



SRM TRP
ENGINEERING COLLEGE
An AUTONOMOUS Institution
Affiliated to ANNA UNIVERSITY
TIRUCHIRAPPALLI

SRM TRP

ENGINEERING COLLEGE

ASPIRE

Academic Skills Placement Innovation Research
and Exploration

NEWSLETTER

VOLUME 17 | ISSUE 05
MAY 2026



CONTENT

VISION

To carve the youth as dynamic, competent, valued and knowledgeable Technocrats through research, innovation and entrepreneurial development for accomplishing the global expectations.

MISSION

M1: To Inculcate academic excellence in engineering education to create talented professionals.

M2: To Promote research in basic sciences and applied engineering among faculty and students to fulfill the societal expectations.

M3: To enhance the holistic development of the students through meaningful interaction with industry and academia.

M4: To foster the students on par with sustainable development goals thereby contributing to the process of nation building.

M5: To nurture and retain conducive lifelong learning environment towards professional excellence.

PATRON

Dr. R. Shivakumar

Chairman- SRM Group of Institutions

Mr. S. Niranjana

Co-Chairman- SRM Group of Institutions

EDITORIAL COMMITTEE

Dr. M. Siva Kumar

Principal - SRM TRP Engineering College

Dr. C. Ramesh Kannan

Vice Principal / Academic

Dr. D. Manikandan

Asst.Professor / Mechanical

Dr. A. Narayanan

Associate.Professor / English

DEPARTMENT COORDINATORS

Dr. D. Manikandan

Asst.Professor / Mech

Dr.R.Jino

Associate Professor / Civil

Dr.M.P.Flower Queen

Professor / EEE

Mr. S.RAJESH

Asst.Professor / CSE

Dr. A. Sugantha

Asst.Professor / ECE



Birthday Greetings to Our Chairman (13.05.2026)

The SRM Group of Institutions family proudly extends its heartfelt birthday wishes to our esteemed Chairman, Dr. R. Shivakumar. His visionary leadership, unwavering commitment to excellence, and continuous support have been instrumental in shaping the growth and success of the institution.

On this special occasion, faculty members, students, and staff join together in expressing their gratitude for his invaluable contributions to education and institutional development. We wish him good health, happiness, and many more years of inspiring leadership and accomplishments.

Happy Birthday, Dr. R. Shivakumar!



SRM TRP
ENGINEERING COLLEGE
An AUTONOMOUS Institution
Affiliated to ANNA UNIVERSITY
TIRUCHIRAPPALLI



Dr. M. SIVA KUMAR
PROFESSOR / PRINCIPAL
Mechanical

Happy
BIRTHDAY
May 19

Wishing you a joyous birthday! Your dedication and hard work are truly appreciated. May this special day bring you happiness, good health, and continued success.

Best Wishes
Dr. R. Shivakumar
Chairman
SRM Group of Institutions, Chennai Ramapuram & Tiruchirappalli



<https://srmorg.com/>

 [/in/dr-shivakuma-r](https://www.linkedin.com/in/dr-shivakuma-r)

Birthday Wishes to Our Principal

The SRM TRP Engineering College family extends its warmest birthday greetings to Dr. M. Siva Kumar, Professor and Principal. His visionary leadership, unwavering commitment to academic excellence, and dedication to the holistic development of students and faculty continue to inspire the entire institution.

On this special occasion, faculty members, staff, and students express their sincere appreciation for his invaluable contributions to the growth and success of the college. We wish him good health, happiness, and continued success in all his endeavors.



Approved by AICTE, Affiliated to Anna University, Accredited by NBA (CSE, ECE, EEE & MECH)
Accredited by NAAC, Recognized by UGC with 2(f) & 12(B) and ISO 9001:2015 Certified Institution
Namakkal-Trichy Main Road, Thottiam, Tiruchirappalli-621 215.

CERTIFICATE OF PARTICIPATION

This to certify that.....**Mr. MANIMARAN S**.....of
.....**SRM TRP ENGINEERING COLLEGE**.....has
Participated in the National Level Five Days Virtual FDP on “**Modern Structural Innovations
and Construction Practices in Civil Engineering - 2K26**” organized by Department of Civil
Engineering, Kongunadu College of Engineering and Technology from 25.05.2026 to
29.05.2026.


HoD/CIVIL


PRINCIPAL

Faculty Achievement – Participation in National Level FDP

Mr. Manimaran S., Faculty Member, SRM TRP Engineering College, successfully participated in a National Level Five-Day Virtual Faculty Development Programme (FDP) on “Modern Structural Innovations and Construction Practices in Civil Engineering – 2K26” organized by the Department of Civil Engineering, Kongunadu College of Engineering and Technology, Tiruchirappalli, from 25 May 2026 to 29 May 2026.

The FDP provided valuable insights into emerging trends, innovative structural systems, sustainable construction methodologies, advanced building materials, and contemporary practices in civil engineering. The programme enabled participants to enhance their technical knowledge and gain exposure to recent developments in structural engineering and construction technologies.

The management, principal, and faculty members of SRM TRP Engineering College congratulate Mr. Manimaran S. on this academic achievement and appreciate his commitment towards continuous professional development and excellence in engineering education.



