



PhD in INGEGNERIA ELETTRICA / ELECTRICAL ENGINEERING - 38th cycle

**THEMATIC Research Field: FLEET MANAGEMENT 5.0 IN SUSTAINABLE MOBILITY:
IMPLEMENTATION, VALIDATION, AND PLANNING OPTIMIZATION**

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**

The mobility of the future will be based on new paradigms in line with evolving consumer needs and new technologies available on the market, two enablers for new business models and consumer services. Consumer needs are constantly evolving, and new consumption patterns, new lifestyles (increasingly connected) and increased attention to environmental sustainability issues are emerging. A tool development is proposed that will aim to give output for the optimal optimization of the fleet from the logistical, maintenance and vehicle suitability point of view related to different typical missions. There will be a design and validation study of an experimental set-up, useful for conducting driving simulations and open to further improvements in the near future. The experimental set-up will allow to test and validate strategies to modify human driving behavior and, by influencing it, make it more sustainable.

**Methods and techniques that will be
developed and used to carry out the
research**

In view of the fact that the management of new mobility will be increasingly influenced by the many factors, the planned methods and techniques will cover:-
Implementation of algorithms in order to optimize the fleet from the perspective of logistics, maintenance, and vehicle suitability considering different types of service applications (e.g., suburban, urban, etc.) - Multi-disciplinary method for sizing vehicles, vehicle subsystems, and charging infrastructure, based on an optimization approach that aims to minimize infrastructure



	optimization approach that aims to minimize infrastructure and operational costs and maximize efficiency, geared toward reducing fuel consumption.- - Different augmented reality techniques and technologies to create user-vehicle communication and algorithms in order to influence human driving behavior, modify or influence performance with a view to optimizing energy consumption.
Educational objectives	To prepare researchers with high scientific qualification, independent research capabilities in the area of electric transportation systems. This includes specific skills in modelling both technical and economic issues, simulations, critical analysis and validation of results. However, psychological and philosophical aspects will also be considered.
Job opportunities	The main opportunities are generally provided by R&D departments of small and large companies and innovative manufacturers, research centers, and EV charging system operators in collaboration with research groups in universities.
Composition of the research group	3 Full Professors 4 Associated Professors 4 Assistant Professors 15 PhD Students
Name of the research directors	Michela Longo

Contacts
<i>Email: michela.longo@polimi.it</i> <i>Tel: +39 02 2399 3759</i>

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

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.