



## EUROPEAN DOCTORAL NETWORK

### GUIDE FOR APPLICANTS (GfA)

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## 1. Project overview

DENSE (Dependable Smart Energy Systems) is a 4-year Marie Skłodowska-Curie Actions-Doctoral Network (HORIZON-TMA-MSCA-DN) funded within the framework of the HORIZON EUROPE Programme. It brings together 10 partners from applied research, academia and industry in 6 different countries with the aim of implementing 12 doctoral research projects.

DENSE is addressing individual research projects and training of early-stage researchers in the innovative dependable engineering of Smart Energy Systems (SEs) with the main focus on robustness as well as preventive and corrective actions under uncertainty. Dependability of complex networks, such as SEs, characterizes their ability to deliver service that can justifiably be trusted. Thus, dependability comprises system attributes, such as availability, reliability, safety, integrity and maintainability. A key requirement of dependability is the desire for providing justifiable trust in the system performance. Hence, rigorous systems engineering yielding provable performance guarantees throughout the system's life time is already required at the design stage. This challenge is tackled in DENSE, through 12 cutting edge research and training projects at doctoral level (<https://www.dense-dn.eu/recruitment/>) with a focus on operational robustness as well as preventive and corrective actions in SEs. These research projects span many disciplines, including *energy engineering, electrical engineering, thermal engineering, control engineering, computer science, data science, and mathematics*.

## 2. Call for recruitment planning

The DENSE project started on the 1<sup>st</sup> of January 2024 and will last 48 months. A Call for recruitment for selecting the 12 international Doctoral Candidates (DC) is opening the **23<sup>rd</sup> of February 2023**, with an application deadline of the **31<sup>st</sup> of March 2024** (5 pm CET). The call planning is detailed in the table below:

Activity	Dates
Call opening	23/02/2024
Call closing	31/03/2024 (5pm CET)
Eligibility check of candidates and organisation of evaluation panels	By 02/04/2024 2024
Evaluation	April
Short list and invitation for interviews	Beginning of May
Interviews	From 13/05/2024 to 17/05/2024
Final ranking list	21/05/2024
Offer of contract/enrolment	By the end of May 20224
Duration of each fellowship	36 months

## 3. Eligibility criteria – Who can apply

The DENSE consortium invites applications of highly-motivated, outstanding candidates, of any nationality, age and gender that respect all the following eligibility rules at the date of the Call deadline:

<b>1.MSCA Eligibility requirements</b>	<p>Applicants must satisfy the MSCA definition of Doctoral Candidates (DC):</p> <p>The applicants should not be in possession of a doctoral degree at the time of the call deadline.</p> <p>Candidates who have successfully defended their PhD thesis but have not received their degree will not be accepted.</p>
<b>2.MSCA Mobility requirements</b>	<p>Applicants must not have lived or carried out their main activity in their main host and recruiting country for more than 12 months in the past 3 years immediately prior to the Call deadline.</p>



<b>3.DENSE Academic qualifications</b>	<p>Applicants must hold a relevant Master degree or equivalent at the time of the application. The educational background should fit with the required skills announced for each DC.</p> <p>Exception: In case a candidate has not obtained yet their Master’s degree at the Call closing date (by the 31st of March 2024), they can nevertheless apply. If a candidate is then part of the final ranking list and to be selected for one of the DENSE positions, before being offered a contract of employment he/she will be required to send to provide the Master’s degree certificate (or, alternatively, a formal preliminary certificate) before the starting date of the employment contract (July-September 2024).</p>
<b>4.DENSE Proof of English</b>	<p>Very good knowledge of English (speaking and writing) is expected.</p> <p><b>For DCs 3, 6, 7, 8, and 10</b>, students need to meet the requirement of the institutions of enrolment. Language requirements details must be checked on the DC descriptions.</p>

To be considered eligible:

- The complete application pack is received by the Call deadline date and timing.
- The application pack is submitted with all the requested documents and templates.
- It is a strict admissible condition for applicants to use the template application documents (CV, references and motivation letter) easily accessible in Word format below from <https://www.dense-dn.eu/recruitment/>. Applications submitted without using the due applications documents will be deemed as ineligible.