NPTEL-AICTE Faculty Development Programme

(Funded by the MoE, Govt. of India)



This certificate is awarded to

K SIVARANJANI

for successfully completing the course

Enabling Technologies for 6G Communications Networks (Hindi)

with a consolidated score of 73 %

Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras



(Feb-Mar 2026)

Roll No: NPTEL26EE72S267100934

Duration of NPTEL course : 4 Weeks

The candidate has studied the above course through MOOCs mode, has submitted online assignments and passed proctored exams.
This certificate is therefore acceptable for promotions under CAS as per AICTE notifications dated 16th Nov, 2023, similar to other refresher / orientation courses.
F.No. AICTE / RIFD / FDP through MOOCs / 2023

Mrs. K. Sivaranjani, Assistant Professor of ECE department has successfully completed the NPTEL Online Certification Course titled “Enabling Technologies for 6G Communications Networks” during the January–February 2026 session. The course was offered by NPTEL (National Programme on Technology Enhanced Learning), funded by the Ministry of Education, Government of India, and conducted by IIT Madras.



Dr. A. Sugantha, Assistant Professor of ECE department, successfully participated in the 6-Day Train the Trainer Program on "RTL to GDSII VLSI Design Flow Using Open Source EDA Tools", organized by the Centre for Academic Courses (CAC), Anna University, Chennai Conducted from 25 May 2026 to 30 May 2026. This training focused on the complete VLSI design flow, covering RTL design, verification, synthesis, physical design, and implementation using open-source Electronic Design Automation (EDA) tools.



ELECTRONICS AND COMMUNICATION ENGINEERING

FACULTY ACHIEVEMENT



Dr. K. Martin Sagayam, Associate Professor of ECE department, successfully participated in the Scheme for Promotion of Academic and Research Collaboration (SPARC) programme on "Introduction to Electromagnetic Metasurface and Modelling Using ANSYS-HFSS."

The programme was organized by the Department of Electronics and Communication Engineering, National Institute of Technology (NIT) Tiruchirappalli, from 27 April 2026 to 1 May 2026. The training provided participants with comprehensive knowledge of electromagnetic metasurfaces, their applications, and advanced modelling techniques using ANSYS-HFSS simulation software.

Mrs. Ga. Nivedaa, Assistant Professor of ECE, successfully participated in the Scheme for Promotion of Academic and Research Collaboration (SPARC) programme on "Introduction to Electromagnetic Metasurface and Modelling Using ANSYS-HFSS."

The programme was organized by the Department of Electronics and Communication Engineering, National Institute of Technology (NIT) Tiruchirappalli, from 27 April 2026 to 1 May 2026. The training provided participants with comprehensive knowledge of electromagnetic metasurfaces, their applications, and advanced modelling techniques using ANSYS-HFSS simulation software.



ELECTRONICS AND COMMUNICATION ENGINEERING

FACULTY ACHIEVEMENT



Dr. Martin Sagayam Kulandairaj, Associate Professor of ECE department, has been recognized by Springer Nature for his valuable contributions as a peer reviewer for the journal Discover Applied Sciences. According to the Reviewer Certificate issued on 12 May 2026, Dr. Martin Sagayam successfully reviewed 11 manuscripts during 2026, demonstrating his expertise and commitment to maintaining high standards of academic research and scholarly publishing.



Dr. Martin Sagayam Kulandairaj, Associate Professor of ECE department, has been recognized as a member of the Reviewing Board of the Journal of Smart Algorithms and Applications (JSAA), published by the Scientific Innovation Research Group (SIRG).

This recognition acknowledges his valuable contributions to the peer-review process and his commitment to maintaining the quality and integrity of scholarly publications. As a reviewing board member, Dr. Martin Sagayam plays an important role in evaluating research manuscripts, providing constructive feedback, and supporting the dissemination of high-quality scientific knowledge in the fields of smart algorithms and advanced applications.



ARJUN COLLEGE OF TECHNOLOGY

(Approved by AICTE - New Delhi & Affiliated to Anna University - Chennai)
(An ISO 9001 - 2015 Certified Institution)
Thamaraikulam, Coimbatore - Pollachi Highway,
Coimbatore - 642 120, Tamil Nadu



12-05-2026

Appreciation letter

Dear Dr. K. Martin Sagayam,

On behalf of Arjun College of Technology, I extend my sincere gratitude and heartfelt appreciation for your valuable contribution as a Resource Person during the Six Days Online Faculty Development Programme on "Machine Learning Applications in Mechanical Engineering: Trends & Insights" organized by the Department of Mechanical Engineering on 09.05.2026. Your session on the emerging applications of Machine Learning in the field of Mechanical Engineering was highly informative, insightful, and intellectually enriching. We deeply appreciate the time, effort, and support extended by you towards the success of this Faculty Development Programme.

Once again, I express my sincere thanks for your esteemed presence and valuable contribution. We look forward to your continued association and support in our future academic and professional activities.


PRINCIPAL 12/5

Ph : 95000 61500, 94433 45263 | Web : www.actechnology.in | Email : arjuncollegeoftechnology@yahoo.com

Dr. K. Martin Sagayam, Associate Professor of ECE department, was honored with an Appreciation Letter from Arjun College of Technology, Coimbatore, in recognition of his valuable contribution as a Resource Person in the Six-Day Online Faculty Development Programme (FDP) on "Machine Learning Applications in Mechanical Engineering: Trends & Insights."

