PhD Program in Civil, Chemical and Environmental Engineering
October 2021 Call, XXXVII cycle - Starting date: January 1st 2022

The research projects submitted for the admission to the PhD program must be prepared in accordance to one of the projects listed below, which are organized in three thematics. Details on projects and referents are in the following pages

Green processes and technologies of chemical engineering aimed at environmental sustainability, energy transition and circular economy

Project: Process intensification applied to the reduction of greenhouse gas emission from ships
Project: Development of Molten Carbonate Cells for Carbon Capture and Energy Transition
Project: Recyclability of bio-based plastics to promote circular economy strategies.
Project: Electrochemical hydrogen production using anion exchange membrane (AEM) and heterostructured spinel/graphene-based electrocatalyst.
Project: Hydrogen production from Chlorella vulgaris under different operating conditions, reactor design and scale-up
Project: Optimization of a biomass gasification plant for the integrated valorisation of agricultural residues through new circular value chains.
Project: Development of a reversible solid oxide cell (R-SOC) for seawater electrolysis and freshwater production

Water engineering approaches for green energy production and saving and for mitigation of the effects of climate change on water bodies and ecosystems

Project: Sediment supply effect on deltas (Po River Delta)
Project: Mitigation of slope erosion under solar photovoltaic (PV) plants
Project: Hydrodynamic development and optimization of an electric flying vessel
Project: Metocean hindcast in tropical systems (South Eastern Africa coast)
Project: Operational assessment and extreme events survivability for offshore plants and installations: developing guidelines and standards for the Mediterranean Sea
Project: Effects of climate change on the morphodynamics of estuaries and tidal environments
Project: Metocean forecast system optimization for offshore operativity and renewable energy exploitation (wind, waves, solar)
Project: Optimization of the technical and economic performance of the storage systems

Monitoring, modelling and technological innovation to reduce the impacts of climate change and promote sustainable development of structures, infrastructures and urbanized environments

Project: Low-carbon Earth based Materials for building applications (LEMBA)
Project: Risk quantification and damage mitigation of critical structures exposed to the action of extreme wind events
Project: Rainfall-induced landslide monitoring and modelling system for sustainable management of mountain and rural urbanized environments
Project: Reduction of the environmental impacts of composite steel-concrete structures by enhancing structural efficiency and circularity

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Project: Development of Molten Carbonate Cells for Carbon Capture and Energy Transition

Keywords: electrochemical cells, clean energy, carbon capture, hydrogen

Brief Description:
Research will be focused on the development of molten carbonate cells, an interesting technology in the current context of energy transition thanks to its ability to simultaneously produce clean energy and capture CO_2 from polluted exhausts. In addition, MCFC reversible functioning allows "gas to power" as well as "power to gas" operating modes, offering the production of hydrogen as a solution for the storage of renewable sources and as a new energy carrier for mobile and stationary applications.
The project will hopefully promote positive repercussions on the national territory in terms of scientific skills and entrepreneurial actions relating to a strategic technology currently developed worldwide only by a few foreign entities. The partner company has already started the opening of new offices in Genoa in conjunction with the establishment of the CapLab laboratory shared with DICCA-UNIGE and aimed at the study of electrochemical cells, and in particular MCFC.

Referent: Barbara Bosio, barbara.bosio@unige.it

Supporting company/firm: Ecospray Technologies, Alzano Scrivia (AL), Italy

Project: Process intensification applied to the reduction of greenhouse gas emission from ships

Keywords: Process intensification, CO2 capture, ships, greenhouse gas reduction, global warming

Brief Description: The need to reduce CO2 emissions from global shipping is evident and one of the possible approaches is to capture, for example through liquid absorbent solutions, the CO2 emissions produced by the combustion process in engines. One of the main difficulties in this type of approach consists in the objective limitations of space on the ship where additional equipment to those already existing would have to be installed. In this work we intend to investigate various alternative solutions with respect to existing technologies in order to make the problem less impacting by looking both on the process aspects and on the plant solutions.

