



***CORSO DI DOTTORATO DI INGEGNERIA DELL'ENERGIA, DEI SISTEMI,  
DEL TERRITORIO E DELLE COSTRUZIONI***

***PHD PROGRAMME IN ENERGY, SYSTEMS, TERRITORY AND  
CONSTRUCTION ENGINEERING***

*Academic year 2022/2023 (38° Cycle)*

**Chairman:** Prof. Renato Iannelli

**Vice-Chairman:** Prof. Antonino Musolino

**Administrative manager:** Dr. Francesca Paola Magagnini

**Teaching & Learning manager** Dr. Francesca Lombardi (*ad interim*)

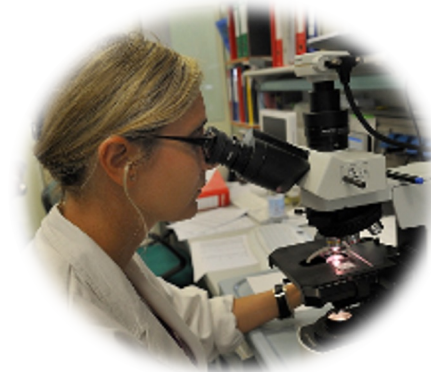


UNIVERSITÀ DI PISA



## Summary

- Training project and objectives of the DESTEC PhD Programme
- Employment opportunities
- Organization of studies and activities; study periods abroad and in private/public companies; internationalization
- How to enroll and available positions (free-themed grants, restricted-themed grants, positions without grants)
- Questions and answers



## Training project and objectives of the DESTEC PhD Programme

- The training project is aimed at training students to research activities of high qualification in the fields of Energy, Systems, Land and Construction Engineering
- The main goal is facing the complexities of an Engineering for Sustainable Development in innovative fields of great international relevance that require a multidisciplinary approach
- The covered topics are grouped into the following scientific sectors:
- **Energy engineering, Electrical Engineering, Economic and Management Engineering, Civil and Environmental Engineering, Architecture and Urban Planning**
- This multiplicity, combined with the variety of laboratories, ensures a stimulating study and research environment
- The programme offers several qualified opportunities for study periods abroad and/or in companies/enterprises

## Employment opportunities

- The employment and professional opportunities are those typical of the five Master's Degrees offered by the DESTEC Department:
- **Electrical Engineering; Energy Engineering; Economic and Management Engineering; Hydraulic, Transport and Land Engineering; Building Engineering and Architecture**
- The PhD course adds the highest qualification for scientific and technological research and development activities aimed at innovation in the industrial and civil fields
- The PhD Course exhibits numerous relationships with universities, research institutions and national/international companies and enterprises
- The course has also a significant attitude to attract national and international funding (as demonstrated by the high number of grants funded by companies and enterprises)
- All of this creates the conditions for employment opportunities in corporate environment and in public/private institutions where innovation is the main objective

## Generalities and useful info on the DESTEC PhD Programme

- The official languages of the DESTEC PhD Programme are English and Italian, but most of the scientific and teaching activities are performed in English. International candidates will feel comfortable in this PhD Course. The only language problem can arise from the administrative regulations which, in some cases, are only in Italian
- At the **Web-site of the DESTEC PhD Programme** (<https://www.destec.unipi.it/en/academics/phd-course>) you will find specific information and suggestions
- In particular, you will find the rules for the **teaching/learning program** (<https://www.destec.unipi.it/en/academics/phd-course/courses>) and the list of **seminars** organized by the DESTEC PhD program that our PhD students can freely attend (<https://www.destec.unipi.it/en/academics/phd-course/courses/internal-courses>) . Other teaching activities of general interest (**Didattica trasversale**) are organized by the University of Pisa specifically for all UniPI PhD students in Italian or in English (<https://phd.elearning.unipi.it/>)

## Description of the Call – Positions with/without grant available (1/2)

For the 38° cycle, the DESTEC PhD Programme offers a total of **20 positions with grant** and **5 positions without grant**. **Supernumerary admissions** are also possible following some rules (see art. 6 of the Call at [https://dottorato.unipi.it/images/stories/competition2022\\_2023/documents/bando38\\_eng.pdf](https://dottorato.unipi.it/images/stories/competition2022_2023/documents/bando38_eng.pdf))

**4 of the 20 positions with grant are free-themed:** the winner of each position will be assigned two supervisors. During the 1<sup>st</sup> year, the PhD student will define the main topic of his PhD course in agreement with his supervisors and the Board of Teachers

