



OFFICE OF INDUSTRIAL CONSULTANCY AND SPONSORED RESEARCH
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI – 600 036

Advertisement No.: ICSR/PR/Advt.204/2026 Dated: 05/10/2026

Applications are invited for the temporary post of **Postdoctoral Researcher**, Department of **Applied Mechanics and Biomedical Engineering**, IIT Madras.

Co-ordinator: Prof. Satyanarayanan Seshadri, Department of Applied Mechanics and Biomedical Engineering, **IIT Madras**

Duration: Initially for one year, later extendable based on the performance.

Number of Vacancies: 01

S. No	Post	Qualification and Experience	Pay
01	Postdoctoral Researcher	• PhD in mechanical or aerospace engineering with a thesis in turbomachinery, rotordynamics or a closely related field. Candidates who have submitted their thesis may apply. Exceptional MS or MTech graduates with at least three years of turbomachinery design experience in industry or a national laboratory will be considered at Senior Project Engineer level. • Demonstrated depth in at least one of: turbomachinery aerodynamic design and CFD; rotordynamics and bearings for high-speed rotors; experimental turbomachinery and rig design. • Working fluency in Python or an equivalent language, and in at least one CFD or finite-element package. • Evidence of finishing things: a rig built, a machine tested, a code others use, or papers with experimental results.	Rs. 90,000-1,30,000

The programme

- We are building oil-free, high-speed turbomachines for industrial decarbonisation: centrifugal compressors for steam (mechanical vapour recompression) and for high-temperature heat pumps, and radial inflow turbines for waste-heat power. The machines are in the 20 to 75 kW class and run

at 35,000 to 90,000 rpm, direct-driven by a permanent-magnet motor designed in-house. The first prototypes will be designed, manufactured in India and tested at IIT Madras. The work builds on the group's mean-line and optimisation research on radial inflow turbines for supercritical CO₂ cycles.

- The design chain is open: REFPROP or CoolProp for real-gas properties, in-house Python mean-line codes, open-source tools for blade geometry, CFD, finite-element analysis and rotordynamics. Validated public geometries such as the NASA CC3 and HECC compressors are used as reference cases.

The role

You will own the design of one complete machine, from duty point to tested hardware, and will be the technical lead for a small team of project engineers and research students. The role suits someone who wants to see their design spin, not only simulate it. Candidates from any branch of turbomachinery are welcome: axial or radial, compressors, turbines, pumps or turbochargers. Depth in one of the areas below matters more than the machine type you have worked on.

Responsibilities

- Mean-line and through-flow design of centrifugal compressor and radial turbine stages with real-gas properties, including off-design maps.
- Three-dimensional blade, diffuser and volute design, and CFD with real-gas models; validation against public test cases.
- Rotor layout with the motor designer: rotordynamics, critical-speed margins, bearing selection and mounting (hybrid ceramic ball bearings first, gas foil bearings later), thrust balance, seals.
- Structural and thermal checks of wheels, shaft, retaining sleeve and casings; overspeed and burst margins.
- Manufacturing drawings and vendor liaison for 5-axis milled wheels, printed or machined casings, balancing and overspeed spin testing.
- Design, commissioning and operation of the steam and refrigerant test loops; instrumentation, uncertainty analysis and performance mapping.
- Publications, design reports and support for funding proposals; mentoring of MS and PhD students.

Essential qualifications

Desirable

- Experience with real-gas or non-ideal working fluids: steam, refrigerants, organic fluids, supercritical CO₂.
- Experience with small high-speed machines: turbochargers, micro gas turbines, turboexpanders, high-speed blowers, fuel-cell compressors.
- Hands-on experience with balancing, vibration measurement, high-speed data acquisition or spin testing.
- Familiarity with open-source tools such as OpenFOAM, SU2, CalculiX, ROSS, Multall or T-Blade3.
- Exposure to manufacturing: 5-axis machining of impellers, metal additive manufacturing, geometric tolerancing.

What we offer

- Ownership of a complete machine from concept to test, with hardware budget in place.
- Eligible candidates will be supported in applications for national fellowships and faculty-track schemes.
- Close links with the group's industry partners and start-ups in decarbonisation and energy efficiency, with scope to take the technology to product.
- 1.3 LPM consolidated salary with additional incentives based on project funding and deliverables
- Initial appointment for [12] months, extendable based on performance. Location: IIT Madras campus, Chennai.

Related openings in the same programme

Role	Focus	Typical background
Rotor and mechanical design engineer	Rotordynamics, bearings and mounts, fits, seals, balancing, overspeed testing	High-speed rotors: turbochargers, turboexpanders, spindles, gas or magnetic bearing research
Electrical machine and drive engineer	75 kW, 35,000 rpm permanent-magnet motor with retaining sleeve; rotor loss, thermal design, inverter and sine filter, sensorless control	PhD or industry experience in high-speed machines or drives
Test and instrumentation engineer	Steam and refrigerant loops, controls, safety, data acquisition, uncertainty analysis	Thermal or process rigs, boilers and pressure systems, LabVIEW or Python data acquisition

The last date for submission of online application is 19.10.2026.

