

इंडियन इंस्टीट्यूट ऑफ टेक्नोलॉजी दिल्ली
हौज खास, नई दिल्ली -110016
(औद्योगिक अनुसंधान एवं विकास इकाई)
INDIAN INSTITUTE OF TECHNOLOGY DELHI
Hauz Khas, New Delhi-110016
(Industrial Research & Development Unit)

No. IITD/IRD/RP05099N/ 556809

Dated: 23/10/2026

Advertisement No.: IITD/IRD/297/2026

Applications from Indian nationals are invited for Project Appointment under the following project. Appointment shall be on contractual basis with consolidated pay, renewable yearly or upto the duration of the project, whichever is earlier. निम्नलिखित परियोजना के तहत भारतीय नागरिकों से आवेदन आमंत्रित किए जाते हैं। अपॉइंटमेंट, अनुबंधित आधार पर समेकित वेतन, नवीकरणीय वार्षिक या परियोजना की अवधि तक, जो भी पहले हो, के साथ होगा।

Project Background:

The glass industry uses various energy resources including but not limited to LPG PNG, furnace oil, coal, hydrogen, and electricity for operation, heating and annealing process. The contribution of PNG among these fuels is the highest with a contribution of more than 95% especially in the developed countries, while the contribution of energy from LPG and electricity are 2.8 and 1.8%, respectively [1]. An assessment of energy performance i.e. specific energy consumption (SEC) in the glass industries varies significantly, with the product, technology, raw materials, scale of operation, and operation practices. For instance, the SEC value for glass melting – Tank type of furnace is 7.7 GJ per ton of glass while for pot furnace this value stands at 19.2GJ per ton of glass, which is significantly higher than the global average of 3.27 GJ/ton of glass production, additionally, this sector contributes to global warming by emitting 429Kt of CO₂ and a significant amount of PM_{2.5} and other harmful pollutants into the environment. India ranks among the top 15 global glass packing markets and is the third fastest growing market in the world, behind Turkey and Brazil. The annual global glass production is about 100 million tons, while in case of India it is -12 (1.32 MT flat glass) million tons annually [2]. The Indian glass market was valued at around USD 8.57 billion in 2024 and is forecasted to grow at a cumulative annual growth rate of > 7.5%, reaching to around 13.45 billion USD by 2020. The float glass market, crucial for construction and automotive applications, was valued at 3.3 billion USD in 2022 and is projected to reach to 5 billion USD by 2020.

Motivation and Objectives:

In this project our goal is to reduce energy consumption and emission reduction from glass industries and make it more competitive and environmentally responsible sector without compromising the quality and growth. One of the most promising opportunities lies in capturing and reusing waste heat from the hot exhaust gases- something that's still underutilized in many traditional plants. We are also looking at replacing part of the fossil fuel use with cleaner alternatives such as biomass and/or hydrogen blends. In the bigger picture, this project supports national efforts to save energy, cut emissions, and modernize industries. Beside, generating human resources to take up the futuristic challenge, needs of the glass industry R&D and optimization techniques. More importantly, it aims to set an example that other energy-intensive sectors can follow-proving that it's possible to reduce cost, motivations and needs, the proposed objectives are to:

- Understand the design, dimensions, and preparation of proper drawing of the existing furnace using different available 3-D techniques at Gold Plus Float Glass Private Limited.
- Study and analyze the thermal performance and emission characteristics of the existing furnace using appropriate methods of Gold Plus Float Glass Private Limited.
- Establish complete heat and mass transfer analysis through simulation and validation via experimental observations of the existing furnace of Gold Plus Float Glass Private Limited.
- Optimize the existing furnace of Gold Plus Float Glass Private Limited at Belagavi plant using different insulating materials for improved performance.

Working at Site and Signing of NDA:

The JRF/SRF will be encouraged to register for PhD program, Following the Institute rules, if admitted into PhD program, then the PhD topic will be related to Project only and after completing the course work, the fellows will be deputed at the Industry at Kanagala (Belgaum) Karnataka. The fellow must work in the glass industry for data collection, analysis, while modelling and optimization can be done through CFD simulation. The PhD work will be on this topic and there is very high chance of getting absorbed by the industry after 2+ yrs. of working experience gained in this project. Further, they must sign a non-disclosing (NDA) with the industry prior to start working, as part of this project.

For further details, the potential candidate may write directly to:

Dr. S. K. TYAGI, Professor
Department of Energy Science & Engineering Indian Institute of
Technology Delhi, Hauz Khas, New Delhi 110016
E-mail: sudhirtyagi@yahoo.com; tyagisk@iitd.ac.in

Selected References

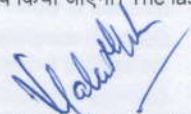
1. TERI, "ACHIEVING ENERGY AND RESOURCES EFFICIENCY IN GLASS AND REFRACTORY INDUSTRIES," TERI & BEE, 2021.
2. A. Cantini et al., "Technological Energy Efficiency Improvements in Glass-Production Industries and Their Future Perspectives in Italy," Processes, vol. 10, no 12, p. 2653, Dec. 2022, doi: 10.3390/pr10122653.
D. M. Taufique, T. Akram, and T. Fatima, "The "The performance of glass industry in India; A study of Temporal Analysis," vol. 09, no. 11, 2024.

Title of the Project	Performance Evaluation and Design Optimization of Glass Industry Furnaces for Improved Combustion & Fuel Saving Potentials. (RP05099N)	
Funding Agency	Gold Plus Float Glass Private Limited, Delhi	
Name of PI	Prof. S. K. Tyagi [email ID: tyagisk@iitd.ac.in]	
Deptt/ Centre	Energy Science and Engineering	
Duration	01-10-2026- 30/09/2030	
Post (S)	Consolidated fellowship / Pay-slab	Qualifications
JRF (01)	₹ 37,000/- + HRA @30%	B.Tech with *NET/GATE and M.Tech in Mech/Thermal/Energy/Chem with a minimum of 65% and preferably having background of modelling/CFD simulation and design of furnace and data analysis. *The requirement of NET/GATE examination for the selection to the post of JRF/SRF may be relaxed for the candidates who have graduated from Centrally Funded Technical Institutes (CFTIs) with a CGPA of more than 8.000 (80% aggregate marks).

The candidates who are interested to apply for the above post should download Form No. IRD/REC-4 from the IRD Website (<http://ird.iitd.ac.in/rec>) of IIT Delhi and submit the duly filled form with complete information regarding educational qualifications indicating percentage of marks/division, details of work experience etc. by e-mail with advertisement No. on the subject line to Prof. S. K. Tyagi at email id: tyagisk@iitd.ac.in

IIT Delhi reserves the right to fix higher criteria for short-listing of eligible candidates from those satisfying advertised qualification and requirement of the project post and their name will be displayed on web link (<http://ird.iitd.ac.in/shortlisted>) along with the online interview details. Only short-listed candidates will be informed for the online interview. In case any clarification is required on eligibility regarding the above post, the candidate may contact to Prof. S. K. Tyagi at email id: tyagisk@iitd.ac.in

5% relaxation of marks may be granted to the SC/ST Candidates. अनुसूचित जाति / अनुसूचित जनजाति के उम्मीदवारों को अंकों की 5% छूट दी जा सकती है। एक सेवानिवृत्त सरकारी कर्मचारी के चयन के मामले में उसका वेतन वर्तमान आईआरडी मानदंडों के अनुसार तय किया जाएगा। The last date for submitting the completed applications by e-mail is 02/11/2026 by 5.00 p.m.


Deputy Registrar, IRD Estt.

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