**The 5 positions without grant follow the same procedure to define the supervisors and the main PhD topic**

**16 of the 20 positions are covered by themed grants:** the doctorate topics are pre-defined by the funding company/institution. During the admission tests, each candidate will express his preferences. The Commission will assign a ranking of candidates to each grant, keeping into account the scores and the preferences expressed by each candidate that passed the test

## Description of the Call – Positions with/without grant available (2/2)

The call includes two selection procedures, with two different Selection tests and Selection Committees (see the annexes to the Call at <https://dottorato.unipi.it/index.php/en/application-process-for-the-academic-year-2022-20232/item/670.html>):

ING\_ENE01: this procedure will select the 9 unthemed positions  
(4 with grant and 5 without grant)

ING\_ENE02: this procedure will select the 16 themed positions

YOU HAVE TO CHOOSE THE PROCEDURE YOU WANT TO APPLY FOR

YOU CAN ALSO APPLY FOR BOTH THE PROCEDURES (the fees must be paid only once when applying for two or more procedures)

**Note: Since the themed grants are much more than the free-theme grants, please consider to apply for ING\_ENE02 (or for both procedures). It will be much easier to win a grant!**

## **THE ADMISSION EXAMS for ING\_ENE01 and ING\_ENE02**

The admission tests are pretty similar for the two selection procedures, but with an important difference: the written test, will be in presence at Pisa for ING\_ENE01, while it will be online with videoconference proctoring for ING\_ENE02

Both the selections will include the evaluation of the CV; a written test and an interview

*If you score at least 18/30 in all of the three stages, you will be included in the final ranking list*

*The available positions with or without grant will be assigned starting from the first in the final ranking list and continuing until covering all the available positions*

*If a candidate winner of a position subsequently waives it, the first candidate in the list which did not get a position will be offered the possibility to take over. This process will go on until covering all the available positions*



## **ING\_ENE01 selection procedure: it will include 3 evaluation stages:**

**1: Evaluation of the CV of the candidates:** *The Committee will assign a score from 1 (worse) to 30 (best). Candidates scoring at least 18 will be admitted to the written test. DO NOT FORGET TO INCLUDE ALL YOUR DATA IN YOUR CV! Double-check the suggested list of data in "Curriculum" at [https://dottorato.unipi.it/images/stories/competition2022\\_2023/concorsi\\_eng/ing\\_ene01\\_eng.pdf](https://dottorato.unipi.it/images/stories/competition2022_2023/concorsi_eng/ing_ene01_eng.pdf)*

**2: Written test:** *The Committee will assign a score from 1 (worse) to 30 (best). Candidates scoring at least 18 will be admitted to the interview. The written test will be performed in Pisa, **Room Idr1**, via C.F. Gabba 22 on **Monday, 5 September 2022 at 9.00**. It will last 4 hours and will include one or more questions to answer. Each candidate will choose the question to answer within a list covering all the topics of the **DESTEC PhD Programme**. You can find a list of the questions assigned in the last years at <https://dottorato.unipi.it/index.php/it/selezioni/Prove-di-ammissione/it/concorsi-d-ammissione-a-a-2022-2023.html>*

**3: Interview:** *The Committee will assign a score from 1 (worse) to 30 (best). Candidates scoring at least 18 will be included in the final rank list. The oral test will be in Pisa, **Room Idr1**, via C.F. Gabba 22 on **Monday, 12 September 2022 at 9.00**. Candidates can ask to perform the interview in videoconference*

## **ING\_ENE02 selection procedure: it will include 3 evaluation stages:**

**1: Evaluation of the CV:** The Committee will assign a score from 1 (worse) to 30 (best). Candidates scoring at least 18 will be admitted to the written test. **DO NOT FORGET TO INCLUDE ALL YOUR DATA IN YOUR CV!** Double-check the suggested list of data in "Curriculum" at [https://dottorato.unipi.it/images/stories/competition2022\\_2023/concorsi\\_eng/ing\\_ene02\\_eng.pdf](https://dottorato.unipi.it/images/stories/competition2022_2023/concorsi_eng/ing_ene02_eng.pdf)

**2: Written test:** The Committee will assign a score from 1 (worse) to 30 (best). Candidates scoring at least 18 will be admitted to the interview. **The written test will be done on elearn.unipi.it with MS Teams proctoring on Tuesday, 6 September 2022 at 9.00. It will last 1 hour and will include one or more questions to answer. Each candidate will choose the questions to answer within a list covering all the topics of the themed grants to be assigned.** Questions assigned in the last years are available at <https://dottorato.unipi.it/index.php/it/selezioni/Prove-di-ammissione/it/concorsi-d-ammissione-a-a-2022-2023.html>