Referents: Renzo Di Felice (renzo.difelice@unige.it)

Supporting company/firm: Cetena SpA; Via Ippolito D'Aste, 5, 16121 Genova

Project: Hydrogen production from Chlorella vulgaris under different operating conditions, reactor design and scale-up

Keywords: hydrogen, microalgae, photo-fermentation, Chlorella vulgaris, scale-up

Brief Description: Some strains of Chlorella vulgaris can produce hydrogen under proper operating conditions. The main parameters influencing hydrogen yield potential will be analysed, as photo-periods, sulphur deprivation, pre-thermal treatments, type of substrate.
The research activity will then focus on operating conditions and reactor's design: a two-stage photo-fermentation combined process will be analyzed at lab-scale and new reactors in which both photo-periods and oxygen deprivation can be easily controlled will be designed and constructed. Reactors scale-up will be carried out using theoretical and methods and numerical simulation.

Referents: Ombretta Paladino, paladino@unige.it

Supporting company/firm: Ansaldo Energia S.p.A - Via N. Lorenzi 8, 16152 Genova (I)

Project: Optimization of a biomass gasification plant for the integrated valorisation of agricultural residues through new circular value chains.

Keywords: integrated residues valorisation; circular value chains; thermo-chemical conversion; multi-spout reactor; bioeconomy

Brief Description: The research will aim at the exploitation of renewable carbon deriving from agricultural biomass of different types with the production of biochar for the study of innovative solutions such as those based on the use of biochar in soils and through the development of new materials for adsorption technologies. The sustainability of the process will also be studied in terms of mitigation of CO2 production, both for the controlled disposal of organic waste and for the greater assimilation of soil enriched in organic carbon (see cfr. PNRR 5.6.3 Bioindustria per la bioeconomia, Articolazione 3. Recupero e valorizzazione di scarti e prodotti organici a fine vita, per la rigenerazione dei suoli e la protezione dell'ambiente). The operating conditions of a previously developed thermal gasifier / pyrolyser of 0.8 MWth (PERT /FILIDEA) using different local agricultural waste will be optimised to obtain a solid residue with desired characteristics. The experimental activity will be accompanied by multiscale modelling and simulation activities to better predict its operation, optimize the operating conditions and estimate the overall yield.

Referents: Prof.ssa Cristina Moliner and Prof.ssa Elisabetta Arato

Supporting company/firm: FILIDEA Srl - VIA MAESTRI DEL LAVORO, 4/A - 13900 BIELLA (BI)

Project: Development of a reversible solid oxide cell (R-SOC) for seawater electrolysis and freshwater production

Keywords: Solid-oxide cell, Freeze-casting, Seawater splitting, Solar-to-hydrogen-conversion, Desalination

Brief description: Water is needed to produce hydrogen as a clean and sustainable alternative energy source to fossil fuels by water splitting to prevent global warming due to large-scale CO2 emissions from the combustion of fossil fuels. Fresh water is also essential to maintain human life: the world is currently facing a global and domestic challenge to reliably supply its population with fresh and safe water, owing to scarcity resulting from global population growth, climate change, contamination of clean water supplies, and public policy. This research project is addressed in designing a reversible ceramic-based solid oxide cell for seawater electrolysis and, when operated in reverse mode, to produce fresh water. The system will be coupled with a solar PV source. Two main purposes are pursued: i) produce optimised materials that may yield highly active and selective electrocatalysts; ii) optimise shaping techniques to manufacture reversible ceramic cells (R-SOC) affordable for different (offshore, naval, stationary) applications.

Referents: M. Paola Carpanese, carpanese@unige.it, Antonio Barbucci, barbucci@unige.it

Supporting company: SOLIDpower S.p.A., Via Trento, 115/117, 38017 Mezzolombardo TN (Italy).

Project: Electrochemical hydrogen production using anion exchange membrane (AEM) and heterostructured spinel/graphene-based electrocatalyst.

Keywords: hydrogen, graphene, electrocatalyst, anion exchange membrane

Brief Description: The electrochemical production of hydrogen using anion exchange membrane (AEM) can be achieved by a hetero-structured spinel/graphene-based electrocatalyst. Spinels pore structure of the electrocatalyst can be modified by using various amount of cations in the structure and replacing oxygen with sulfur to extend cycle life, conductivity, and increase electrochemical performance. The use of graphene-based materials can increase active sites. Selected electrocatalysts will be fabricated on GDLs and different commercial membrane sandwiched between them. Semi-empirical resistance-based mathematical model of the system will be developed to optimize parameters. A control model will be also developed for real-time control in combination with a solar panel and/or other renewable energy production systems.