#### 4. List of the research and training projects

Here below is the list of the **12 doctoral courses** on offer:

<b>DC1: Hierarchical coordinated operation control of integrated electric-gas systems</b>	
<b>Recruiting Organisation</b>	Fraunhofer Research Institution for Energy Infrastructures and Geothermal Systems IEG
<b>Supervisors</b>	Johannes Schiffer, Anton Plietzsch
<b>DC2: Robust procedures for state estimation of uncertain systems with disturbances attenuation</b>	
<b>Recruiting Organisation</b>	TU Ilmenau
<b>Supervisors</b>	Johan Reger
<b>DC3: Data-driven decentralised control design in active distribution grids</b>	
<b>Recruiting Organisation</b>	Cyprus University of Technology
<b>Supervisors</b>	Petros Aristidou
<b>DC4: Smart adaptive control scheme for a multi-sources energy system</b>	
<b>Recruiting Organisation</b>	Ecole Centrale de Nantes
<b>Supervisors</b>	Franck Plestan
<b>DC5: Fault detection and diagnostics in large-scale heat pump systems</b>	
<b>Recruiting Organisation</b>	Fraunhofer Research Institution for Energy Infrastructures and Geothermal Systems IEG
<b>Supervisors</b>	Shahin Jamali
<b>DC6: Optimal operation of electric vehicles and heat pumps in active distribution grids</b>	
<b>Recruiting Organisation</b>	Electricity Authority of Cyprus (EAC)
<b>Supervisors</b>	Chrysovalantis Spanias
<b>DC7: Robust and optimal planning of district heating networks for next-generation energy systems</b>	
<b>Recruiting Organisation</b>	VITO
<b>Supervisors</b>	Robbe Salenbien, Maarten Blommaert



<b>DC8: Advanced control for highly energy-efficient buildings and neighborhoods</b>	
<b>Recruiting Organisation</b>	The University of Manchester
<b>Supervisors</b>	Alessandra Parisio
<b>DC9: Stable and scalable control algorithms for managing energy flexibility in thermal networks</b>	
<b>Recruiting Organisation</b>	VITO
<b>Supervisors</b>	Tijs Van Oevelen
<b>DC10: Optimization of costs and availability of green hydrogen production</b>	
<b>Recruiting Organisation</b>	Enertrag
<b>Supervisors</b>	Felix Bübl, Thomas Frenzel
<b>DC11: Machine learning with government operated environmental information systems to provide databases for automated emissions accounting</b>	
<b>Recruiting Organisation</b>	Enersis
<b>Supervisors</b>	Christian Thomann
<b>DC12: Smart control and grid integration of floating wind turbines</b>	
<b>Recruiting Organisation</b>	Ecole Centrale de Nantes
<b>Supervisors</b>	Mohamed Hamida

An overview of each research and training project on offer is available at: <https://www.dense-dn.eu/recruitment/> and in the **Annex of the Call for Applicants**. Full details are given about the research area, the training, the required skills and the expected results. Please read carefully the description of the projects and be sure that you meet the required skills.

## 5. Evaluation and selection procedure

DENSE consortium sets up a central recruitment for the first and second round of recruitment, with the aim to ensure an open, transparent, impartial and equitable process in line with [European Charter and Code for the recruitment of researchers](#). Indeed, by centralizing the process, the consortium ensured all candidates would be evaluated through the same criteria and with the same methods and documents. Beyond the application phase, the candidates will be informed all along the selection and recruitment process as illustrated below:

<b>Phase of the selection/recruitment procedure</b>	<b>Information provided to the candidates</b>
<b>Eligibility check</b>	After the Call deadline all submitted applications will be checked for eligibility. <b>Complete applications must have the online application form duly filled in and submitted together with the required application documents using the provided document templates.</b> If the application is complete, and has all the requested template application documents, then it will be evaluated. Ineligible applicants will be notified by the project manager (PM).
<b>Stage 1: evaluation based on the application files</b>	The eligible applications will go forward to the project specific Selection Committee (SC). Scores will be given for each candidate by the SC. Applicants scoring more than 75% will be part of a first ranking list and invited to the web interview (Stage 2).
<b>Stage 2: interviews</b>	All interviews will be conducted in English and the interview panel will be made up of at least 3 people. The interviews will be designed to explore the candidates' achievements, motivation, main research interests and knowledge and experience in the field of their chosen project. All interviews will follow the same format, with all candidates first giving a brief 5-minute presentation on their achievements and rationale behind the project choice, followed by a series of questions, with each candidate being asked the same questions. Interviews will be carried out via video/web conferencing. Each evaluation committee will develop a final report with reviews and scores (for each candidate) and will



