



**Maire Tecnimont Centre For Research in Waste
Recycling and Circular Economy**
National Institute of Technology Karnataka Surathkal
NITK Campus Post Srinivasnagar Surathkal-575025

**Advertisement for Maire Tecnimont Research Scholarships
for Sustainable Development**

Ref. No: NITK/MTE-WRCE/CSR-2021-22

Date: 01/02/2022

Applications are invited for Maire Tecnimont Research Scholarships for Sustainable Development

Applications are invited from interested meritorious candidates under **Maire Tecnimont Research Scholarships for Sustainable Development**, as a part of a CSR-funded research project entitled Waste Recycling and Circular Economy from **B.Tech. Third-year and M.Tech. First-year and M.Sc. First-Year students studying in NITK**. The research grants sanctioned under this project can be utilized for buying minor equipment, consumables, contingencies, and domestic travel for field visits for carrying out **Final year B.Tech./M.Tech./MSc projects**. There is no provision for providing manpower support under this scheme.

Objective:

The **Maire Tecnimont Research Scholarships for Sustainable Development** is aimed to identify motivated young researchers and provide them support for doing research in frontier areas of **Waste Recycling and Circular Economy**. The fellows will work under a Faculty member from NITK, and it is hoped that this training will provide them a platform to develop as an independent researcher. The beneficiaries of this fellowship in the future can support the planners and policy-makers of local governments in strengthening their capacity to manage problems related to waste and access to clean water as well as energy. Further, they can also create employment opportunities, which will help in social upliftment and promote social integration as well as social inclusion.

Interested candidates should fill in their academic and personal details in the prescribed application format and send the same along with attested copies of relevant certificates within 15 days from the date of advertisement to the contact person. Only the shortlisted candidates will be informed by post/E-mail/Phone/ Website: www.nitk.ac.in.

Shortlisted candidates should report to the contact person for certificate verification, followed by a test and technical interview. The interview is most likely to be held during the Fourth week of February 2022. Any change in the date of the interview will be intimated through email. Selection will be based on qualification, experience, test performance, and interview. TA/DA will not be paid for attending the written test and interview. NITK, Surathkal reserves the right to reject any or all the applications without assigning any reasons thereof. Selected candidates will be required to join immediately.



Title project	Waste Recycling and Circular Economy
Sponsoring Company	Tecnimont Private Limited, Mumbai, Indian subsidiary of Maire Tecnimont S.p.A. Milan Italy.
Research grants available	Refer to Table 01 in P. No. 04
Number of Research Scholarships/Grants Available	Mechanical Engineering-(PG-01 Male, 01 Female) (UG-01 Male, 01 Female) Chemical Engineering-PG-01 (Female), (UG-01 Male, 01 Female), Metallurgical and Materials Engineering-UG-01 (Female) Chemistry-MSc-01 (Green Chemistry) (Female Candidate)
Faculty/Mentors Associated from Department/Centre	Department of Mechanical Engineering Department of Chemical Engineering Department of Metallurgical and Materials Engineering Department of Chemistry
Tenure of availability of Research Grant	Currently for one year,
Qualification and Experience	Qualification: B.Tech. Third-year and M.Tech. First-year/Second Year and M.Sc. First-Year students studying in NITK and are willing to work in the research areas related to Thermal Engineering / Renewable Energy/ Waste Recycling and Circular Economy/ Energy Engineering / Chemical Engineering/Chemistry
Desirable qualities	The candidate must be able to work independently and flexibly and having the following qualities will be desirable. <ol style="list-style-type: none">1. <i>Basic knowledge about</i> laboratory/benchscale work with a technical focus on the basic fundamentals to understand and optimize the process2. <i>Implementation:</i> Pilot/demonstration scale or the field application projects3. <i>Sustainability aspects:</i> Financial, social, environmental aspects, models and simulations, theoretical evaluation, potential analysis, decision support tools4. Excellent analytical and writing skills
Additional information	May be obtained by contacting the Head/ CSR Project Coordinator, Maire Tecnimont Centre for Research in Waste Recycling and Circular Economy directly through email.
Last date for receipt of application	15th February 2022



Interested candidates may apply in the prescribed format along with CV, photocopies of relevant certificates, grade/mark sheets, publications, etc., and should reach NITK on or before **05/02/2022** by email (scanned documents) at the prescribed address below:

