



# PhD in INGEGNERIA ELETTRICA / ELECTRICAL ENGINEERING - 40th cycle

**PNRR 630 Research Field: TECNOLOGIE ABILITANTI ALLA CYBERSICUREZZA PER LA  
TRANSIZIONE ENERGETICA: DALLE RETI INTELLIGENTI AI VEICOLI ELETTRICI COME  
RISORSE ENERGETICHE DISTRIBUITE**

<b>Monthly net income of PhDscholarship (max 36 months)</b>
<b>€ 1500.0</b>
In case of a change of the welfare rates during the three-year period, the amount could be modified.

<b>Context of the research activity</b>	
<b>Motivation and objectives of the research in this field</b>	<p>The purpose of the research is to study scenarios and use cases of smart grids and electric vehicles used as distributed energy resources on which to validate Cybersecurity Enabling Technologies.</p> <p>More and more, in fact, we are talking about energy transition services, which therefore require interaction with ICT tools towards electric systems for planning, metering, pricing and control reasons. These tools are a problem if not managed effectively within the relevant regulations and cybersecurity management framework in IT.</p> <p>The student will therefore be responsible for identifying and reproducing scenarios in a real time simulation environment with integration of communication protocols and cybersecurity layers.</p> <p>Eventual risks will then be identified, assessing their impact through simulation and developing solutions for their mitigation.</p>
<b>Methods and techniques that will be developed and used to carry out the research</b>	<p>The activities will be carried out in collaboration with RSE, which will provide tools and methods, which integrated with those available to the polytechnic research group will enable the student to tackle the project.</p> <p>Programming skills, development of models in structured environments such as Simulink, use of analysis</p>



	<p>techniques will be required.</p> <p>the research work will be carried out at the simlab 40 laboratory of the polytechnic of milan and at RSE.</p>
<b>Educational objectives</b>	<p>The educational objectives are:</p> <ol style="list-style-type: none"> <li>1. To learn about the integrated scenarios between ICT and power systems.</li> <li>2. Learn how to model and simulate the previously defined scenarios.</li> <li>3. Understand the main causes of risk in cybersecurity issues.</li> <li>4. Learn how to reproduce cyber risk conditions, assess their effects and implement mitigation actions.</li> </ol>
<b>Job opportunities</b>	<p>Employment opportunities are:</p> <ol style="list-style-type: none"> <li>1. Research centers and universities</li> <li>2. Companies in the area of power systems and electric vehicles</li> <li>3. ICT companies in the cybersecurity field</li> </ol>
<b>Composition of the research group</b>	<p>2 Full Professors                  1 Associated Professors                  4 Assistant Professors                  1 PhD Students</p>
<b>Name of the research directors</b>	<p>Prof. Giambattista Grusso</p>

<b>Contacts</b>
<p>giambattista.grosso@polimi.it                  phd-elt@polimi.it  <a href="https://www.simlab40.deib.polimi.it/">https://www.simlab40.deib.polimi.it/</a></p>

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

Scholarship Increase for a period abroad	
Amount monthly	750.0 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	RSE
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	To be defined
By number of months abroad	6

**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*.