 months)

€ 1400.0

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	<p>CUP D43C22003120001 Decreto di Concessione DD n. 1551 del 11/10/2022</p> <p>ML models will be developed and technological solutions evaluated for defining models of electrical systems (Digital Twins) for use in manufacturing to control various entities within a socio-technical production system perspective (products, processes, and interaction with personnel involved). Here, models of different electrical systems will be introduced at both component and system levels with a focus on monitoring energy efficiency and for flexibility planning. The whole activity as a whole is in full relevance to the principles of Spoke 8 del PE 11 Digitally oriented factory design and management through AI (Artificial Intelligence) and data-driven approaches</p>
Methods and techniques that will be developed and used to carry out the research	<ul style="list-style-type: none"> •Machine learning Algorithms •Demand Response Algorithms •Optimisations techniques
Educational objectives	<ul style="list-style-type: none"> •Learning how to conduct research activities •Learning to model electrical systems in the industrial environment •Learn about deep and machine learning algorithms



Job opportunities	SMC, Italtel, Cavanna Group, UNIPD, INIBG
Composition of the research group	1 Full Professors 2 Associated Professors 0 Assistant Professors 3 PhD Students
Name of the research directors	Prof. Giambattista Gruosso

Contacts	
Phone 0223993696 Email Giambattista.gruosso@polimi.it phd-elt@polimi.it	

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

Scholarship Increase for a period abroad	
Amount monthly	700.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>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.</p> <p>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.</p> <p>Computer availability: individual use. Desk availability: individual use.</p> <p>Accommodation in Politecnico's Residences (http://www.residenze.polimi.it) is available for PhD candidates; special rates will be applied to selected out-of-town candidates (detailed info in the call for application).</p>



Research period abroad: Our candidates are strongly encouraged (6 months minimum is mandatory) to spend a research period abroad, joining high-level, research groups in the specific PhD research topic, selected in agreement with the Supervisor. An increase in the scholarship will be applied for periods up to 6 months.