

Jobbnorge ID: 296048
Deadline: 20.03.2026
Website: <http://www.ntnu.no>
Scope: Fulltime
Duration: Temporary

The Department of Mechanical and Industrial Engineering has a vacancy for a

PhD Positions in Systems Engineering (Up to 5 positions)

This is NTNU

NTNU is a broad-based university with a technical-scientific profile and a focus in professional education. The university is located in three cities with headquarters in Trondheim.

At NTNU, 9,000 employees and 43,000 students work to create knowledge for a better world.

You will find more information about working at NTNU and the application process [here](#).

Video: <https://youtu.be/Xt-yHCN5QS0>

About the position

The Department of Mechanical and Industrial Engineering (MTP) at the Norwegian University of Science and Technology (NTNU) has five vacancies for PhD candidates within different disciplines of Systems Engineering/New Product Development, funded through the Centre for Research-based Innovation, [SFI-CELECT \(Research Centre for Effective Engineering and Learning in Complex Systems\)](#).

The positions are 3-year doctoral research fellowships starting in 2026. The PhD candidates will be embedded in the research activities of SFI-CELECT and will work closely with NTNU, University of South-Eastern Norway (USN), University of Agder (UiA), Technical University of Denmark (DTU), and leading industrial partners in the product manufacturing, defence and aerospace, and maritime sectors.

Your immediate leader will be the Head of Department.

About SFI CELECT—Centre for Effective Engineering and Learning in Complex Systems

[SFI-CELECT is a new Centre for Research-based Innovation \(SFI\)](#), starting 2026, funded by the Research Council of Norway and industrial partners and led by the University of South-Eastern Norway (USN) in close collaboration with NTNU and UiA, and a broad consortium of leading companies across industrial sectors. Through research on new methodologies for effective engineering and learning in complex systems, we aim to accelerate innovation and value creation in industry by developing better methods and smarter tools to do more with less—and faster. SFI-CELECT runs from 2026 to 2033 and is Norway's most ambitious long-term research initiatives within innovation in complex systems.

The primary objective of SFI-CELECT is to leap the innovation and product realization capabilities in some of Norway's leading industries by enhancing how new products are developed and managed. Operating within an integrated academic-industry ecosystem, SFI-CELECT will generate research-based methodologies, methods and tools for effective and efficient product innovation and realization, embracing the complexity and dynamics in today's business environments where digitalization and AI tools play an increasingly important role.

A key aim of CELECT is to establish an integrated academic-industry learning and educational ecosystem, where PhDs and researchers work together across disciplines to solve complex problems of high industrial importance using industry-as-a-laboratory as the research context.

Education and competence building are central pillars of CELECT. The centre will educate more than 30 PhD and postdoctoral researchers and over 120 MSc students, strengthening Norway's international position in new product innovation. Work location for the five positions posted herein is NTNU - Department of Mechanical and Industrial Engineering, Trondheim, Norway.

PhD position 1: Human-AI Decision-Support for Efficient Value Chains of Complex Products

The PhD will utilize and develop human-centric AI decision-support tools for analyzing and designing efficient and sustainable value streams across various complex industrial supply chains. The main focus is integrating product and process requirements/specifications, logistics resilience, and sustainability into a unified multidimensional modelling framework, with specific emphasis on synergies between defense, manufacturing, maritime and public sectors. The candidate will build and verify a digital decision-support platform, integrating simulation, optimization, and ethical AI for joint human-AI evaluation of supply chain and lifecycle trade-offs (e.g., defense supply resilience, maritime logistics sustainability, manufacturing flexibility, public procurement ethics).

The candidate will work in close collaboration with industrial partners and needs to be responsible for reporting progress and delivering outputs to the CELECT centre.