General Instructions to the candidates

- 1) All the positions are on purely contract basis.
- 2) The completion of the period of contract will not confer any right for further extension, regularization, permanency at the Institute.
- 3) Candidates should apply online only in the website https://icandsr.iitm.ac.in/careers/current_openings.php - **(Please check the advertisement number Advt.204/2026 displayed and submit the application for the relevant position).**
- 4) Separate application has to be filled for each post.
- 5) The system will accept single application only with the registered login ID (email) for an advertisement, hence the candidate is requested to select the multiple positions (In case, the candidate wishes to apply for more than one position) before the submission of application.
- 6) The application cannot be edited, reverted once it is submitted.
- 7) Candidates should not attempt to apply twice for the same post. If multiple applications are received from a candidate for the same post, the candidature will be liable to be rejected.
- 8) Candidates should follow the prescribed procedure for submission of online application.
- 9) Candidates are advised to fill their correct and active e-mail addresses in the online application as all correspondence will be made by the Institute through e-mail only.
- 10) The candidates applying for any post should ensure that they fulfil all the eligibility conditions for the post. Their admission to any stage of the selection process will be purely provisional subject to confirmation that they satisfy the prescribed eligibility conditions. Mere issue of registration certificate / call letter to the candidate will not imply that the candidature has been found eligible.
- 11) After successful online submission of application, a printout of the application form must be obtained and submitted when called for test. It will be required at the time of document verification/test/interview. Hard copy of the application is NOT to be sent to the Institute.
- 12) Candidates must be citizens of India. Persons who have migrated from Pakistan with the intention of permanently settling in India or subjects of Nepal are also eligible, but in their case a certificate of eligibility from the Government of India will be necessary for appointment. Such candidates should apply to the Government of India in the Ministry of Home Affairs for necessary certificate and furnish satisfactory proof of having so applied.
- 13) The prescribed qualifications are minimum and unless specified, they are required for consideration for the post, even if higher qualification has been acquired and the mere fact that a candidate possesses the same will not entitle them for being called for interview.
- 14) Relevant experience gained after the minimum qualifying degree will only be taken into consideration. Minimum requirements of qualifications and/or experience can be relaxed in respect of exceptionally outstanding candidates.

- 15) The experience required is relaxable at the discretion of the Institute in the case of candidates belonging to the Scheduled Caste / Scheduled Tribe, if at any stage of selection, the competent authority is of the opinion that sufficient number of candidates from these communities possessing the requisite experience are not likely to be available to fill up the vacancy reserved for them.
- 16) The Institute reserves the right to restrict the number of candidates for written / skill test / interview to a reasonable limit on the basis of qualifications, level and relevance of experience higher than the minimum prescribed in the advertisement and other academic achievements. The Institute also reserves the right of rejecting any or all the applications without assigning any reasons, therefore.
- 17) Calling a candidate for test/interview merely indicates that it is felt that the candidate with others may be suitable for the post and conveys no assurance whatsoever that they will be recommended or selected or their conditions specified in the application will be accepted.
- 18) Candidates will be short-listed for Test/Interview on the basis of the information provided by them in their online applications. They must ensure that such information is true. If at any subsequent stage or at the time of Test/Interview any information given by them or any claim made by them in their online applications is found to be false, their candidature will be liable to be rejected.
- 19) The Institute shall verify the antecedents or documents submitted by a candidate at any time at the time of appointment or during the tenure of the service. In case, it is detected that the documents submitted by the candidates are fake or the candidate has clandestine antecedents/background and has suppressed the said information, then their services shall be liable to be terminated.
- 20) In case of any inadvertent mistake in the process of selection which may be detected at any stage even after the issue of appointment letter, the Institute reserves the right to modify/ withdraw/ cancel any communication made to the candidates.
- 21) Applicants who are working in **any one of the Project at IIT Madras**, must apply through proper channel otherwise they will be required to produce No-Objection Certificate at the time of document verification/Test/Interview. Candidates without NOC will not be permitted to appear for Test/Interview.
- 22) Candidates may send testimonials from persons intimately acquainted with their work and character. If the applicant is in employment, the candidate should submit testimonials from the most recent employer or immediate superior as a referee.
- 23) The Institute has a right to decide the mode of screening and testing the applicant for short listing and selection.
- 24) The Institute solely reserves the right not to fill any advertised position without assigning any reason
- 25) Only shortlisted applicants will be contacted.
- 26) No correspondence whatsoever will be entertained from candidates regarding conduct and result of test/interview and reasons for not being called for interview. Canvassing in any form will be a disqualification.
- 27) The crucial date for determining the eligibility criteria for all candidates in every respect shall be the prescribed closing date for submission of online application.
- 28) The Institute strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

- 29) Any corrigendum/clarifications on this advertisement, if necessary, shall be uploaded on website and no separate communication will be sent for this purpose.
- 30) If there is any issue to submit the application please send E-mail to : icsrrcruitment6@icsrpis.iitm.ac.in / icsrrcruitment@icsrpis.iitm.ac.in **Contact: 044- 2257 8843** on all working days from **9.00 AM to 05.30 PM (Monday to Friday – except National Holidays)**. (Please note, only technical issues will be accepted – No interim correspondence with reference to the selection process will be considered).
- 31) **Instructions to apply online:** Eligible applicants would require to register and apply online through https://icandsr.iitm.ac.in/careers/current_openings.php and submit the application.

Sd/-

CM –HR
Office of IC&SR
IIT Madras