**3: Interview:** The Committee will assign a score from 1 (worse) to 30 (best). Candidates scoring at least 18 will be included in the final rank list of each grant. The interview will be performed (at choice of each candidate) online or in Pisa, Room Idr1, via C.F. Gabba 22 on **Tuesday, 13 September 2022 at 9.00**

## **Themed grants funded or co-funded by private/public companies or enterprises**

For the 38° cycle, the DESTEC PhD Programme offers the following 16 themed grants (1/2):

1. Water purification and carbonation systems for domestic use
2. Artificial intelligence systems aimed at saving energy in small drinking water production machines
3. Efficient and environmentally friendly technologies for the manufacture of small refrigeration machines
4. Analysis of training supply and demand in Italian universities, using Artificial Intelligence tools
5. Static converters with innovative control structures and logics for advanced industrial drives and generation and storage systems
6. Study of the process of the Aquarno industrial WWTP to improve the characteristics of the effluent and optimize the balance of energy and matter
7. Technical-economic optimization of aggregates of prosumers and renewable decentralized flexibility resources
8. Development of new containment systems for alternative fuels in marine applications

## **Themed grants funded or co-funded by private/public companies/enterprises**

For the 38° cycle, the DESTEC PhD Programme offers the following 16 themed grants (2/2):

9. Numerical / experimental analysis of the behavior of modern ICMs fed with renewable fuels
10. Development of models and innovative technologies for the evaluation and monitoring of performance of alkaline electrolyzers
11. Advanced Process Analytics for Smart Manufacturing
12. Integrated planning of multi-energy systems
13. Development of embedded sensors for electric motors applications based on wireless data transmission
14. Study of high torque density brushless motors: electromechanical design and control algorithms
15. Innovative electrical machines without the use of rare earths: electromechanical design and control algorithms
16. Development of Natural Language Processing tools for the automatic mapping of technologies and skills from corporate documentation

- 1. Water purification and carbonation systems for domestic use**
- 2. Artificial intelligence systems aimed at saving energy in small drinking water production machines**
- 3. Efficient and environmentally friendly technologies for the manufacture of small refrigeration machines**

Reference person: **Prof. Paolo Di Marco** [paolo.dimarco@unipi.it](mailto:paolo.dimarco@unipi.it)

Funding institution: **DRINKSTATION, Inc.** (subsidiary of PepsiCo, Inc.)

1605 Lockness Place, Los Angeles, California 90501, USA

[www.drinkstation.com](http://www.drinkstation.com)

*These grants offer the opportunity to study and develop three innovative topics in the field of small drinking water production machines. Periods of study/research abroad and/or in the funding company are not mandatorily foreseen but are possible and promoted by the funding company.*

## **4. Analysis of training supply and demand in Italian universities, using Artificial Intelligence tools**

Reference persons: **Prof. Antonella Martini** [antonella.martini@unipi.it](mailto:antonella.martini@unipi.it);  
**Prof Rocco Rizzo** [rocco.rizzo@unipi.it](mailto:rocco.rizzo@unipi.it)

Funding institution: **Italian Ministry of University and Research (DM 351/2022)**

Sector: **Public administration**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

*This PhD project aims to use Natural Language Processing tool to analyze data from Universities (description of courses, syllabi, training objectives or course contents) and from the labour market (job posts, job profiles or curricula), to provide universities with tools to support educational design.*

*The research activity will be carried out within the multidisciplinary group B4DS - Business Engineering for Data Science (<http://b4ds.unipi.it/>), which coordinates 3 European projects on the subject of doctoral scholarship.*

## **5. Static converters with innovative control structures and logics for advanced industrial drives and generation and storage systems**

Reference persons: **Dr. Paolo Bolognesi** [paolo.bolognesi@unipi.it](mailto:paolo.bolognesi@unipi.it);

**Dr Luca Papini** [luca.papini@unipi.it](mailto:luca.papini@unipi.it)

Funding institutions: **Compolab s.r.l.; Ministry of University and Research (DM 352/2022)**

Sector: **Qualified engineering services mainly for industry**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

