



# PhD in INGEGNERIA ELETTRICA / ELECTRICAL ENGINEERING - 38th cycle

**THEMATIC Research Field: OPTIMIZATION AND INNOVATIVE METHODS FOR  
SUSTAINABLE MOBILITY APPLIED TO THE LOCAL PUBLIC TRANSPORT SECTOR**

Monthly net income of PhDscholarship (max 36 months)
<b>€ 1195.5</b>
In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity	
<b>Motivation and objectives of the research in this field</b>	<p>The international policies of many countries are now strongly focused on the process of decarbonizing the transport sector: the emissions produced can affect both air quality, especially in urban areas, and climate change. From a quantitative point of view, the transport sector is second only to electricity production and heating in terms of CO2 emissions. The real-time acquisition and analysis of large amounts of data enables the development of methodology and approaches that can make strategic decisions for local public transport companies. In particular, the focus will be on the deployment of green mobility, especially buses by proposing feasibly applicable models and technical solutions in companies.</p>
<b>Methods and techniques that will be developed and used to carry out the research</b>	<p>In view of the fact that green mobility management is increasingly affected by the "many" factor, the planned methods and techniques will cover:</p> <ul style="list-style-type: none"> <li>• optimization methods for planning and managing charging stations (CS) considering where possible dynamic wireless charging with the focus of new types of storage.</li> <li>• modeling techniques for electrical systems in the presence of renewable sources and loads for electric mobility;</li> <li>• forecasting techniques for the installation of storage</li> </ul>



	<p>systems for CS deployment.</p> <ul style="list-style-type: none"> <li>• Also evaluate other types of vehicles such as hydrogen-powered vehicles and make some assessment of progressive change in the bus fleet.</li> </ul>
<b>Educational objectives</b>	<p>To prepare researchers with high scientific qualification, independent research capabilities in the area of electric transportation systems. This includes specific skills in modeling both technical and economic issues, simulations, critical analysis and validation of results. However, psychological and philosophical aspects will also be considered.</p>
<b>Job opportunities</b>	<p>The main opportunities are generally provided by R&amp;D departments of small and large companies and innovative manufacturers, research centers, and EV charging system operators in collaboration with research groups in universities.</p>
<b>Composition of the research group</b>	<p>5 Full Professors 4 Associated Professors 3 Assistant Professors 15 PhD Students</p>
<b>Name of the research directors</b>	<p>Prof. Michela Longo</p>

<b>Contacts</b>	
<p>Email: <a href="mailto:michela.longo@polimi.it">michela.longo@polimi.it</a> Tel: +39 02 2399 3759</p> <p><a href="https://www.energia.polimi.it/en/energy-department/research/research-groups/electric-systems-for-energy-and-transportation/#c1812">https://www.energia.polimi.it/en/energy-department/research/research-groups/electric-systems-for-energy-and-transportation/#c1812</a></p>	

<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>	597.75 €
<b>By number of months</b>	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.

**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).

**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.