

# Call for proposals: Industrial research internships

Opening date: September 2014

Call for proposals open on an on-going basis

**Memo:** The call for proposals is open to companies, competitiveness clusters and technical centres, and internally to the researchers from Tec 21 Laboratory of Excellence. Tec 21 is funding internship grants for students working on an industrial problem. The aim of the call is to bring the first elements of the answer – either technical or theoretical - to an industrial problem and raise the potential for further collaborations between the researchers from Tec 21 and the industry.

Tec 21 ([www.tec21.fr](http://www.tec21.fr)) gathers the scientific community of fluid and solid mechanics, bio mechanics and process engineering in Grenoble. Tec 21 is a Laboratoire d'Excellence co-financed by the French government as part of its "Investissements d'Avenir" program.

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## Context and objectives of the call

Tec 21 develops scientific tools and methods for the understanding and modelling of complex natural and industrial systems.

3 main research axis are considered:

- **Axis 1 : Coupling fluid and solid mechanics** for the study of the dynamic behaviour of materials,
- **Axis 2 : Coupling fluid mechanics and bio physico chemical phenomena** for the development of clean processes and technologies
- **Axe 3 : Soft matter physics and biomedical approaches**

In these research areas, Tec 21 finances fundamental research projects aiming to better understand the mechanisms involved in such complex systems, through the development of modelling and simulation tools relying on experimentations under controlled conditions.

Our research activity is closely related to 7 application areas depending on the studied objects or systems:

- **Environment:** sediment transport, geophysical flows, atmospheric transport, avalanches, mud flows...
- **Civil engineering:** behaviour of building materials, geomaterials and structures under various constraints...
- **Energy:** hydrodynamics, turbulent and multiphase flows, materials for the energy, biofuels, heat transfer...
- **Space and aeronautics:** injection, sprays et atomisation...
- **Process engineering:** separation, mixing and micromixing, rheology of complex fluids, phase change, heat transfer, ultrasound assisted processes, bioprocesses...
- **Biorefinery:** biomass processing and deconstruction, purification, functionalization, products and materials processing (composites, films, surfactants, biofuels, packaging...)
- **Health:** cell mechanics, adhesion, growth, differentiation, tissue mechanics, clotting, new biocompatible materials...

**The aim of the present call for proposal is to increase the contribution of our expertise and tools to technological innovation, through enabling projects with high application potential to benefit from the scientific backup of Tec 21 research groups and encourage longer term collaborations.**

Our approach lies on a long term experience of public private partnerships and a will to launch new research themes in relation to R&D that can benefit from the broad spectrum of scientific competences existing in our laboratories as well as in the education units active in Grenoble.

**The industrial research internships program intends to further connect the diversity of our expertise to the needs of industrial sectors using as a link the students currently under training to become the future engineers and R&D players.**



## Principle of the call for proposals

The present program follows the classical rules of our education units (engineer schools, masters...) for student internships.

**The specificity of the program lies in the type of projects to be funded, which must be related to R&D or industrial problems.** The internships will be co-supervised by one of Tec 21 scientific expert and a person from the private sector in charge of the project.

The present call covers the following type of projects:

1. Literature review or bibliography analysis on a specific problem
2. Theoretical calculations for the design of a new system or process
3. Design of a pilot experiment for a case study or the validation of a new concept
4. Construction and experimental study of a prototype
5. Metrology, measurements under controlled conditions
6. Testing and mechanical properties assessment of materials
7. Validation of the technical feasibility of a process,
8. Other problem requiring a technical or theoretical milestone prior to further developments

## Who can apply?

**A company**, wishing to address a specific problem directly related to one of its technology,

**A competitiveness cluster, a technical centre or a Federation of industries**, wishing to address a question of interest for a number of R&D players, or a broader problem of interest for a whole industrial sector,

## Project submission

The project holder sends a non-confidential description of the problem to be addressed under the form of a short document (1-3 pages max) stating:

- The technical background of the request



- The description of the problem to be addressed and its type (cf type of projects in the section above),
- The expected results and perspectives.

Tec 21 will evaluate the feasibility of dealing with the request considering its expertise, its scientific road-map, and the existence of an education program where the topic will be relevant.

In collaboration with the project holder, Tec 21 will build up a work plan to address the problem as part of a student internship to be co-supervised by a researcher from Tec 21 and the project holder. The internship proposal will be submitted to the appropriate educational institution.

## Financing

**The selected projects will be financed by Tec 21 under the form of an internship grant** covering the student's salary over the project span (from 3 to 6 months).

**All other costs incurred during the project are not eligible for funding by Tec 21.** The project holder will have to financially support the project-related costs (scientific expertise, operating costs, equipment or consumables).

## Carrying out of the projects

All projects will be carried out in one of our partner laboratories (<http://www.tec21.fr/about-us/internal-organization/partner-laboratories/>) and research platforms (<http://www.tec21.fr/applications/platforms/>).

The internships will be carried out according to the specificities of the educational institution awarding the diploma.

At the end of the project, a meeting is to be organised between the supervisors and the students to discuss the results and explore the opportunities for further development in collaboration.

## Schedule

Due to the important effort necessary to analyse the projects, particularly those coming from private partners and requiring the building up of a proposal by Tec 21 in tandem with the project holder, **the call for proposals is open on an on-going basis.**

The following dates are given for information purposes:



Submission of the internship proposals to the educational institutions: ideally  
September – November

Beginning of the training: February – March

Duration: 3-6 months



## Template for the proposals

*1 to 3 pages max*

Name of the project holder:

Email:

Phone #:

Position:

Organisation (Company):

Description of the industrial problem to be addressed:

- General background
- Technical background of the request
- Description of the problem to be addressed and its type (cf type of projects in the section above),
- Expected results and perspectives.