*Compolab ([www.compolab.it](http://www.compolab.it)) provides qualified and customized engineering services to a diversified but mostly industrial customer base, using intelligent processes based on the most advanced technologies and a constant drive for innovation to optimize the product time-to-market. Operation fields: CAD and electronic/electrical design and construction, software development, testing activities, industrial automation and robotization, engineering and construction of test benches, special equipment and prototyping, additive printing on metals and polymers. It develops CAE simulation and calculation, thermo-structural FEM analysis for combustion chambers in gas turbines, design of composite structures for biomedical, automotive, aeronautical and railway applications, for structures installed in submarine naval environment.*

## **6. Study of the process of the Aquarno industrial WWTP to improve effluent characteristics and optimize the balance of energy and matter**

Reference person: **Prof. Renato Iannelli** [renato.iannelli@unipi.it](mailto:renato.iannelli@unipi.it);

Funding institutions: **Consorzio Aquarno s.p.a.; Min. of University & Research (DM 352/'22)**

Sector: **Wastewater treatment in the tannery sector**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

*Within the topics of the DESTEC PhD Programme, this training project focuses on the study of the chemical-physical-biological treatment of Cr-tanning wastewater to develop and evaluate, at lab and pilot scale, possible innovative alternative treatments to remove sulphides and non-biodegradable COD without increasing wastewater salinity. The objective is also to optimize, within these constraints, the mass and energy balances also of potentially reusable by-products within the life cycle of the product "treated wastewater". The R&D activities of Aquarno s.p.a.*

*([www.depuratoareaquarno.it](http://www.depuratoareaquarno.it)) point at the innovation in treating wastewater and liquid waste produced by the associated companies belonging to the tanning district of Santa Croce sull'Arno (Pisa). They can count on a well-equipped chemical and biological laboratory, and several pilot plants built in cooperation with research institutions and universities.*



## **7. Technical-economic optimization of aggregates of prosumers and renewable decentralized flexibility resources**

Reference person: **Prof. Davide Poli** [davide.poli@unipi.it](mailto:davide.poli@unipi.it);

Funding institutions: **Engreen s.r.l.; Min. of University & Research (DM 352/'22)**

Sector: **Integration of distributed renewable systems in the electricity system**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

*EnGreen ([www.engreen.eu](http://www.engreen.eu)) is an engineering consultancy registered since 2019 as an innovative startup, with a solid background and academic experience in international cooperation for electrification via mini-grids in developing countries. The company is also active in the design and installation of renewable energy systems and energy efficiency. Its R&D dept. focuses on improving models and practices for off-grid systems, mainly for load estimation of greenfield communities.*

*The Company believes in the continuity between Community self-consumption and optimal integration of renewable systems distributed within the Italian electricity system, and leverages on specific, not only technical skills such as direct involvement of communities in the energy supply chain, evaluation of social aspects and impact assessment, among others.*

## **8. Development of new containment systems for alternative fuels in marine applications**

Reference persons: **Prof. Umberto Desideri** [umberto.desideri@unipi.it](mailto:umberto.desideri@unipi.it);  
**Prof. Lorenzo Ferrari** [lorenzo.ferrari@unipi.it](mailto:lorenzo.ferrari@unipi.it)

Funding institutions: **Gas & Heat s.p.a.; Min. of University & Research (DM 352/'22)**

Sector: **Design/construction of tanks and fuel systems for naval transport and coastal of fuel deposits, including cryogenic fuels**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

*Gas and Heat s.p.a. ([www.gasandheat.it](http://www.gasandheat.it)) is a leading company in the design, construction, supply and installation of cargo systems for gas carriers dedicated to shipping transport of liquefied gases, in three commercial grades defined as LPG (Fully Press, Semi Ref, Fully Ref), or cargoes shipped at  $-48^{\circ}\text{C}$ ; ETHYLENE or cargoes shipped at  $104^{\circ}\text{C}$ ; LNG, or cargoes shipped at  $-162^{\circ}\text{C}$ . Its R&D Dept. is mainly active in development of Plants for containment and evaporation of LNG; Small-medium size gas tankers for LNG transportation; Bunker vessel for LNG/ marine diesel; Small size land-based LNG storage plant.*

## **9. Numerical/experimental analysis of the behavior of modern ICMs fed with renewable fuels**

Reference person: **Prof. Marco Antonelli** [marco.antonelli@unipi.it](mailto:marco.antonelli@unipi.it);

Funding institutions: **Marmotors s.r.l.; Min. of University & Research (DM 352/'22)**

Sector: **Research in high-efficiency internal combustion engines**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