Sd/-

Dr. Vasudeva Madav / Prof Ashok Babu

CSR Project Coordinators

Maire Tecnimont Centre for Research in Waste Recycling and Circular Economy

National Institute of Technology Karnataka Surathkal

Email: mt.center-research@nitk.edu.in

Tel: +91-824-2473670, M: +91-9008889796

Faculty Associated from various Departments/Centre's NITK

From Mechanical Engineering

Dr. Vasudeva Madav Assistant Professor, Department of Mechanical Engineering National Institute of Technology Karnataka Surathkal P.O: Srinivasanagar, Mangalore, Karnataka- 575 025	E-mail: vasu@nitk.edu.in

Prof. Ashok Babu T P Professor, Department of Mechanical Engineering National Institute of Technology Karnataka Surathkal P.O: Srinivasanagar, Mangalore, Karnataka- 575 025	E-mail: tpashok@nitk.edu.in

From Chemical Engineering

Dr. Keyur Raval Associate Professor and Department of Chemical Engineering National Institute of Technology Karnataka Surathkal P.O: Srinivasanagar, Mangalore, Karnataka- 575 025	E-mail: keyurnraval@nitk.edu.in

From Metallurgical and Materials Engineering

Dr. Ravishankar K S Associate Professor, Department Metallurgy and Materials National Institute of Technology Karnataka Surathkal P.O: Srinivasanagar, Mangalore, Karnataka- 575 025	E-mail: ravishankarks.2467MT@nitk.edu.in

From Department of Chemistry:



Dr. Saikat Dutta Assistant Professor, Department of Chemistry National Institute of Technology Karnataka Surathkal P.O: Srinivasanagar, Mangalore, Karnataka- 575 025	E-mail: sdutta@nitk.edu.in

Nature & Duration of Support:

- The research grant is tenable only in India and will be implemented at NITK, Surathkal. The Maire Tecnimont Centre for Research on Waste Recycling and Circular Economy, NITK, Surathkal, and the respective department will provide necessary administrative and infrastructural support.
- The fellows will be entitled to receive the grants as given in table 1 below:

Table 01: Fellowship and Research Grants

Sl. No.	Budget Head	Amount
1	Fellowship	Not Applicable
2	Research	For B.Tech./M.Sc. Candidates Rs.30,000/- per annum
	Grant	For M.Tech. Candidates Rs.30,000/- per annum

- **Research grants can be used for minor equipment, consumables, contingencies, and domestic travel. There is no provision for providing manpower support under this scheme.**
- The fellows must seek the consent of the Faculty Mentor/Project Coordinator/ Dean R&C if he/she intends to be away from NITK (except for field work related to the project) continuously for a period of more than eight weeks.

Selection & Mode of Application

The call for applications for MTE-Scholarships for Sustainable Development will be notified through the website www.nitk.ac.in

- The application form along with a research proposal highlighting the objectives of the research work to be undertaken should be submitted online through the email
- The selection will be based on the recommendations of an Expert Committee that will be constituted by the Maire Tecnimont Centre for Research on Waste Recycling and Circular Economy, NITK, Surathkal and as per the procedure laid down by NITK, Surathkal
- Final Selection will be made as per the procedure laid down by NITK, Surathkal.
- If required, the applicants may be called for a personal interview.



Research Area:

1. Department of Mechanical Engineering

Title: Food Waste to hydrogen by steam Biogas reforming

Abstract:

Steam methane reforming (SMR) is a widely used method for large-scale hydrogen production. Although SMR is a mature technology, it suffers from significant disadvantages such as mass and heat transfer issues and coke deposition during the reaction when used for Biogas Reforming. Catalyst deactivation due to poisoning, sintering, and fouling is a major problem for SMR reactors. Numerical studies based on computational fluid dynamics (CFD) and experimental studies need to be carried out to investigate the effect of various operating parameters on H₂ yield and reforming efficiency.

2. Department of Chemical Engineering

Title: Food Waste to Bio-CNG

Abstract:

Biogas is primarily composed of methane (50-70% v/v) and carbon dioxide. (30-50% v/v) with traces of other impurities. The conversion of CO₂ to Methane in the presence of catalysts is a promising technology that can offer an efficient solution for the utilization of CO₂ as a renewable and environmental friendly carbon source. In general, high metal dispersion, good anti-sintering properties, deactivation of the catalyst due to oxidation, and surface area of the catalyst are the prime limitations in the development of the CO₂ methanation process. The thermal and chemical stability, heat conduction, and dissipation properties during the design and synthesis of catalysts require great attention. The development of catalysts that can operate at lower temperatures can significantly improve the process economics. Novel strategies to improve the performance of catalysts is an emerging area of research.

