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

Advertisement No.: ICSR/PR/Advt.227/2026 Dated: 03/11/2026

Applications are invited for the temporary post of **Project Engineer,** in the Department of **Engineering Design, IIT Madras.**

Co-ordinator: Prof. C. S. Shankar Ram, Department of Engineering Design, IIT Madras.

Primary Contact: Sundaresan S A, Professor of Practice, Department of Engineering Design, IIT Madras

Duration: Initially for one year, later extendable based on factors such as performance and project funding.

Number of Vacancies: 01

S. No	Post	Qualification and Experience	Pay
1	**Project Engineer**	• Bachelor's degree in electrical engineering, Mechanical Engineering or Mechatronics discipline with a Minimum of 75% marks or CGPA of 7.5 or equivalent Candidates with the following additional qualifications will be given preference: • Experience in Collegiate Engineering Design Competitions • Work experience in high-voltage traction motor design, gearbox/drivetrain specification, system-level modelling, and hardware validation for automotive or commercial vehicle platforms • Exposure to Software Tools – 1-D and 3-D simulation (e.g. MATLAB/Simulink/SimScape, Siemens Simcenter, Ansys, Dymola)	**Consolidated Pay up to Rs 60,000/- - to Rs 70,000/-Per month** depending **on experience**

Job Description: Project Engineer – High Voltage Traction Motors & Drivetrain Systems (Mobility Applications)

Role Overview

We are seeking self-driven, hands-on, eager to learn and experiment engineers to join as Project Engineer – High Voltage Traction Motors & Drivetrain Systems to develop electric drive units for advanced mobility applications (high voltage heavy-duty vehicles).

In this role, you will participate in the complete electric drivetrain lifecycle - starting from deriving top-level motor and gearbox specifications directly from target vehicle duty cycles, through detailed electromagnetic and mechanical design, virtual multi-physics validation, high-level gearbox architecture sizing, prototype builds, dyno bench testing, and final vehicle-level integration and commissioning.

Key Functions

Application-Driven Specification Derivation & Sizing

- Translate vehicle-level performance requirements (acceleration, top speed, gradeability, payload variations, and target drive cycles) into quantitative electric drive unit (EDU) requirements.
- Derive high-level traction motor and gearbox specifications, including peak/continuous torque-speed curves, voltage limits (800V+), gear ratios, transmission efficiency targets, and thermal/cooling budgets.
- Perform trade-off analyses between drivetrain architecture (direct drive, e-Axle, single motor to multiple motors), motor sizing (speed vs. torque) and gearbox gearing strategies (single-speed vs. multi-speed, single/multi-stage reduction, planetary vs. parallel-axis topologies) to optimize system weight, cost, and drive cycle energy consumption.

Design & Engineering (Motor & High-Level Gearbox Architecture)

- Electromagnetic, thermal, and mechanical design of high-voltage traction motors.
- Define high-level gearbox architecture specifications, including gear ratio selection, gear pitch line velocity limits, shaft layout, bearing loads, lubrication/cooling schemes (oil spray/sump), and housing integration with the motor.
- Perform detailed electromagnetic trade-o studies (torque density, efficiency maps, field-weakening range, cogging torque, ripple mitigation, and magnet segmentation).
- Specify insulation systems, magnetics, lamination geometries, cooling jackets (water-glycol or direct oil-cooling), and conductor technologies (hairpin vs. random-wound).

Virtual Validation & System Simulation

- Conduct rigorous multi-physics virtual validation, including 2D/3D
- Electromagnetic FEA, Thermal/CFD analysis, and Structural/NVH simulations for both the motor (rotor stress, Modal analysis, acoustic radiation) and gear mesh/housing dynamics.
- Build integrated 1D system models (drivetrain + motor + inverter) to evaluate efficiency maps, gear losses, rotor/shaft dynamics, and thermal behaviour across full duty cycles.

- Build thermal network models and efficiency maps for the motor across operational speed-torque envelopes for system-level drive cycle simulations.
- Perform thermal-demagnetization, structural burst-speed margin assessments, and gear/bearing fatigue life estimations under cyclic road loads.

Prototyping & Manufacturing Coordination

- Coordinate early-stage EDU prototype builds, collaborating closely with suppliers.
- Define DFM/DFA (Design for Manufacturing / Assembly) criteria for integrated motor-gearbox assemblies and high-volume electric drive unit production.
- Address assembly tolerances, gear backlash, shaft alignment, HV insulation integrity, and oil sealing during prototype builds.

Bench Testing & Experimental Validation

- Formulate comprehensive test plans (DVPR) for integrated motor and transmission characterization on back-to-back dyno test benches.
- Coordinate testing activities: back-EMF, iron/copper loss separation, gear loss/efficiency mapping, thermal run-up, NVH/vibration profiling (gear whine and motor cogging), and high-voltage insulation integrity (HIPOT, partial discharge).
- Correlate simulation results with physical dyno test data to refine FEA and drivetrain analytical models.

Vehicle Integration & Testing

- Coordinate with Inverter/Motor Control, Battery System, and Vehicle Integration teams to optimize system-level performance (PWM frequency, switching losses, DC-link ripple, and shift/torque-interruption control if applicable).
- Participate in vehicle-level calibration, thermal management tuning, driveline shock/jerk smoothing, and functional safety testing on proving grounds or chassis dynos.
- Support functional safety hazard analysis (HARA) and safety mechanisms for electric powertrain components. Required Skills & Qualifications

Selection: Based on a written test (Quantitative, Analytical, Verbal, and Technical Skills) and Interview.

The last date for submission of online application is 23.11.2026.

Self-Declaration: Applicants must declare that all information and documents submitted in support of their application are true, accurate, and complete to the best of their knowledge. Any discrepancy, misrepresentation, or submission of false information, if identified, may result in disqualification of the applicant.

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.227/2026 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 : icsrrecruitment6@icsrpis.iitm.ac.in / icsrrecruitment@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