PhD position 2: Next generation knowledge management: Digital tools and organizational learning as complementary capabilities for effective product development

This PhD will research how new, enabling digital tools and digital threads can be effectively integrated into work flows in new product development (NPD) to provide a robust basis for organizational learning. The possibilities to acquire knowledge from inside and outside the organization for the design and development of new products have increased dramatically in recent years. Despite this shift, however, long-time established NPD methods that form the basis for company practices have virtually remained unchanged with their focus on building capabilities for inside knowledge transformation. In response, this PhD will research how organizations can sustain competitive advantage by leveraging organizational learning in today's digital NPD context, where project learning increasingly requires openness and rapid knowledge acquisition, often from outside the organization. Relevant research questions are: What are (the characteristic of) 'organizational learning' in today's digital era? How can it be reinforced? How can organizations effectively convert and manage knowledge acquired for decision support across NPD projects into improved capabilities for executing future projects and sustained competitive advantage?

PhD position 3: Knowledge-Based Development (KBD) for Instant Decision Support in digitally supported NPD processes

The aim of this PhD is to develop effective knowledge-based strategies for improved decision support in NPD processes. The PhD will develop, test and verify the next generation platform for improved decision support in NPD, bridging theory, practices, processes, people and digital tools, and equipping companies with the absorptive capability necessary to effectively navigate the increasing product-service lifecycle responsibility and complexity in various company-business contexts.

This position will complement PhD position 2 above, which focuses more on the organizational learning dimension, by primarily focusing on how NPD teams efficiently can acquire information and knowledge to support instant decision making in projects. Some main research questions: What are the main components of a knowledge-based development framework (where digital tools play an increasingly important role)? How can organizations enable interoperability between people, processes and IT/AI tools within such a framework? How do contextual factors play a role for implementation of such a framework? How can we balance between standardized core components and localized adaptations in companies operating globally?

PhD position 4: Strategies for leveraging cross-functional knowledge flows in digitally supported NPD processes

Since the outcome of NPD processes is not only the physical artifact but also the creation, recombination and transfer of knowledge, cross-functional knowledge flows are central to NPD effectiveness (quality of decisions and solutions) and efficiency (speed and 'first-time-right'). This PhD will research how such cross functional knowledge flows can be enabled and leveraged in contemporary NPD settings where collaboration is increasingly mediated by shared digital tools rather than co-located interaction. Accordingly, s/he will investigate how organizations can make NPD work processes more productive by better understanding where digital tools has their limitations and which countermeasures that can be established to improve interactions across functional boundaries to make work flows more tangible and transparent with regards to identifying waste sources and lack of value.

PhD position 5: Generative AI for Systematic Concept and Architecture Exploration in Early-stage Product- and System Design

Generative AI is emerging as a powerful enabler for systematic concept and architecture exploration in early-stage product design, where the ability to rapidly explore and structure large design spaces is critical. By supporting the formalization of requirements, the generation of diverse solution concepts, and the synthesis of alternative system architectures, generative AI has the potential to augment human designers' capacity to reason across functional boundaries and make informed trade-offs early in development. However, current applications remain largely ad-hoc, with limited integration into structured design processes and weak support for verification, traceability, and decision-making.

This PhD will investigate how generative AI can be methodically embedded as tools/methodologies into early-stage product and system design workflows to improve the breadth, quality, and transparency of concept and architecture exploration, while accounting for the limitations of digitally mediated design work.

The candidate will plan and conduct empirical studies and case-based research with research and industry partners, including mapping current practice, introducing method elements in real design projects, and evaluating effects on design quality, development speed, traceability, and robustness of decisions.