Referents: Ombretta Paladino, paladino@unige.it

Supporting company/firm: Ansaldo Energia S.p.A - Via N. Lorenzi 8, 16152 Genova (I)

Project: Recyclability of bio-based plastics to promote circular economy strategies.

Keywords: bio-based plastics; circular value chains; recyclability; bioeconomy

Brief Description: This research project is focused on the study of the recyclability paths for two different bio-based plastics: PLA and PHA. Different alternatives based on mechanical, chemical and thermal recycling will be evaluated to identify the best disposal technology and its optimal operational parameters. For each recycling route, experimental tests will be accompanied with statistical and numerical analysis as a complementary and synergetic working strategy. The experimental tests for the three recycling paths will be performed at the laboratories of the University of Valencia (Spain) and in the R&D laboratories of AIMPLAS (www.aimplas.es), private technological centre expert on plastics technologies.
A correct and sustainable end-of-life strategy will become crucial for the full implementation of these materials within the Bioindustria circolare (Sezione 5.6.3. Bioindustria per la bioeconomia- Articolazione 2) and the Recupero e valorizzazione di scarti e prodotti organici a fine vita, per la rigenerazione dei suoli e la protezione dell'ambiente (Sezione 5.6.3. Bioindustria per la bioeconomia- Articolazione 3).

Referents: Prof.ssa Elisabetta Arato

Supporting company/firm: AIMPLAS. Instituto Tecnològico del plàstico. C- Gustave Eiffel, 4. 46980 Paterna (Valencia). www.aimplas.es

Project: Optimization of the technical and economic performance of the storage systems

Keywords: optimization, bidding models, electricity grid, renewable energy sources, hyperledger

Development of short-term automatic bidding models (2-3 day horizon) for storage plants connected to the national electricity grid and which participate in the markets for ancillary services for the grid. These models will allow the formulation of supply strategies on the energy markets that allow to optimize the technical and economic performance of the storage systems. The models will be based on the real-time optimization of the information available which include: (i) the level of actual or expected prices in the day-ahead, continuous intraday markets, of ancillary services, also considering the distributions of these prices; (ii) information relating to the state of the network, the level of production of non-programmable renewable resources, the level of availability of the plants; (iii) dispatching rules and restrictions imposed by the network operator; (iv) information relating to the storage device itself, including the state of charge, any operational constraints and costs. The optimization problems involved are of a stochastic nature and of a high level of complexity. A good physical and economic performance of the storage systems is essential to support the high penetration of the grid of non-programmable renewable sources as they allow the minimization of both the management costs of the grid and the need for investments in grid infrastructures, with consequent reduction of costs incurred by the final consumer. The solution of this class of problems is part of a context of considerable evolution of the electricity market (transition to the continuous intraday market) and of digital technologies. Such models are expected to be useful in the future for the creation of contracts based on hyperledger technologies.

Referents: Jan Oscar Pralits (jan.pralits@unige.it)

Supporting company: EGO Energy (www.ego.energy), Via F. Romani 9, 16122 Genova

Project: Metocean forecast system optimization for offshore operativity and renewable energy exploitation (wind, waves, solar)

Keywords: numerical weather forecasting, wave energy, wind energy, climate change, green energy exploitation

Brief Description: the project aims at developing state-of-the-art solutions capable of achieving optimal forecast strategies of the most relevant green energy resources such as wind, wave and radiation obtained from Meteocean models. We are particularly interested to apply the resulting strategies to the renewable energy market. Both point forecasts and ensemble forecasts (as for instance the EPS system from the European Centre for Medium-Range Weather Forecasts, ECMWF) will be considered for the most relevant metocean variables relevant for the renewable energy market. Such predictions will be properly calibrated in a way to account features not explicitly accounted by the model, due to its coarse spatial resolution or the missing information in the initial/boundary conditions. The calibration will be carried out via state-of-the-art statistical methods (Non Homogeneous Nonlinear Regressions) and Machine-Learning-based techniques.