During the programme, Dr. Martin Sagayam delivered an expert session on the emerging applications of Machine Learning in Mechanical Engineering, providing participants with valuable insights into current technological advancements and interdisciplinary research opportunities. His session was highly appreciated for its informative content, practical relevance, and academic excellence.



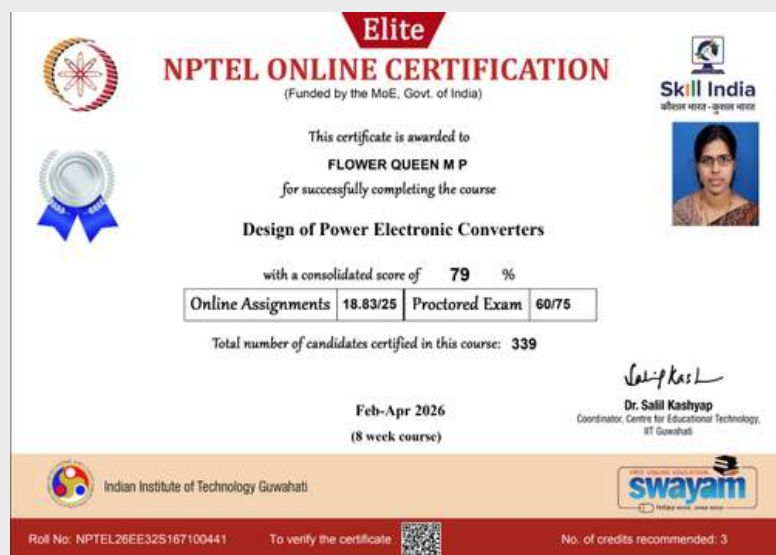
We are proud to share that Dr. G. Maheswaran of the Department of Electrical and Electronics Engineering, SRM TRP Engineering College, has successfully completed the prestigious Centre for Engineering Education Excellence (CEEE) Program, equivalent to a 2-week AICTE–ATAL FDP.

The program was jointly organized by Infosys Foundation and Indian National Academy of Engineering, with support from AICTE and IITs. The training was conducted at the regional centre Indian Institute of Technology Kharagpur from May 2025 to December 2025.

The program focused on enhancing excellence in engineering education through hybrid-mode training that included both offline and online learning sessions. This achievement reflects the institution's continuous commitment towards academic excellence, faculty development, and quality technical education.

ELECTRICAL AND ELECTRONICS ENGINEERING

FACULTY ACHIEVEMENTS



Dr. M. P. Flower Queen, Associate Professor, Department of Electrical and Electronics Engineering, SRM TRP Engineering College, for successfully completing the prestigious NPTEL Online Certification Course on “Design of Power Electronic Converters.”

The certification course was offered through National Programme on Technology Enhanced Learning in association with Indian Institute of Technology Guwahati under the SWAYAM initiative of the Government of India.

Dr. Sathishkumar R. on successfully completing the prestigious NPTEL Online Certification Course titled “Energy and the Climate Crisis: The Path to Net-Zero Emissions.”

The course was offered through the National Programme on Technology Enhanced Learning (NPTEL) under the SWAYAM initiative of the Government of India. This certification demonstrates his dedication to continuous learning and his commitment to understanding contemporary global challenges related to energy sustainability and climate change.



We are delighted to congratulate Mr. G. Ram Prakash on successfully completing the prestigious NPTEL Online Certification Course titled “Industry 4.0: Managing the Digital Transformation.”

The course was offered through the National Programme on Technology Enhanced Learning (NPTEL) in association with Indian Institute of Technology Bombay under the SWAYAM initiative of the Government of India.



ELECTRICAL AND ELECTRONICS ENGINEERING

FACULTY ACHIEVEMENTS



Mr. T. Chithras, Assistant Professor, Department of Electrical and Electronics Engineering, SRM TRP Engineering College, on successfully completing the prestigious NPTEL Online Certification Course titled "Industry 4.0: Managing the Digital Transformation."

The certification course was offered through the National Programme on Technology Enhanced Learning (NPTEL) in association with Indian Institute of Technology Bombay under the SWAYAM initiative of the Government of India.



Mr. R. Bharanidharan, Faculty Member, Department of Electrical and Electronics Engineering, SRM TRP Engineering College, successfully completed the Faculty Development Programme on "Skill Development Workshop for Electronic Product Design & Systems."

The programme was conducted from 20th to 22nd May 2026 through the Centre for Continuing Education (CCE), Indian Institute of Science (IISc), Bengaluru, one of India's premier institutions for advanced scientific and technological research.

The workshop focused on enhancing participants' knowledge and practical skills in electronic product design, embedded systems, hardware development, system integration, and emerging technologies in electronics engineering. The programme provided valuable exposure to current industry practices and innovative approaches in electronic system design and development.





🎉 Welcoming New Faculty Members 🎉

The Department of Electrical and Electronics Engineering, SRM TRP Engineering College, is delighted to welcome Dr. A. Revathy and Dr. T. Chithras as Assistant Professors in the department.

Their appointment marks a valuable addition to the academic community, bringing with them knowledge, expertise, and a passion for teaching and research. With their academic accomplishments and commitment to excellence, they are expected to contribute significantly to the department's mission of providing quality education, fostering innovation, and nurturing future engineers.