Required selection criteria

- You must have a relevant Master's degree in Mechanical Engineering, Manufacturing Engineering, Industrial Engineering, Management or related field of the actual PhD position. Your course of study must correspond to a five-year Norwegian course, where 120 credits have been obtained at master's level.
- You must have a strong academic background from your previous studies and have an average grade from your Master's degree study, or equivalent education, which is equal to B or better compared to [NTNU's grading scale](#). If you do not have letter grades from previous studies, you must have an equally good academic foundation. If you have a weaker grade background, you maybe considered if you can document that you are particularly suitable for a PhD education.
- You must meet the requirements for admission to [the faculty's Doctoral Programme](#)
- Strong academic background relevant to the topic
- Good written and oral English skills
- You must meet the requirements to obtain NATO security clearance for access to the facilities of the partner companies
- The hiring of each PhD candidate must be approved by the board of SFI-CELECT
- The applicant must clearly indicate which position s/he is applying for

PLEASE NOTE: For detailed information about what the application must contain, see paragraph "About the application".

The appointment is to be made in accordance with [NTNUs guidelines for recruitment positions](#) and [Regulations for the degrees philosophiae doctor \(ph.d.\) and philosophiae doctor \(ph.d.\) in artistic development work at the Norwegian University of Science and Technology \(NTNU\)](#) for general criteria for the position.

Preferred selection criteria

- Knowledge in using G/AI/digital tools
- Competence in modelling and data programming
- Knowledge and skills in executing case and qualitative research studies
- General industrial work experience
- Experience from design/new product development/value chain/manufacturing as practitioner.
- International work experience
- Scandinavian language skills

Personal characteristics

To complete a doctoral degree (PhD), it is important that you are able to:

- Highly motivated
- Systematic and structured
- Able to work independently
- Curious and enthusiastic
- Strong ability to systematically carry out goal-oriented work
- Passion for interdisciplinary research
- Eager to learn and work in teams
- Good skills for sharing and communicating research results
- Strong interest in combining theory and practice using industry-as-laboratory approaches

Emphasis will be placed on personal qualities.

We offer

- Exciting and stimulating tasks in a strong international academic environment
- CELECT facilities, industrial network, a joint PhD environment and access to [PhD school Inrescos](#)
- Excellent research infrastructure (Experiments and modelling)
- Industry-as-laboratory possibilities
- An exciting job with an important [mission](#) in society
- Career guidance and [follow-up during the PhD period](#)
- [Working capital](#) that can be used to implement the project
- [Mentor programme](#) as a [new employee at NTNU](#)
- Favorable terms as a member of the [Norwegian Public Service Pension Fund \(SPK\)](#)
- Free Norwegian language training at a basic level ([A2](#)).

As a PhD Candidate at NTNU, you will have access to [employee benefits](#).

Diversity

Diversity is a strength, and at NTNU we aim to be an employer that reflects the diversity in society and that makes use of the potential of the population's collective skills. Our vision is [Knowledge for a better world](#) and [our values are creative, critical, constructive and respectful](#). We believe that an organization that is equal, diverse and gender-balanced is essential for us to achieve our goals.

We strive to attract employees with different skills, life experiences and perspectives to contribute to even better problem solving of our societal mission in research and education.

If you think this position is relevant and interesting, we encourage you to apply, regardless of gender, functional ability and cultural background, or whether you have been out of work for a period of time.

At NTNU we want to increase the proportion of women in scientific positions. We have a number of [measures](#) to promote equality.

Salary and conditions

In the position of PhD Candidate, code 1017, your gross salary will normally be NOK 550 800,-per annum depending on qualifications and seniority. A 2% statutory contribution to the State Pension Fund is deducted from the salary.

The employment period is 3 years.

For employment as a PhD Candidate, it is a prerequisite that you gain admission to [the PhD programme in Engineering](#) within three months of your employment contract start date, and that you participate in an organized doctoral programme through out the period of employment.

The position is conditional on external funding.

As an employee at NTNU, it is important that you keep yourself up to date with academic and organizational changes and adapt to them.

For the necessary professional and social interaction, it is a prerequisite that you are physically present and available to the institution on a daily basis.

The appointment is carried out in accordance with the principles of the [State Employees Act](#), and [Export control](#) (legislation that regulates the export of knowledge, technology and services). Candidates who, after assessment of the application and attachments, are considered to be in conflict with the criteria in the latter act, will not be able to be employed.