Referents: prof. Andrea Mazzino, andrea.mazzino@unige.it

Supporting company/firm: EGO Energy (https://ego.energy/en/)

Project: Effects of climate change on the morphodynamics of estuaries and tidal environments

Keywords: sea level rise, estuaries, saltmarshes, bifurcations

Brief Description: Concerns about climate change induced increasing sea level and flow discharge variability, particularly related with the ability of estuaries to maintain their intrinsic characteristics and of saltmarshes to maintain their elevation in the tidal frame, have deserved a considerable attention in the last years. One of the aims of this project is to study the effects of sea level rise and variability of flow discharge regimes on the stability of bifurcations by means of the formulation of a proper process-based numerical model. Moreover, as halophytic vegetation species control the dynamics of salt-marsh ecosystems while competing for habitat resources, the project wishes to analyze the effects of biogeomorphic interactions over saltmarshes by extending existing 1D eco-morphodynamic models to include interspecific competition among halophytic species and the role of benthic biofilms on bed erosion.

Referents: Nicoletta Tambroni (nicoletta.tambroni@unige.it), Michele Bolla Pittaluga (michele.bollapittaluga@unige.it)

Supporting company/firm: Hydrodata, Via Pomba 23, 10123 Torino, Italia

Project: Operational assessment and extreme events survivability for offshore plants and installations: developing guidelines and standards for the Mediterranean Sea

Keywords: Mediterranean Sea; Extreme Events; Storm; Offshore Design Rules; Offshore Wind, Wave, Solar Farms

Brief Description: Design criteria and guidelines for offshore structures and installations have been traditionally developed in a harsh and specific environment such of that of the North Sea. Nowadays the Green Deal and specific technologies, such as the floating offshore platforms, give a significant push to develop offshore installations, such as floating wind farms or multipurpose floating platforms (wind+wave+solar+acquacolture), even in significantly different environments, such as specifically the Mediterranean Sea. Development of such projects requires an update of reference guidelines and best practices (traditionally published by DNV) to a complete different climatic region with respect to the North Sea. The project has the scope to analyze ad-hoc developed metocean hindcast in order to develop a tailored guideline for the implementation of offshore projects in the Med Sea.

Referents: prof. Giovanni Besio, giovanni.besio@unige.it

Supporting company/firm: DNV - Energy Systems, Offshore & Mid/Downstream Section Southern Europe - Via Energy Park, 14, 20871 Vimercate MB

Project: *Hydrodynamic development and optimization of an electric flying vessel*

Keywords: Electric water vehicle on calm water bodies, flying vessel on foils, wave/noise/drag reduction

Brief Description: The project concerns the fluid-dynamic design of a new concept of electric propulsion boat, ideal for navigation in calm waters (lakes, canals, navigation within the Genoa breakwater, etc.). The boat is equipped with foils to rise above the surface of the water when the navigation speed is greater than about 8 knots. In such 'flight' conditions, friction is greatly reduced, as only one central torpedo-shaped body remains submerged (in addition to the foils). The foils are equipped with trim control flaps, and a large number of numerical simulations are needed to parametrically characterize forces and moments on all system components, in order to produce effective control laws for the 'flight' dynamics of the boat. The project has set itself the goal of reducing energy consumption (eliminating discharges into the atmosphere), and reducing the production of waves. The hull can also slide on two lateral axis systems, rising and lowering until eventually resting on the water on lateral movable mini-hulls, to allow full accessibility even to people with reduced mobility.

Advisors: Alessandro Bottaro (Alessandro.bottaro@unige.it), Joel Guerrero (joel.guerrero@unige.it)

Supporting company/firm: Gerrisboat srl, Via Moggia 75/C – 16033 Lavagna (GE)

Project: Sediment supply effect on deltas (Po River Delta)

Keywords: Morphodynamics, sediment transport, deltas, climate change, Po River

Brief Description: The PhD project will aim to enhance our capability to predict the long-term evolution of delta systems at the decadal scale and beyond. Human control on rivers, achieved by fragmenting the river courses through dams and channel diversions, has led to a dramatic decrease in the supply of coarse-grained material to the sea. Delta systems become, therefore, more vulnerable to the action of marine processes and flooding, leading to a generalized phase of delta erosion and retreat.In this project, we will examine in detail one such delta: the Po River delta. The project will take advantage on the availability of a state of the art hindcast rainfall dataset on the Po River Basin for the last 10 years (2011-2020) that will be employed to calibrate a hydrological model coupled with a morphodynamic model to evaluate sediment transport and deposition along the coast. The model will be used to test the sensitivity of this delicate environment to the influence of sediment loss upstream due to dams, rising sea level and coastal subsidence. The model will be also employed to determine how much these effects can be offset by improved sediment supply associated with river renaturalization measures (such as reactivation of abandoned channels). The project will also benefit from the new extensive bathymetric measurements along the Po River, that are planned to be collected at the beginning of 2022. Ultimately, the idea is to infer fundamental knowledge about the Po River basin and delta system, and then to draw conclusions that could be applied to river systems globally.