The department looks forward to their active involvement in academic, research, and student development activities. Their presence will further strengthen the department's efforts toward achieving excellence in teaching, research, and industry collaboration.

We extend our warmest welcome and best wishes to Dr. A. Revathy and Dr. T. Chithras for a successful and fulfilling journey at SRM TRP Engineering College.

ELECTRICAL AND ELECTRONICS ENGINEERING

FACULTY ACHIEVEMENTS



Mr. Bharanidharan Ravi Shankar on successfully completing the AI Upskilling Certificate: Hands-On Development from Model to App offered by Qualcomm Academy.

This certification provides comprehensive training in Artificial Intelligence application development, equipping participants with practical skills to transform AI models into real-world applications. Through hands-on learning experiences, the program emphasizes the integration of machine learning concepts, model deployment strategies, and application development practices.

Mr. Bharanidharan R on receiving the 2026 Certificate of Participation from the IEEE Sensors Council in recognition of his status as a member in good standing and his commitment to advancing technology for the benefit of society. This recognition reflects his active engagement with the global engineering community and dedication to professional excellence. Membership in the IEEE Sensors Council signifies a commitment to continuous learning, innovation, and contributions to emerging sensor technologies that impact industries worldwide. The IEEE Sensors Council brings together researchers, academicians, and industry professionals working across multidisciplinary domains to foster technological advancement and collaborative research.



ELECTRICAL AND ELECTRONICS ENGINEERING

FACULTY ACHIEVEMENTS

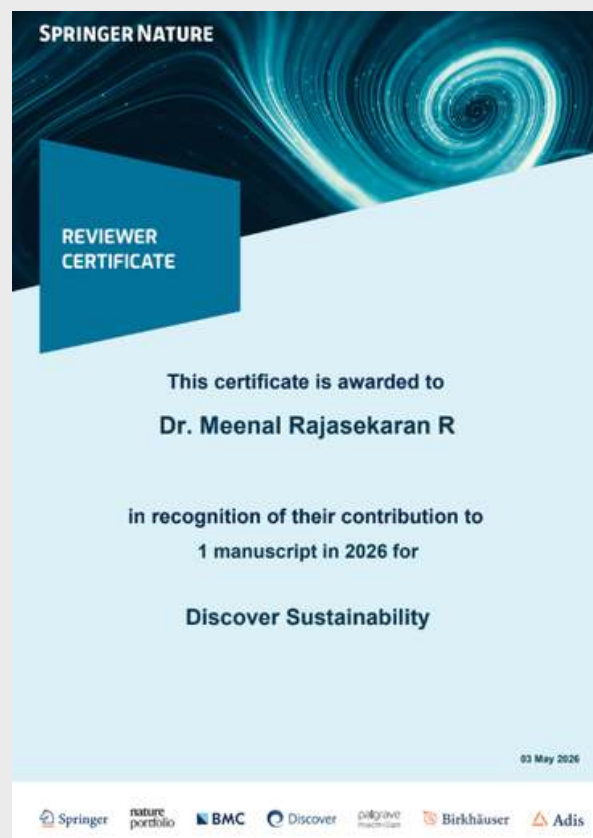


 Review History Report Athikesavan MUTHU MANOKAR From: 1 May 2026 To: 25 May 2026 All dates in GMT 		
Total journals reviewed for:		8
Total reviews completed:		8
	Desalination and Water Treatment	1
	Journal of Engineering Research	1
	Next Materials	1
	Results in Engineering	1
	Separation and Purification Technology	1
	Solar Energy	1
	Solar Energy Materials and Solar Cells	1

Dr. M. P. Flower Queen, Associate Professor, Department of Electrical and Electronics Engineering, SRM TRP Engineering College, for successfully completing the prestigious NPTEL Online Certification Course on “Design of Power Electronic Converters.” The certification course was offered through National Programme on Technology Enhanced Learning in association with Indian Institute of Technology Guwahati under the SWAYAM initiative of the Government of India.

Dr. Meenal Rajasekaran R has been honored with a Reviewer Certificate from Springer Nature in recognition of valuable peer-review contributions during 2026.

Dr. Meenal Rajasekaran R successfully reviewed a manuscript for the journal Discover Sustainability, demonstrating commitment to maintaining high standards of scholarly research and academic excellence.





Received: 6 October 2024 | Revised: 28 March 2025 | Accepted: 22 April 2025
DOI: 10.1002/ep.70489

ORIGINAL RESEARCH
Sustainable Energy

ENVIRONMENTAL PROGRESS
& SUSTAINABLE ENERGY

Comparative experimental investigation of conical solar still using almond shells at different sizes: Yield, energy, and exergy analysis

Mohammed El Hadi Attia¹ | Sivakumar Vaithilingam² | A. Muthu Manokar³

¹Physics Department, Faculty of Exact Sciences, University of El-Qadisiyah, El-Qadisiyah, Iraq
²Department of Mechanical Engineering, Ramo Institute of Technology, Rajapet, Tamil Nadu, India

³Department of Electrical and Electronics Engineering, SRM TRP Engineering College, Tiruchirappalli, Tamil Nadu, India