*Marmotors s.r.l. ([www.rpm-italia.org](http://www.rpm-italia.org)) carries out research and development in the field of high efficiency internal combustion engines using also renewable fuels, for both vehicular propulsion and stationary generation.*

*The Vision is to establish an influential business network with global reach for Italian SMEs working in motorsport promoting and enhancing Made in Italy engineering excellence.*

*The Mission is to promote trade between member firms, help create new trade for member firms both nationally and internationally, help member firms diversify into new sectors, create an influential voice for Italian motorsport SMEs on the national and global stage.*

## **10. Development of models and innovative technologies for the evaluation and monitoring of performance of alkaline electrolyzers**

Reference persons: **Prof. Umberto Desideri** [umberto.desideri@unipi.it](mailto:umberto.desideri@unipi.it);

**Prof. Lorenzo Ferrari** [lorenzo.ferrari@unipi.it](mailto:lorenzo.ferrari@unipi.it)

Funding institutions: **McPhy Energy Italia s.r.l.**; **Min. of University & Research (DM 352/'22)**

Sector: **Design and management of hydrogen production and distribution equipment**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

***McPhy Energia Italia ([mcphy.com](http://mcphy.com)). McPhy operates in the field of hydrogen production and distribution equipment and contributes to the worldwide spread of zero-carbon hydrogen for the energy transition and the achievement of a "Net Zero" society. McPhy operates in the design, manufacture and integration of alkaline pressurization electrolyzers and hydrogen stations. The Group has extensive experience in project engineering and project management. With 5 development, engineering and manufacturing centers in France, Italy and Germany, McPhy can rely on a solid and evolving European industrial base. The local commercial teams are rooted in their national and regional ecosystems, to ensure the large-scale deployment of hydrogen as a key link in the global path towards carbon neutrality.***

## **11. Advanced Process Analytics for Smart Manufacturing**

Reference persons: **Prof. Davide Aloini** [davide.aloini@unipi.it](mailto:davide.aloini@unipi.it);

**Prof. Valeria Mininno** [valeria.mininno@unipi.it](mailto:valeria.mininno@unipi.it)

Funding institutions: **Nexman s.r.l.; Min. of University & Research (DM 352/'22)**

Sector: **Management and integration of human/machine communication**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

*Nexman (Next Manufacturing, [www.nexman.it](http://www.nexman.it)) help manufacturing companies to innovate the production process through the management and integration of communication between man and machine (IoT: internet of things). The company deals directly with the programming of collaborative robots and carries out Machine learning and predictive maintenance projects. Among others, their R&D activities include: ① IoT solutions for MES (Manufacturing Execution System) and MOM (Manufacturing Operation Management) to support the complete digitalization of business operation; ② Industrial Analytics for integrated production management, automatic performance monitoring, predictive maintenance, etc; ③ Cobots or collaborative robotic solutions to support operations.*

## **12. Integrated planning of multi-energy systems**

Reference persons: **Prof. Umberto Desideri** [umberto.desideri@unipi.it](mailto:umberto.desideri@unipi.it);  
**Dr. Aldo Bischi** [aldo.bischi@unipi.it](mailto:aldo.bischi@unipi.it)

Funding institutions: **Optit s.r.l.**; **Min. of University & Research (DM 352/'22)**

Sector: **Solutions and support services based on mathematical and heuristic modeling, data-driven models and advanced analytics**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

***Optit ([www.optit.net](http://www.optit.net)), a spin-off of the Alma Mater University of Bologna, operates since 2007 in the development of decision support solutions and services (DSS) based on mathematical and heuristic modeling, data-driven models and advanced analytics. Optit covers almost all the investment costs in new technologies, new business models and entry into new markets. The company dedicates about 20% of turnover and 24% of its workforce to R&D and Innovation projects, through internal investment orders aimed at both the conception and exploration of new approaches to business problems, their prototyping and development of solutions or upgrades of existing solutions to build a distinctive offer portfolio.***

## **13. Development of embedded sensors for electric motors applications based on wireless data transmission**

Reference person: **Prof. Sami Barmada** [sami.barmada@unipi.it](mailto:sami.barmada@unipi.it);

Funding institutions: **Util Industries s.p.a.; Min. of University & Research (DM 352/'22)**

Sector: **Fine blanking of steel, aluminium and alloys components for automotive applications**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