Referents: Michele Bolla Pittaluga (Michele.BollaPittaluga@unige.it), Nicoletta Tambroni (Nicoletta.Tambroni@unige.it) e Andrea Mazzino (Andrea.Mazzino@unige.it)

Supporting company/firm: RINA CONSULTING S.P.A.Via Cecchi, 16129 Genova

Project: Mitigation of slope erosion under solar photovoltaic (PV) plants

Keywords: Slope erosion, sediment transport mechanics, soil preservation, roughness

Brief Description: The installation of large scale solar PV plants results in extended areas where soil is exposed to weathering and can be easily eroded by water runoff even along slopes of modest steepness. Models that should predict the velocity of water and the shear stress acting on the slope surface are particularly sensitive to the roughness coefficients. Moreover, the erosion process is affected by environmental and climatic factors that are sharpened by the global climatic change. The reduction and the control of the runoff velocity would prevent environmental and economical disasters. Indeed, roughness elements suitably arranged along the slope could significantly reduce the susceptibility of solar PV plants' sites to erosion and preserve the surrounding habitats. The project is aimed at improving our knowledge on the effect of the arrangement, the shape and the size of roughness element on the runoff properties (velocity, shear stress) in order to support the development of practical solutions to mitigate the soil erosion in solar PV plants. The candidate will use HPC facilities to analyse big data by means of suitably developed parallel computing tools. The modelling is based on the results of micro-scale particle-resolved numerical simulations and of meso-scale large-eddy simulations.

Referent: Marco Mazzuoli

Supporting Company: ENEL Green Power

Project: Metocean hindcast in tropical systems (South Eastern Africa coast)

Keywords: Metocean, wind hindcast, wave hindcast, typhoons, climate change

Brief Description: The recent Sixth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) showed that the Indian Ocean is experiencing the world's fastest rate of ocean surface warming. A warmer sea means more heat for cyclones to draw energy from. It also means more moisture for cyclones to feed on. So warming seas allow for the genesis and maintenance of severe cyclonic storms. Particularly, along the South Eastern Africa coast it is projected an increase of average tropical cyclone wind speeds and associated heavy precipitation and of the proportion of category 4-5 tropical cyclones. Moreover, relative sea level has increased at a higher rate than global mean sea level around Africa over the last 3 decades and relative sea-level rise is likely to continue around Africa, contributing to increases in the frequency and severity of coastal flooding in low-lying areas to coastal erosion and along most sandy coasts. In this project, we will develop a state of the art metocean dataset over an area offshore the South Eastern Africa coast, covering Mozambique and Tanzania coasts. We will take advantage on the availability of high resolution wind dataset for the last 40 years (1980-2020) that will be coupled with a wave model to evaluate wind and wave climate along the coast. The model will be calibrated with observations available in the area and will be used for a wide range of purposes including renewable energy exploitation (wind and waves), hazard evaluations or coastal protection and restoration projects. Ultimately, the idea is to infer fundamental knowledge about coastal systems, and then to draw conclusions that could be applied to analogous systems globally.

Referents: Andrea Mazzino (Andrea.Mazzino@unige.it), Michele Bolla Pittaluga (Michele.BollaPittaluga@unige.it)

Supporting company/firm: PM_TEN srl Sede legale piazza della Vittoria 7/14 16121 Genova (GE)

Project: Low-carbon Earth-based Materials for Building Applications (LEMBA)

Keywords: Geotechnical Engineering, Material Engineering, Earth building, Sustainable construction

Brief Description: The building sector must significantly reduce the current exploitation of conventional energy and natural resources to ensure its long-term sustainability. The present project capitalizes on existing knowledge in the domains of soil mechanics and material engineering to develop earth-based construction materials stabilized by means of eco-friendly binders. This will contribute to curbing the use of traditional earth binders (e.g. cement and lime) that are widely employed within current engineering practice but exhibit high environmental impact. The novel earth-based materials developed during the present project are natural, and therefore widely available, exhibit low levels of embodied energy, are easily reusable after demolition and offer high levels of hygro-thermal inertia. They may therefore contribute to reducing the environmental impact of residential buildings while also benefitting traditional geotechnical design via application to ground consolidation, infrastructure embankments and retaining structures.