Correspondence:
A. Muthu Manokar, Department of Electrical and Electronics Engineering, SRM TRP Engineering College, Tiruchirappalli, 621105, Tamil Nadu, India.
Email: muthumanokar@srmtpr.ac.in and muthumanokar@srmtpr.ac.in

Abstract

This manuscript studies the effect of almond shells (AS) at different sizes (4, 6, 8, and 10 mm) on the Conical Solar Still (CoSS) performance. The AS of different sizes (10, 6, 8, and 4 mm), by a regular distribution in the bottom of a basin of CoSS of surface of 0.1 m² covered with a 3 mm thick plastic conical cover, filled with 1 l of salt water. On the first day, A CoSS, a CoSS containing AS at 10 mm (CoSS-AS6410), and a CoSS containing AS at size 8 mm (CoSS-AS68) were experimented. On the second day, A CoSS containing AS at size 6 mm (CoSS-AS66) and a CoSS containing AS at size 4 mm (CoSS-AS64) were compared with the CoSS. In May 2024, experiments were carried out in El-Qadisiyah, Iraq. Cumulative return results for CoSS, CoSS-AS6410 mm, CoSS-AS68 mm, CoSS-AS66 mm, and CoSS-AS64 mm are 4.69, 5.44, 5.83, 6.3, and 6.86 L/m²/day, respectively. The rate of improvement in the cumulative yield was 16, 24.23, 34.37, and 46.3% for CoSS with using quantities of AS at different sizes 10, 8, 6 and 4 mm, respectively.

KEYWORDS

almond shells, conical solar still, different sizes, solar energy, South Algeria

1 | INTRODUCTION

Numerous researchers are trying to improve the yield of the passive SS (PSS) over the past centuries. It is a continuous process of evolving new techniques to improve its existing performance. The climatological parameter is only at the mercy of nature. The researchers have control over the design and operation parameters. From a design point of view, the researchers modified the structure of the PSS. In this work, we designed and developed a conical structure for the solar stills. Comparatively, the best conical solar stiller may not produce the same productivity as a simple trapezoidal solar stiller. Still, the enhancement of SS performance is a really one, even after the revision in the structure of the stiller. Out of the abundant improving techniques tried in the solar stiller, the incorporation of energy storage material^{1–3} showed better performance. To develop a cost-effective solar stiller, the choice of a low-cost naturally available energy material plays a vital role.

Bardien et al.⁴ improved the productivity of SS by using bricks by incorporating atmospheric heating systems. The PV-coated SS with 0.64 m² basin area productivity is 9200–10,900 L/m²/day by the inclusion, the traditional SS productivity is only 2050–2340 mL/m²/day. There is an increase in daily efficiency of 17.4% (27%–44.8%) achieved in this study. A black plate of 2 mm measuring 0.48 by 0.48 m with a thickness of 2 mm is used as a low-cost energy absorbing material to improve the yield of a distillation unit by Khechichouche et al.⁵ The productivity increased to 54% for the usage of energy absorbing material in the solar distillation unit. Hattar et al.⁶ used with low-cost, biodegradable materials such as sawdust and rice straw to enhance the yield of the distillation unit. The conventional SS is capable of producing 34.81% and 51.86% less than that of the modified SS stored with sawdust and rice straw, respectively. Abdullah et al.⁷ achieved 84% and 135% more productivity than conventional SS modified with an internal reflector, nano-phase change material.

Environ Prog Sustainable Energy. 2025;13:70489.
<https://doi.org/10.1002/ep.70489> | © 2025 American Institute of Chemical Engineers. | 5 of 18

The research article titled “Comparative Experimental Investigation of Conical Solar Still Using Almond Shells at Different Sizes: Yield, Energy, and Exergy Analysis” has been successfully published in the esteemed journal Environmental Progress & Sustainable Energy. The research was carried out by Dr. A. Muthu Manokar, contributing valuable insights into sustainable energy and water purification technologies.

the research article titled “Efficacy of Parabolic Trough Collector with Three Different Receivers at Various Flow Rates of Working Fluids” in the prestigious international journal Applied Thermal Engineering. The research was authored by Dr. A. Muthu Manokar contributing significant advancements in the field of solar thermal energy systems and sustainable energy technologies.



Research Paper Efficacy of parabolic trough collector with three different receivers at various flow rates of working fluids

Babu Sasi Kumar Subramaniam^{1,2,3} | A. Muthu Manokar³ | Mohamed M. Awad^{3,4}

¹Department of Mechanical Engineering, SRM Institute of Technology, Tiruchirappalli, Tamil Nadu, India
²Department of Electrical and Electronics Engineering, SRM TRP Engineering College, Tiruchirappalli, 621105, Tamil Nadu, India
³Mechanical Power Engineering Department, Faculty of Engineering, Mansoura University, Mansoura 20536, Egypt

