



PhD in INGEGNERIA ELETTRICA / ELECTRICAL ENGINEERING - 39th cycle

**PNRR 117 Research Field: USING SMART TECHNOLOGIES AND ELECTRIC VEHICLES FOR
THE OPTIMIZATION OF ENERGY MANAGEMENT IN THE RESIDENTIAL CONTEXT**

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 European initiative "Fit for 55" is a set of proposals to revise and update EU legislation and to put in place new initiatives with the aim of ensuring that EU policies are into line with the climate goals agreed by the Council and the European Parliament.

In this context, many technologies devoted to the decarbonization of the human activities will be considered and promoted. Besides, the European Commission decided to limit the CO₂ emissions also through the ban of selling new ICE (Internal Combustion Engine) vehicles after 2035 in favor of electric vehicles and other zero-emission technologies.

The residential is one of the sector where it is possible to significantly reduce the greenhouse emissions since it is responsible for about 22% of the energy consumption. However, this sector is characterized by users that are not expert and familiar with sophisticated technologies. Therefore, the proposed PhD program wants to overcome this gap through innovative smart technologies and electric vehicles for the optimization of the energy consumption, improving the consequent benefits on the environmental impact of the residential sector.

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

The aim is to form a highly qualified engineer in a highly motivated and qualified research group, gaining experience, knowledge and skills in cutting edge technologies of the distributed power generation, energy utilization and electric mobility for the energy management



	<p>utilization and electric mobility for the energy management optimization with possible involvement in international and EU projects as well as in the cooperation with leading industries and R&D institutions.</p> <p>The candidate will learn how to identify critical aspect specifically link to mathematical modelling of energy production and use.</p> <p>The candidate will learn how to communicate the results of the Ph.D. research presenting results and analysis in a scientific and industrial context.</p>
Educational objectives	<p>This research activity will qualify the candidate for future academic and research positions, as well as for a highly qualified professional career in industries in the energy and electrical mobility fields.</p>
Job opportunities	<p>The main opportunities are offered, typically, by R&D departments of both small and large innovative companies and manufacturers, research centers, Transmission and Distribution Operators, Regulating authorities, Generation Companies. Finally, the academia is also an option.</p>
Composition of the research group	<p>2 Full Professors 2 Associated Professors 2 Assistant Professors 4 PhD Students</p>
Name of the research directors	<p>Prof. Morris Brenna</p>

Contacts
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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

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	Edison S.p.A.
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	The project promotes collaboration with relevant international universities and research centers. The foreign institution will be selected during the 3 years research program in agreement with the industrial partner.
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.