3. Department of Metallurgical and Materials Engineering

Title: Hydrogen storage technology

Abstract:

Efficient storage of hydrogen is crucial for the success of hydrogen energy markets. The large-scale storage of hydrogen plays a fundamental role in a potential future hydrogen economy. The storage of gaseous and liquid hydrogen applicable to all regions due to varying geological conditions is still a challenge. The application of certain storage technologies, such as utilization of methanol, ammonia, and dibenzyl toluene, metal hydrides are found to be advantageous in terms of storage density, cost of storage, and safety but not universally applicable and hence alternative options must be explored. As the available technologies differ fundamental approach, a common techno-economic ground evaluation is yet another challenge.

4. Department of Chemistry



Title: Food Waste to Hydrogen Gas in Water

Abstract:

Waste to fuels and chemicals is the way for the future that solves the multifaceted problem of waste management, feedstock flexibility, and environmental footprint. A significant interest has been given to the value addition of food wastes into hydrogen or syngas. A suitable chemical-catalytic system must be developed that can convert a wide-variety of food wastes into hydrogen in satisfactory selectivity and yield under energy-efficient conditions.

How to apply:

For successful submission of the application the following points may be noted:

- Applicants should fill the form, which includes Bio-data, Photo, Institute, Address, etc.
- Details including Project Title (max 500 characters), Project summary (max 3000 characters), Keywords (max 6), Objectives of the project (max 1500 characters), Expected output, and outcome of the proposal (max 1500 characters) should be provided at the time of submission of the application.
- Work Methodology and Research Plan must be submitted in a single PDF file, not more than 3 pages (max 10 MB).

Documents required (in PDF) should be in prescribed format:

- Duly Filled Application
- Bio-data
- Qualification Certificate
- Undertaking Certificate by the applicant (as per the attachment)
- Plagiarism undertaking



APPLICATION FOR MAIRE TECNIMONT RESEARCH SCHOLARSHIPS FOR SUSTAINABLE DEVELOPMENT

For Office Use:	Paste your recent Passport size photo
Serial Number:	
Eligible for Written exam/Interview: Yes / No	
Verified the Certificates:	

1. Name:	
2. Father's Name:	
3(a). Date of Birth:	3(b). Nationality:

4.Contact information:

(i) Address for communication:	
(ii) Mobile No:	
(iii) Email ID:	

5.Educational Qualifications*

Class	Subject/ Stream	Board/ University	Name of Institute	Marks/ CGPA	Year of Passing
X					
XII					
UG Degree					
PG Degree					
MPhil					
PhD					
Competitive Exam					
Competitive Exam	Qualified	Marks / Rank		Year	
CSIR-UGC NET	Yes / No				
GATE	Yes / No				

***Attach self-attested copies of all certificates.**



6. Work Experience, if any (in years)

Organization	Designation	Duration	Responsibilities

7. Number of Publications: (Attach a separate list of publications with full details)

National	International

8. Workshop/Training programs attended*:

S. No.	Details

*Attach separate sheet (if required)

9. Technical Skills

S. No.	Details

10. Other Achievements*:

S. No.	Details

*Attach separate sheet (if required)

11. Declaration: All the above information provided by me is accurate to the best of my knowledge and I understand that, if found incorrect, I may be disallowed to appear in the interview/test or terminated at any stage.

Date:

Place:

Signature of the Candidate

Note: Attach the list of enclosures along with the application.



Undertaking by the Fellow

I, _____, Son/Daughter/Wife of Shri_____ resident of _____ agree to undertake the following, if I am offered the Research Grant

1. I shall abide by the rules and regulations of NITK during the entire tenure of the fellowship.
2. I shall also abide by the rules, the discipline of the institution
3. I shall devote full time to research work during the tenure of the fellowship
4. I shall prepare the progress report on the 25th day of every month and communicate the same to Maire Tecnimont through the mentor and Project Coordinators
5. I shall send two copies of the consolidated progress report at the end of the fellowship period.
6. I further state that I shall have no claim whatsoever for regular/permanent absorption on the expiry of the fellowship.

Date:

Signature



Plagiarism undertaking by the Fellow

To

Sir I _____
hereby certify that the research report titled _____

_____ submitted for as a part of Research Scholarships funding by Maire Tecnimont is my original idea and has not been copied/taken verbatim from anyone or from any other sources. I further certify that this proposal has been checked for plagiarism through a plagiarism detection tool i.e. _____ approved by the Institute and the contents are original and not copied/taken from any one or many other sources.

I am aware of the UGCs Regulations on prevention of Plagiarism i.e. University Grant Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions) Regulation, 2018.

I also declare that there are no plagiarism charges established or pending against me in the last five years. If the funding agency notices any plagiarism or any other discrepancies in the above proposal of mine, I would abide by whatsoever action taken against me by NITK, as deemed necessary.

Signature of Fellow with name and date