	send it to the SC. Applicants that score minimum of 75% will be eligible for consideration. If multiple candidates with comparable scores are retained, a second interview and/or task can be organized for the remaining candidates.
<b>Offer of contract</b>	Applicants are ranked according to their final score, and the top candidates for each DC will be offered a contract. There will be a <b>reserve list of candidates</b> , if the top ranked applicant refuses the funding offer, then the next candidate from the reserve list of that project will be offered a contract.

The evaluation criteria for stages 1 and 2 are described in the table below. They are refined and converted into an evaluation form during the first phase of call by the RB.

**The redress procedure:** For each stage, the applicants have the possibility to request for redress no later than 2 weeks after email notification of rejection of their application. The request can be done by email after each stage of the selection process. The Selection Committee sends to the applicant an Evaluation Summary Report. The processing of the requests for redress only deals with procedural aspects of the selection process, also meaning that the scientific evaluation shall not be questioned.

## 6. Evaluation criteria

<b>Evaluation criteria in Stage 1 – Candidates’ application files</b>	<b>Scores</b>
1: Academic background and excellence of the applicant: (a) Originality of appropriation of the research, clarity of the objectives, (b) Research experience, (c) Education, qualifications, academic marks	max = 35
2: Strength and relevance of the topic: (a) Feasibility within 3 years based on former experience, (b) Capacity to carry out the project and preliminary career plan, (c) Communication and Dissemination plan	max = 35
3: Professional references: (a) Ability to work independently, (b) Quality of previous work performed and scientific curiosity, (c) Soft skills	max = 15
4: Career development of the applicant: (a) Past and planned diversity of research agenda, (b) Past and planned international experience, (c) Past and planned non-academic experience	max = 15
<i>Rejection under 75/100 threshold. In case of equality, criteria 1 will prevail on criteria 2, then criteria 3 and then 4.</i>	<b>Total = 100</b>
<b>Evaluation criteria in Stage 2 – Interviews</b>	<b>Scores</b>
1: Academic Excellence & Motivation: (a) Qualification, coherence of the resume, (b) Knowledge of the state of the art of the topic, match between candidate’s profile and PhD topic, (c) Personal, professional and scientific motivation	max = 40
2: Appropriation of the PhD project: (a) Explanation of the problem and hypotheses, (b) Description of the objectives and methodology, (c) Feasibility (scientific agenda, dissemination plan)	max = 35
3: Communication skills and maturity of the applicant (a) Quality and clarity of the presentation, (b) Quality of answers given to reviewers’ question, (c) Fluency in English	max = 25
<i>Rejection under 75/100 threshold. In case of equality, criteria 1 will prevail on criteria 2, then criteria 3. In case of equality, the score in the 1st stage will prevail.</i>	<b>Total = 100</b>

## 7. How to submit your application

Applications need to be submitted through the email address [recruitment-dense@ec-nantes.fr](mailto:recruitment-dense@ec-nantes.fr), by the given deadline. In order to be eligible, the online application form must be submitted together with a set of due application documents, each using the templates provided.



**! The email object and a SINGLE attached Pdf file containing all required documents (see Section 8 below) must include the specific DC code that you apply. Applications not meeting this condition will be automatically rejected.**

Example of email object: **[DC3] DENSE Application**

Example of Pdf file name: **DC3-DENSE Application-Family name.pdf**

## **8. Document to be submitted**

The applicant must provide the following documents:

- Applicant CV following the template
- Name and contact details of two referees
- Motivation letter following the template
- A scanned copy of the original Master degree with full transcripts. In case the master's degree has not been obtained at the Call closing date (by the 31st of March 2023), applicants must upload their BSc degree/diploma in English, and also upload the transcript of the exams sustained so far during their master course, with a clear indication of the conclusion of the studies
- English proficiency certificate is **compulsory for DCs 3, 6, 7, 8 and 10.**

