



PhD in PROGETTAZIONE ARCHITETTONICA, URBANA E DEGLI INTERNI / ARCHITECTURAL, URBAN AND INTERIOR DESIGN - 38th cycle

**INTERDISCIPLINARY Research Field: LARGE-SCALE PHOTOVOLTAIC SYSTEMS AND
LANDSCAPE. GUIDELINES FOR THE DESIGN, CONSTRUCTION AND OPERATION OF
LANDSCAPE-INTEGRATED PV PLANT**

Monthly net income of PhDscholarship (max 36 months)	
€ 1195.0	
In case of a change of the welfare rates or of changes of the scholarship minimum amount from the Ministry of University and Research, during the three-year period, the amount could be modified.	
Context of the research activity	
Motivation and objectives of the research in this field	<p>Interdisciplinary PhD Grant</p> <p>The PhD research will be carried out in collaboration with research groups of the PhD programme in "ELECTRICAL ENGINEERING".</p> <p>See https://www.dottorato.polimi.it/?id=422&L=1 for further information.</p>
Methods and techniques that will be developed and used to carry out the research	<p>To achieve this aim, it is essential strengthening the integration and complementarity of the various technical and scientific disciplines, the interaction between the skills that can be traced back to the field of landscape design, and the more technical skills of electrical power systems engineering (electricity production, electrical networks, and systems, storage systems).</p> <p>This would make it possible to substantially advance knowledge in an integrated form that would allow the outlining of the entire range of evaluations, choices, technical solutions, and possible works in this field, taking into account the tasks for which large ground-mounted PV systems are intended and their economic, social, environmental and landscape impact.</p> <p>The research will be divided into three distinct phases, each with a concluding elaboration that marks the</p>



	<p>progress and becomes material for comparison with the two colleges of teachers of the two PhDs involved and to make any changes in direction or approach dictated by new needs and new opportunities in the interaction between the various disciplines.</p> <p>1.a. State of the art: a survey of the scientific literature on the subject.</p> <p>1.b. Selection and analysis of significant case studies to identify criticalities, potentials, and formulate the objectives to be achieved around four issues to be explored: biodiversity and ecosystem management; innovation in agricultural uses; requalification of environmentally compromised areas; optimization of the PV/storage system and energy transmission.</p> <p>2. Experiments on pilot projects to be identified in agreement with companies that manage and develop photovoltaic power generation activities.</p> <p>3. Guidelines for the design, implementation, and management of large-scale PV fields integrated into the territory.</p>
<p>Educational objectives</p>	<p>The expected result of this interdisciplinary Ph.D. program is a new researcher profile, capable of developing an integrated approach to the design of large-scale ground-mounted photovoltaic fields, meeting the objectives of increasing energy production from renewable sources within the framework dictated by the UN 2030 Agenda for Sustainable Development.</p> <p>This integrated and multidisciplinary approach goes beyond the opposition between the technical-functional objectives that guide the "engineering" design of the plant and the qualitative objectives relating to the resolution of critical issues in the relationship with the ecological-environmental systems, human systems, and the landscape.</p> <p>Large-scale plants must provide ancillary services to the electricity grids and, therefore, increasingly need storage systems, such as electrochemical batteries, combined with generation systems.</p> <p>The research proposes to evaluate different solutions, such as distributed rather than concentrated conversion and storage systems, concerning environmental and</p>



	<p>landscape impact, compatibly with overall system efficiency. In the integrated approach that we would like to experiment with, in addition to this first level of design orientation, these interventions are also considered as opportunities to counteract and sometimes concretely eliminate some strong negatives related to the impact of the plants on the territory, landscape, and acceptability by local communities.</p>
<p>Job opportunities</p>	<p>The AUID Ph.D. Program aims to train highly qualified researchers and professionals who will work in academic institutions, research centers, public administration, as well as in the private sector, in the fields of architectural, urban, and interior design:</p> <ul style="list-style-type: none"> • University researchers and lecturers in the scientific fields of the Ph.D. Program. • Researchers with an excellent scientific profile in complex architectural developments and interventions of recovery and transformation. • Independent professionals qualified in the management of highly complex design processes. • Designers with tasks of high responsibility in institutions and professional structures and leading manufacturers, engaged in traditional residential and special utilities, cultural institutions (museums, libraries, universities, schools, cultural centers), public and private services, commercial networks, accommodation, and leisure.
<p>Composition of the research group</p>	<p>15 Full Professors 22 Associated Professors 6 Assistant Professors 69 PhD Students</p>
<p>Name of the research directors</p>	<p>Alessandro Rocca, Sara Protasoni</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	597.50 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

<http://www.auid.polimi.it/>

Universities that are cooperating in the research:

- Katholieke Universiteit Leuven, Campus Sint-Lucas, Ghent
- HafenCity Universitaet Hamburg
- TU Delft, School of Architecture
- TU Berlin, Institute for Architecture
- University of Ljubljana

Educational activities (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student per year ("DOTE"):

1st year: max **1.624,30 euro**
 2nd year: max **1.624,30 euro**
 3rd year: max **1.624,30 euro**

Workspace: In the AUID hall, on the 4th floor of Bldg 12 in Leonardo Campus, are available workstations for shared use. All the Ph.D. students can use their laptops with a wireless connection.

Workstations and other equipment are available in the various departmental laboratories (Dastu) linked with the doctoral Program.