ARTICLE INFO

Keywords:
Parabolic trough collector
Receiver
CuO
Al₂O₃
Water

ABSTRACT

The preferred method for generating heat in various applications is a parabolic trough collector (PTC). This research tackles the gap in current literature, as the majority of studies emphasize a sole receiver with one receiver under constrained circumstances. Its performance was evaluated in three different vacuum-glass-covered stainless steel, copper, and silver strip receivers, each featuring a different concentration of Nano-fluids (water with 0.2% volume concentration of CuO, Al₂O₃, and Fe₃O₄) at flow rates of 0.025, 0.05, and 0.075 kg/s, respectively. In the experiments, the PTC-Copper tube receiver achieves a maximum productivity of 40% using water (0.2% CuO) Nano-fluids at 0.075 kg/s, the best flow rate for maximum heat absorption, compared to 0.045 and 0.055 kg/s. The Copper tube receiver shows improved heat resistance through Monte Carlo Ray tracing, and the effective thermal conductivity is influenced by Brownian motion. The results indicated that 0.045 and 0.055 kg/s were 2% and 6% less effective, respectively, than 0.075 kg/s. The copper and stainless steel tubes show efficiencies that are 3% and 1.5% higher, respectively, than the efficiency of the silver strip strips. Increasing the water at a rate of 0.025, 0.05, and 0.075 kg/s, the efficiency drops by 6.5, 8, and 13%, respectively. The research identifies the optimal receiver flow rate pairing to enhance thermal productivity and system reliability by examining heat transfer, energy losses, and the effects of receiver design to boost PTC performance without altering the collector structure.

1. Introduction

In modern years, rising energy and fossil fuel prices have made renewable and sustainable energy sources more affordable. Among these, solar energy stands out as one of the most plentiful and environmentally friendly options available due to its low carbon footprint [1]. Many energy needs, such as hot water for household use, home heating, industrial heat demand, and electricity generated by solar power facilities, can be met [2]. However, much research has focused on enhancing their effectiveness at high operating temperatures by increasing heat transfer, which depends on the Working Fluids and tube geometry. Since the choice has a significant impact on collector yield, it has become the focus of intensive study in the past few years. Typical working fluids include water, water-glycol blends, and water-based Nano-fluids, serving as efficient methods for progress. The global demand for solar thermal technologies, particularly in concentrating solar

power systems such as parabolic trough collectors, depends on the design of receiver tubes, heat transfer methods, and the effectiveness of insulation. For further improvement, overall efficiency and longevity can be enhanced through advances in materials engineering, including the adoption of cutting-edge materials such as aluminum-magnesium hybrid metal matrix composites, which offer improved thermal conductivity, lighter weight, increased mechanical strength, better surface quality, lower tool wear, and greater dimensional accuracy. Additionally, the use of alternative water jet machining ensures superior surface finish and manufacturability for high-temperature applications. Further gains can be achieved by integrating hybrid Nano-fluids with energy storage systems. At the same time, it improves thermophysical properties, thereby enhancing heat transfer efficiency in the system. Integrating phase-change materials, such as polyethylene glycol, into aluminum foam frameworks improves thermal storage and heat-transfer efficiency by leveraging porous media with a high surface

^{*} Corresponding author.
[†] Corresponding author at: Department of Mechanical Engineering, SRM Institute of Technology, Tiruchirappalli, Tamil Nadu, India.
E-mail address: sbskumar1112@gmail.com (B.S. Subramaniam), a.muthumanokar@gmail.com (A.M. Manokar), m.m.awad@mans.edu.eg (M.M. Awad).

<https://doi.org/10.1016/j.applthermaleng.2025.121178>
Received 26 August 2024; Received in revised form 12 April 2025; Accepted 22 April 2025
Available online 22 April 2025

1394-4311/© 2025 Elsevier Ltd. All rights are reserved, including those for text and data mining, AI training, and similar technologies.



Cite this article
Durasamy Ramalingam R, Dhamodaran G, Esakkumuthu G and Athikesavan M
Enhancement of solar desalination using a passive parabolic trough integrated tubular solar still through experimental investigation.
Proceedings of the Institution of Civil Engineers – Energy
<https://doi.org/10.1680/jenr.21.00018>

Research Article
Paper 2000216
Received 16/02/2021; Accepted 30/04/2021
Emerald Publishing Limited. All rights reserved.

Energy

Enhancement of solar desalination using a passive parabolic trough integrated tubular solar still through experimental investigation

Rajendran Durasamy Ramalingam
Department of Mechanical Engineering, Shivajirao S. Jondhale College of Engineering & Technology, Thane, India

Gopinath Dhamodaran
Centre for Sustainable Energy Technologies, Easwari Engineering College, Chennai, India; Centre for Research, SRM Institute of Science and Technology, Chennai, India (corresponding author: gopulu6@gmail.com)

Ganapathy Sundaram Esakkumuthu
Department of Mechanical Engineering, Velammal Engineering College, Chennai, India

Muthumanokar Athikesavan
Department of Electrical and Electronics Engineering, SRM TRP Engineering College, Tiruchirappalli, India

Conventional solar stills are constrained by low productivity and limited thermodynamic efficiency. This study experimentally investigates a passive parabolic trough-assisted tubular solar still (TSS-PTC) and compares its performance with a conventional tubular solar still (TSS) under identical climatic conditions. A passive parabolic trough reflector is integrated to enhance solar concentration without external energy input, achieving an effective concentration ratio of 2.33 and improving solar energy absorption. Experiments conducted over five consecutive days under peak and average solar irradiance of 970 and 641.5 W/m² indicate improved thermal behaviour. The TSS-PTC showed increases in basin water and cover temperatures of 3.84°C and 1.9°C, respectively, leading to a 23.10% rise in the evaporative heat transfer coefficient. Consequently, freshwater productivity increased, with a 54% rise in peak hourly yield and an average productivity improvement of 91.3% compared to the conventional system. The maximum thermal efficiency reached 45.2%, while the conventional one still produced 26.1%. In addition, thermal and exergy efficiencies increased by 59.43% and 91.30%, respectively. Overall, daily distillate output from the TSS-PTC was more than twice that of the conventional still, indicating its suitability for efficient, decentralised solar desalination applications.