*UTIL s.p.a. ([utilgroup.com](http://utilgroup.com)) operates in the technological sector of Fine Blanking for metal components in steel, aluminum and other alloys. The metal components produced is used in various industrial sectors including Automotive, Construction, Earthmoving Machinery, two-wheeled vehicles and others*

*UTIL's research and development activities are diversified between Advanced Production Technologies, Molding Technologies and Metallurgy, Mechatronics and Sensors.*

*An important area of R&D that is being developed is that of optimizing the production of components for electric motors for traction and drive and the possibilities of instrumenting series production of these components.*

## **14. Study of high torque density brushless motors: electromechanical design and control algorithms**

Reference person: **Prof. Antonino Musolino** [antonino.musolino@unipi.it](mailto:antonino.musolino@unipi.it);

Funding institutions: **Vitesco Technol. Italy s.r.l.; Min. of University & Research (DM 352/'22)**

Sector: **Vehicle propulsion systems (electric drives, electronic control systems, sensors, actuators, exhaust gas cleaning)**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

*Vitesco Technologies ([www.vitesco-technologies.com](http://www.vitesco-technologies.com)) integrate innovative and efficient propulsion systems for today and tomorrow and for vehicles of all kinds. With intelligent principles of scalability and modularity, they cover the requirements of cars, commercial vehicles and two-wheeled transport, as well as new mobility concepts. Thanks to intelligent systems and components for electric, hybrid and combustion engines, Vitesco Technologies make powertrains clean, efficient and affordable. The product portfolio includes electric drives, electronic control systems, sensors and actuators and innovative exhaust gas cleaning. They are now investing in R&D with the DESTEC PhD Programme with two available positions.*



## **15. Innovative electrical machines without the use of rare earths: electromechanical design and control algorithms**

Reference person: **Dr. Luca Sani** [luca.sani@unipi.it](mailto:luca.sani@unipi.it);

Funding institutions: **Vitesco Technol. Italy s.r.l.; Min. of University & Research (DM 352/'22)**

Sector: **Vehicle propulsion systems (electric drives, electronic control systems, sensors, actuators, exhaust gas cleaning)**

Mandatory study/research periods in companies or research centers: **from 6 to 12 months**

Mandatory study/research periods abroad: **from 6 to 18 months**

*Vitesco Technologies ([www.vitesco-technologies.com](http://www.vitesco-technologies.com)) integrate innovative and efficient propulsion systems for today and tomorrow and for vehicles of all kinds. With intelligent principles of scalability and modularity, they cover the requirements of cars, commercial vehicles and two-wheeled transport, as well as new mobility concepts. Thanks to intelligent systems and components for electric, hybrid and combustion engines, Vitesco Technologies make powertrains clean, efficient and affordable. The product portfolio includes electric drives, electronic control systems, sensors and actuators and innovative exhaust gas cleaning. They are now investing in R&D with the DESTEC PhD Programme with two available positions.*

## **16. Development of Natural Language Processing tools for the automatic mapping of technologies and skills from corporate documentation**

Reference person: **Prof. Andrea Bonaccorsi** [andrea.bonaccorsi@unipi.it](mailto:andrea.bonaccorsi@unipi.it);

Funding institutions: **Leonardo s.p.a.**

Sector: **Defence, aerospace and security**

*The training project is centered on the design and implementation of training activities in emerging technological fields for the up-skilling and re-skilling of current and future workers in reference to digital transformation. The contents of the Training Courses and the methods based on the use of digital tools will be investigated, answering the research question: "how to teach and learn new digital content using the typical tools of the Fourth Industrial Revolution?", in order to design and implement new training activities. The recipients of these activities will be workers in the field of Defense and related sectors present in the territory of Basso-Sangro-Trigno, and students of Technical Institutes and Universities in the engineering field, which can be used in the industrial environment.*

*The achievement of this goal seems desirable thanks to the presence on the territory of Leonardo S.p.A. ([www.leonardo.com](http://www.leonardo.com)), an Italian company active in the Defense, Aerospace and Security sectors, with over 40 divisions distributed throughout the national territory. The Cyber Security Division of Chieti will participate in the research as an Industrial Partner and will benefit from training activities.*

## QUESTIONS AND ANSWERS

I am available to answer you questions, now or later by email ([renato.iannelli@unipi.it](mailto:renato.iannelli@unipi.it)).

For details on the themed grants, please contact directly the reference persons (their email addresses are in the specific forms above)

**THANK YOU FOR YOUR ATTENTION  
AND SEE YOU AT THE DESTEC PhD PROGRAMME!**