



PhD in INGEGNERIA ELETTRICA / ELECTRICAL ENGINEERING - 40th cycle

**PNRR 630 Research Field: ELECTROMAGNETIC MODELING OF HVDC AND TRIPOLAR
SUBMARINE CABLES**

Monthly net income of PhDscholarship (max 36 months)

€ 1500.0

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 installed capacity of offshore wind-farms has steadily increased in recent years. This has led to a growing interest in the accurate rating of submarine power cables used to connect the offshore generators between themselves and to the mainland. However, armored three-core AC submarine cables are quite difficult to model accurately from an electromagnetic point of view. The same can be said for High Voltage Direct Current (HVDC) cables, which constitute an important technological asset to operate a highly efficient transmission of electric power over long distances.

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

Integral equation methods will be developed for an accurate electromagnetic modeling of HVDC and tripolar AC submarine cables in the whole frequency range of interest.

Educational objectives

The candidate will learn how to use and implement computational electromagnetics techniques and will acquire a deep knowledge of the modeling issues related to submarine cables.

Job opportunities

Submarine power cable manufacturers are looking for experts in the numerical modeling and design of cables, both in R&D and engineering divisions.



Composition of the research group	1 Full Professors 2 Associated Professors 1 Assistant Professors 2 PhD Students
Name of the research directors	Prof. Luca Di Rienzo

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	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)	Prysmian
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
<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>



Computer availability: *individual use*.

Desk availability: *individual use*.