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[Instituto de Engenharia Mecânica](#)

| Posted on: 15 September 2026

IDMEC is opening a call for Post-Doctoral Research Fellowships

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15 Sep 2026

Job Information

Organisation/Company	Instituto de Engenharia Mecânica
Research Field	Engineering » Mechanical engineering
Researcher Profile	Recognised Researcher (R2)
Positions	Postdoc Positions
Application Deadline	30 Sep 2026 - 18:00 (Europe/Lisbon)
Country	Portugal

Type of Contract	Not Applicable
Job Status	Not Applicable
Offer Starting Date	1 Nov 2026
Is the job funded through the EU Research Framework Programme?	Not funded by a EU programme
Reference Number	BI 30.PL750.2026.IDMEC
Is the Job related to staff position within a Research Infrastructure?	No

Offer Description

Reference: BI 30.PL750.2026.IDMEC

The Institute of Mechanical Engineering – IDMEC is opening a call for

Post-Doctoral Research Fellowships

Applications are open for one post-doctoral research fellowship (BIPD) within the framework of the project DEEPFRAC (Deep fracture), **2024.14907.PEX**, financed by national funds (OE) through FCT, I.P., under the following conditions:

Scientific Area: Computational Mechanics / Phase-field fracture and physics-informed machine learning (PINN)

Admission Requirements:

Post-Doctoral Research Fellowships

1. to hold a PhD degree obtained in the three years prior to the submission of the fellowship application;
2. *to have carried out the research work that led to the PhD degree in a different entity from the host institution of the fellowship;*
3. not to exceed, with this fellowship contract, including possible renewals, an accumulated period of three years in this type of fellowship, continuously or with interruptions;
4. not to have previously held a post-doctoral fellowship contract with IDMEC.

Work plan and objectives to achieve:

The fellow joins the team of the project DEEPFRAC (Deep fracture), devoted to phase-field methods and physics-informed neural networks (PINN) for damage and fracture, and will work with the finite-element code SimPlas, developed by the supervisor, and with advanced computing resources (Deucalion). The plan below corresponds to Tasks 2 and 3 of the project; If applicable, the renewal period corresponds to the end of Task 3 and to Task 4.

1) Months 1–3 (November 2026 – January 2027): Task 2, constitutive PINN algorithms for damage and fracture.

Neural-network surrogates of the integration algorithms of continuum-damage constitutive laws and of cohesive laws; iso-error maps and efficiency comparison with the classical algorithms; crack-branching cases not solved by the classical algorithms. Outputs: public code (GitHub), a paper submitted to an international journal on numerical methods and a presentation at an international conference.

2) Months 4–7 (February – May 2027): Task 3, phase-field PINN for damage and fracture.

Length-scale identification by inverse PINN on representative volume elements; PINN formulations for brittle (Francfort–Marigo, AT1/AT2) and quasi-brittle fracture (cohesive laws imposed as constraints); ductile damage with calibrated dissipation; benchmark result database published on the project website. Outputs: a submitted paper and a public database.

3) Renewal period (if applicable, up to the limit allowed by the regulations and by the execution period of the project).

Completion of Task 3: large-scale 3D fracture with crack branching and coalescence, compared with tests on additively manufactured cellular structures (working software and a paper). Task 4: topology and fibre-orientation optimisation with PINN-based sensitivities and manufacturing constraints (a paper).

Legislation and Regulations: Statute of Scientific Research Fellow, approved by Law nr. 40/2004, of August 18, as worded by Decree-Law nr. 123/2019, of August 28; FCT Regulation for Research Studentships and Fellowships, available on <https://diariodarepublica.pt/dr/detalhe/regulamento/950-2019-127238533>

Workplace: The work will be developed at IDMEC - Institute of Mechanical Engineering, which is both the Host and the Contracting Entity, under the scientific supervision of Professor Pedro Areias.

Duration: The research fellowship is awarded for 7 months, expected to begin on 1 November 2026, and may be renewed up to the maximum limit allowed by the applicable regulations. Renewal requires a request by the fellow, accompanied by the opinions of the scientific supervisor and of the host institution, formalised before the end of the contract.

Monthly maintenance allowance: According to the values for Research Fellowships awarded by FCT in Portugal (<https://www.fct.pt/fct-atualizou-o-valor-das-bolsas-para-2026/>), the amount of the monthly maintenance allowance is € 1901,00, paid by wire transfer.

Selection methods: The selection methods will be the following: curriculum evaluation and individual interview (in person or by videoconference), with the respective weights of 70% curriculum and 30% interview. The interview assesses the fit of the applicant's profile to the work plan and the applicant's availability to take up duties on the expected start date.

Composition of the selection Jury:

Professor Pedro Areias.

Professor Nuno Silvestre.

Professor Aurélio Araújo.

Announcement / notification of the results: The final evaluation results will be communicated to all applicants by email.

After being notified, applicants have 10 working days to submit a formal rebuttal, by email.

A selection reserve list will be drawn up, which may be used during the execution period of the project, including any extensions.

Application deadline and formalization: The call is open from 16 September to 30 September 2026, until 18:00 (Lisbon time).

Post-Doctoral Research Fellowships

It is mandatory to formalize applications with the submission of the following documents: Curriculum Vitae; PhD degree certificate; motivation letter, stating the date from which the applicant can take up duties in Lisbon and, where applicable, the status of any visa or residence-permit process for Portugal; declaration on honour that the applicant does not exceed, with this contract, an accumulated period of three years in this type of fellowship, continuously or with interruptions, within the scientific and technological system, and that the research work that led to the PhD degree was carried out in a different entity from the host institution of the fellowship.

Note: an applicant who does not yet hold the PhD certificate at the application deadline may replace it by a declaration on honour that the degree was held on the date of the call, undertaking to deliver the certificate before the contract is signed.

Applications should be submitted by email to: pedro.arias@tecnico.ulisboa.pt

Start date and documentation: The fellowship is expected to start on 1 November 2026. Under the FCT Regulation for Research Fellowships, the award lapses if the selected applicant does not deliver the documents required for the fellowship contract within six months of the notification of the final results; in that case the next applicant on the reserve list will be called.

The contract template and the final report template are available at <https://www.idmec.tecnico.ulisboa.pt/about/job-openings/>

Where to apply

E-mail	pedro.arias@tecnico.ulisboa.pt
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Requirements

Research Field	Engineering » Mechanical engineering
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Education Level	PhD or equivalent
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Additional Information

Website for additional job details	https://www.idmec.tecnico.ulisboa.pt/about/job-openings/
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Work Location(s)

Number of offers available	1
Company/Institute	IDMEC- Instituto de Engenharia Mecânica
Country	Portugal
State/Province	Lisboa
City	Lisboa
Postal Code	1049-001
Street	IDMEC, Av Rovisco Pais, 1
Geofield	

Contact

State/Province	Lisboa
City	Lisboa
Website	https://www.idmec.tecnico.ulisboa.pt/
Street	Av Rovisco Pais, 1
Postal Code	1049-001

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