Referents: Domenico Gallipoli (domenico.gallipoli@unige.it) & Agostino Walter Bruno (email not yet available as this referent starts working at UNIGE on 1st October)

Supporting company/firm: ENVIROSOIL Remediation Ltd - Unit 3, The Old Dairy - Long Walk, Easton, Winchester, Hampshire, SO21 1DG, UNITED KINGDOM – https://www.envirosoil.org/

Project: Reduction of the environmental impacts of composite steel-concrete structures by enhancing structural efficiency and circularity

Keywords: design for disassembly, sustainable structures, composite steel-concrete structures, circularity, structural efficiency.

Brief Description: The aim of this research project is to develop design strategies to reduce the environmental impacts of composite steel-concrete structures. Based on life-cycle analysis, the research will be based on two complementary approaches:

- Enhancement of structural efficiency by both improving analytical models and building technology
- Enhancement of circularity by developing design-for-disassembly strategies

The first approach is oriented to reduce the quantity of material used in the building phase, while the second approach is oriented to reduce the environmental impacts of the end-of-life phase and to enhance the recyclability/reusability of materials and structures.
The efficiency of the proposed approaches will be assessed by evaluating and comparing the environmental footprint of different products/solutions in their life-cycle. The analysis will also keep into account social and economic issues.

Referents: Chiara Calderini (chiara.calderini@unige.it)

Supporting company/firm: Tecnostrutture s.r.l – Via Meucci 26, 30020 Noventa di Piave, Italy

Project: Risk quantification and damage mitigation of critical structures exposed to the action of extreme wind events

Keywords: Damage, Extreme wind events, Risk assessment, Structures, Wind engineering.

Brief Description: (max 10 lines)
The research project involves the study of extreme wind events caused by non-synoptic meteorological phenomena and their effect on structures.
The database of the European Severe Storm Laboratory (ESSL) documents over 1200 cases of structural damage and collapse due to extreme winds recorded in Italy in the last 3 years, almost 60,000 in Europe, with huge economic damage, situations of hardship and risk for people. Many of these are associated with thunderstorms, the intensity of which could increase in the coming years, due to global warming, leading to increasingly destructive events. The most vulnerable structures are light and flexible ones, such as poles and telecommunications towers, roofs, temporary structures and port infrastructures.
The present research project aims to provide a detailed characterization and separation of the extreme wind regimes, in order to develop innovative methods of risk quantification and damage mitigation of critical structures exposed to their action.

Referents: Federica Tubino (Federica.tubino@unige.it), Maria Pia Repetto (mariapia.repetto@unige.it)

Supporting company/firm: To be defined (from Cuba)

Project: Rainfall-induced landslide monitoring and modelling system for sustainable management of mountain and rural urbanized environments

Keywords: Landslide; monitoring; modelling; innovation; sustainability

Brief Description: The project concerns the mitigation of the landslide risk and the increase of the resilience of the territory through an innovative sustainable system for the monitoring, analysis and forecasting of landslides. The University of Genoa conceived and is still developing a system, named LAMP, for the analysis and forecast of landslides triggered by rainfalls. LAMP is based on a hydrological and geotechnical model, for whose feeding soil moisture sensors, in addition to temperature and rainfall data (observed by rain gauges or meteorological radar), are used. GPS receivers are arranged on the ground for the result validation. Maps of landslide susceptibility in the occurrence of measured or forecasted rainfalls are provided by LAMP. The PhD student's activity could focus on: calibration and testing of low-cost sensors; automatic integration of the monitoring data for feeding the hydrological-geotechnical model; implementation of an early-warning system by sharing acquired data and modelling results in real time with local land management technicians.

Referents: Rossella Bovolenta (rossella.bovolenta@unige.it) and Bianca Federici (bianca.federici@unige.it)

Supporting company: Gter srl Innovazione In Geomatica, Gnss e Gis- Via Jacopo Ruffini, 9/1A - 16128, Genova