Keywords: clean water and sanitation/energy conservation/energy productivity/freshwater productivity/parabolic trough collector/renewable energy/solar desalination/tubular solar still/UN SDG 6: Clean water and sanitation/UN SDG 7: Affordable and clean energy

Notations

h_e evaporative heat transfer coefficient

I solar irradiance

$\dot{m}^d$ distillate mass flow rate

Q_e evaporative heat transfer rate

T_a ambient temperature

T_c cover (glass/acrylic) temperature

T_b basin water temperature

η_{ex} exergy efficiency

η_{th} thermal efficiency

water, but only 0.3% of it is easy to obtain for drinking, like surface water and shallow groundwater. This growing imbalance between supply and demand poses a significant risk to public health, global food security, and socio-economic development, particularly in regions where natural freshwater resources are severely limited (Tarazona-Romero *et al.*, 2022; Ahmadi *et al.*, 2020; Bundschuh *et al.*, 2021). Because of these problems, more and more people are turning to decentralised and sustainable ways to treat water. Renewable energy-driven desalination has emerged as a viable long-term option for freshwater production. Among these, solar desalination has attracted considerable academic and industrial attention due to its low environmental impact, operational simplicity, and suitability for off-grid applications, particularly in remote and underserved regions (Chauhan *et al.*, 2021; Mohan *et al.*, 2019). Among the available passive technologies, solar stills provide an economical and low-maintenance solution by replicating the natural processes of evaporation and

1. Introduction

The global availability of freshwater has become a major concern in the 21st century due to increasing population, expanding industrial activities, and the influence of climate change on natural water cycles. About 70% of the Earth's surface is covered by

The research article titled “Enhancement of Solar Desalination Using a Passive Parabolic Trough Integrated Tubular Solar Still Through Experimental Investigation”, co-authored by Dr. A. Muthu Manokar, Department of Electrical and Electronics Engineering, SRM TRP Engineering College, Tiruchirappalli, along with researchers from leading institutions across India.



Faculty members from the Department of Electrical and Electronics Engineering, Dr. R. Sathishkumar and Mr. R. Bharanidharan, participated in an Industrial Training Programme at High Energy Batteries (India) Limited, Mattur, Tamil Nadu, from 11th to 13th May 2026.

High Energy Batteries (India) Limited is a leading indigenous manufacturer specializing in advanced battery technologies for India's Defence, Aerospace, and Space sectors. The training programme provided valuable exposure to state-of-the-art battery manufacturing technologies and industrial practices employed in mission-critical applications.

During the programme, the participants interacted with industry experts and gained in-depth knowledge of advanced energy storage technologies, including Battery Management Systems (BMS), Power Electronics Applications, Energy Storage Systems (ESS), Vanadium Redox Flow Battery (VRFB) Technology, and Renewable Energy Integration. The training also covered industrial testing procedures, quality assurance practices, safety standards, and battery protection systems.

The training enhanced the participants' understanding of real-world industrial applications of Electrical and Electronics Engineering concepts and strengthened the linkage between academic learning and industry requirements. It also provided valuable insights into emerging trends in battery technology, renewable energy systems, and smart energy management.

This industrial exposure reflects the department's commitment to continuous learning, industry collaboration, and curriculum enrichment, ensuring that faculty members remain updated with the latest technological advancements and industrial practices.



ELECTRICAL AND ELECTRONICS ENGINEERING

STUDENT ACHIEVEMENTS



ELECTRICAL AND ELECTRONICS ENGINEERING

STUDENT ACHIEVEMENTS



Celebrating Academic Excellence: NPTEL Faculty Achievements

DATA MINING FOR DECISION MAKING 4 WEEKS IIT MANDI



Mrs. P Jeyamedona
Assistant Professor
Elite with silver



Mrs. R. Sampavi
Assistant Professor
Elite with silver



Dr. Sabeetha Saraswathi
Associate Professor
Elite



Mrs. T. Suganya
Assistant Professor
Successfully Completed



Mrs. R. K. Maheswari
Assistant Professor
Successfully Completed

EDGE COMPUTING 8 WEEK
COURSE IIT KANPUR



Mr. S. Rajesh
Assistant Professor
ELITE

FOUNDATION FOR VIRTUAL
AND AUGMENTED REALITY SYSTEMS
12 WEEKS IIT GUWAHATI



Dr. A. Muthuraj
Associate Professor
ELITE



Mrs. M. Subasri
Assistant Professor
Successfully Completed

Design Thinking - A Primer 4 weeks



Mrs. S. Deva Priya
Assistant Professor
Elite with silver



Mrs. T. Ramya
Assistant Professor
Elite with silver



Ms. Maruvarasi
Assistant Professor
Elite with silver



Mrs. C. Aarthi
Assistant Professor
Elite with Silver



Dr. A. Muthuraj
Associate Professor
Elite



Mr. A. Sendhooran
Assistant Professor
Elite

The Department of Computer Science and Engineering proudly applauds its faculty achievers for their outstanding accomplishment in successfully completing the prestigious NPTEL certification courses:

