UNIVERSITY OF ENGINEERING & TECHNOLOGY, TAXILA
DEPARTMENT OF MECHANICAL ENGINEERING
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Full Time Funded PhD Position for HEC Funded Project

Applications (**Detailed CV with photocopies of duly attested transcripts**) are invited from qualified individuals for the following positions under the HEC approved project **"Thermal Efficiency Enhancement of a Heavy-Duty Automotive Engine Platform"**.

Sr. #	Position/ Pay Package/	No. Of Posts	Duration	Eligibility Requirements
1	Ph.D Scholar Avg Monthly Stipend Rs 80,000/- With Full fees waiver from UET Taxila	01	Upto 03-Years max	1. Strong academic profile preferably CGPA greater than 3.0/4.0. 2. Preference will be given to those students who completed their course work. 3. Candidates should preferably have genuine interest in: a. Computational Fluid Dynamics (ANSYS, Tecplot, Matlab, Any other) b. Design of Experiments, Instrumentation & Controls c. Thermofluidics d. Technical Report Writing

Note:

1. **Applicants should email the documents at m.shehryar@uettaxila.edu.pk and submit the hard form to the Registrar Office up to 31 May 2022 3:00 PM.**
2. The above posts are project-based, hence have no right of regular appointment.
3. Attested copies of degree / certificate / testimonials / CNIC / experience certificates and photograph must be attached.
4. Incomplete or late received applications will not be entertained. Only short-listed candidates will be called for test / interview.
5. The university reserves the right to accept or reject any /all applications without assigning any reason.
6. No TA/DA will be admissible for the interview/tests etc.

(Mr. Khalid Mahmood)
Registrar
051-9047405

PROJECT SUMMARY

Waste heat management in power plants based on internal combustion engines is a significant design aspect where the focus is effective heat removal to keep critical engine components cool at desired temperature levels. Small, special purpose engines can be cooled using relatively simple and lightweight systems based on atmospheric air as the primary cooling fluid. In larger complex systems, waste heat is rejected to the atmosphere by a radiator using a closed loop of coolant pumped through the engine.

Heat transfer in internal combustion engines can generally be regarded as a parasitic process contributing to a loss in efficiency. For example, heat transfer at the inlet decreases volumetric efficiency whereas heat losses at the exhaust diminish the turbocharger performance. In addition to the combusting air-fuel mixture, friction between engine components is also a significant source of thermal loading in engines. The two taken together govern the fan, oil and water cooler design capacities responsible for maintaining operating temperatures of critical engine components. This in turn affects their durability and designed life spans. Simply put, effective engine cooling can be used to achieve better engine performance / efficiency and enhanced life span.

This project aims at enhancing engine performance by augmenting heat transfer in heavy duty mobile power plants operating in harsh environmental conditions. There are a number of means to enhance heat transfer including for example using finned tubes, introducing nano-particles in the primary cooling fluid, using louvered fins in tubes and using ribbed or grooved tubes. In a power plant radiator setup, different tube and fin arrangements are already extensively investigated. Remarkably optimized designs already exist for these parameters. A more comprehensive investigation focused on exploiting nano-fluids and tube surface modifications by grooves / ribs is direly needed. This work seeks to improve heat transfer which may ultimately lead to a more efficient, light weight radiator design for the same power requirements.