Please note that the person hired will work with critical infrastructure and areas affected by controls on the export of strategic goods, services and technology. Candidates who do not meet the requirements for the necessary security clearance, access clearance and authorization as described in the National Security Act, the Export Control Act and the Act on the Implementation of International Sanctions (Sanctions Act) cannot be considered (e.g. candidates from, among others, Russia, Iran, North Korea, China).

About the application

The attachments (including a description of your scientific work) must accompany the application as these documents form the basis of the application assessment. The documents must be in Norwegian/a Scandinavian language or English.

Please note: the application will only be assessed on the basis of the information we have received by the application deadline. Therefore, make sure that your application clearly shows how your skills and experience meet the criteria described above. The application and all attachments must be sent electronically via [Jobbnorge.no](#). If you are invited to an interview, you must bring certified copies of certificates and diplomas upon request.

The application must include:

- Which position(s) you are applying for
- Transcripts and diplomas for Bachelor's and Master's degrees
- CV
- Copy of Master's thesis. If you have recently submitted your Master's thesis, you can attach a draft of the thesis. Documentation of a completed Master's degree must be presented before taking up the position.
- Short letter of motivation (400 words/1 page)
- Possibly publications etc. other relevant research work
- Possibly certificates
- Names and contact information of three relevant referees

If all, or parts, of your education has been taken abroad, we also ask you to attach documentation of the scope and quality of your entire education, both Bachelor's and Master's education, in addition to other higher education. If your institution uses "diploma supplement" (normal for most European institutions), you must attach this. A description of the documentation required can also be found [here](#). If you already have a statement from [Norwegian Directorate for Higher Education and Skills \(HK-dir\)](#), please attach this as well.

Joint work will be considered. If it is difficult to identify your contribution to joint work, you must attach a brief description of your participation.

When assessing the best qualified, we emphasize necessary qualifications such as education, experience and personal suitability. Motivation for the position, ambitions, and potential for research will also count when assessing the candidates.

NTNU recognizes a wide range of academic contributions and has committed itself to [The San Francisco Declaration on Research Assessment](#) and [CoARA](#) (responsible assessment of research and recognition of a greater breadth of academic contributions in accordance with NTNU's social mission).

General information

A public list of applicants with name, age, job title and municipality of residence is prepared after the application deadline. If you wish to be exempt from entry on the public applicant list, this must be justified. Assessment will be made in accordance with [current legislation](#). You will be notified if the exemption is not granted.

If you think this position looks interesting and in line with your qualifications, you are welcome to apply.

If you have any questions about the positions, please contact:

Position 1: Professor Fabio Sgarbossa, e-mail: fabio.sgarbossa@ntnu.no.

Position 2-4: Professor Torgeir Welo, e-mail: torgeir.welo@ntnu.no

Position 5: Associate Professor Christer Elverum, e-mail: christer.elverum@ntnu.no.

If you have any questions about the recruitment process, please contact HR Senior Consultant Hedda Winnberg, e-mail: hedda.winnberg@ntnu.no.

Application deadline: 20.03.2026

For practical information about [working at NTNU](#), please visit [this webpage](#).

[The city of Trondheim](#) is a modern European city with a rich cultural scene. [Trondheim is the tech capital of Norway](#) with a population of 200,000. The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world. Professional subsidized day-care for children is easily available. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life and has low crime rates and clean air quality.

NTNU - knowledge for a better world

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The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

Department of Mechanical and Industrial Engineering

We educate graduates who can create new products, operate and maintain products, and manage projects. The Department has a variety of bachelor's and master's degree programmes. We conduct wide-ranging research in fields such as technology, energy, product quality and development, and productivity. [The Department of Mechanical and Industrial Engineering](#) is one of eight departments in [the Faculty of Engineering](#).

Additional information

Place of service:

Richard Birkelands vei 2B 7034 Trondheim (Trondheim Municipality)