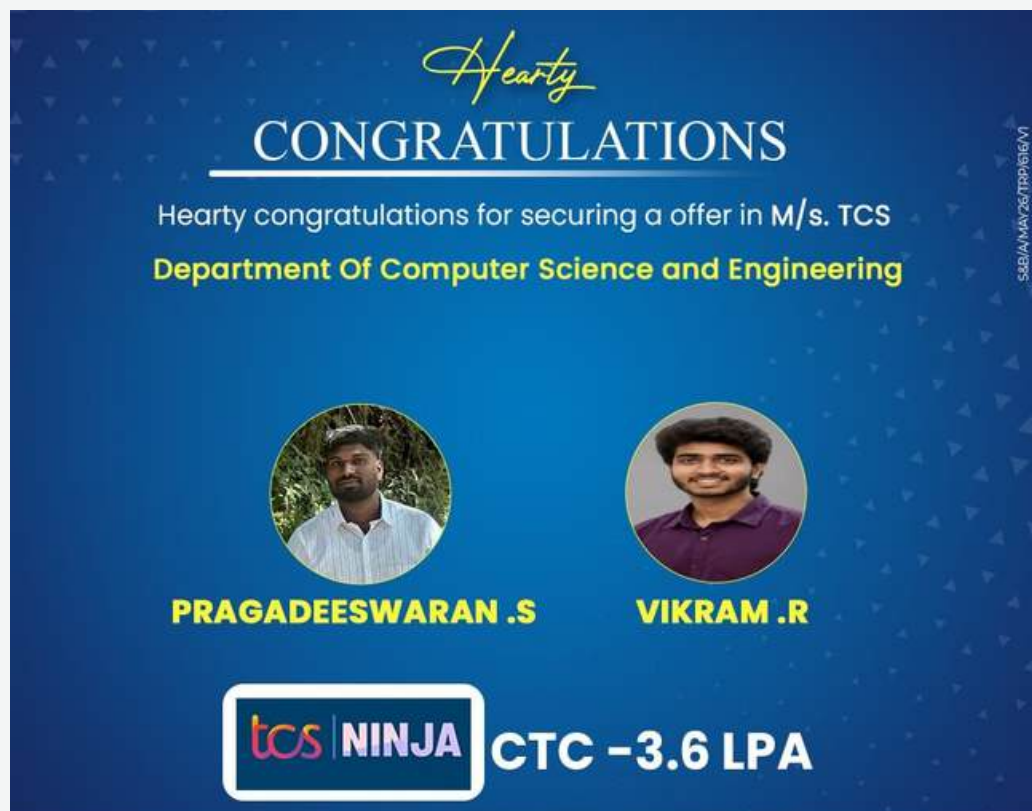
Data Mining for Decision Making – 4 Weeks, IIT Mandi

Design Thinking – A Primer”, 4 Weeks, IIT Madras

Edge Computing – 8 Weeks, IIT Kanpur

Foundation for Virtual and Augmented Reality Systems – 12 Weeks, IIT Guwahati

These achievements reflect the faculty members' dedication to continuous learning, academic excellence, and professional growth. By embracing emerging technologies and advancing their expertise in cutting-edge domains, they continue to set inspiring examples for students and peers alike.



Placement Achievement – Department of Computer Science and Engineering

The Department of Computer Science and Engineering proudly congratulates Pragadeeswaran S and Vikram R on securing a prestigious Dream Offer at TCS Ninja. Their remarkable achievement reflects unwavering dedication, perseverance, and a relentless pursuit of excellence. Through consistent hard work and focused determination, they have brought pride and honor to the department. This milestone stands as a testimony to their technical competence, disciplined efforts, and commitment toward achieving their career goals. The department extends its heartfelt wishes to both students for a successful and distinguished professional journey ahead.

STUDENTS ACHIEVEMENTS

Excellence Beyond Classrooms – NPTEL Achievers

BLOCKCHAIN AND ITS APPLICATIONS 12 WEEKS IIIT KHARAGPUR

 L. SWETHA Elite	 S. VIKAS Elite	 S S VISHNU VARTHAN Successfully completed	 D. RASIKA Successfully completed
 SUBASH GUNASEKARAN Successfully completed	 S PUVISHA Successfully completed	 D. SINDHU SRI Successfully completed	 A. SIVADHARSAN Successfully completed
 YOGASRI VELAYUTHAM Successfully completed	 B P VARSHINI Successfully completed	 M LOGESWARAN Successfully completed	

Design Thinking – A Primer IIT Madras 4 week course

 M. PRAVEEN SAGAR Elite with Silver Certification	 M. NACHIMUTHU Elite Certification	 M.R. MANIKANDAN Elite Certification	 V. KUMARAGURU Elite Certification
 N.MUTHUKUMARAN Successfully Completed	 A.PRAVIN KUMAR Successfully Completed	 K.KESAVARAJ Successfully Completed	 I.MOHAMED IRFAN Successfully Completed
 G.PRAKASH Successfully Completed	 G.PRAVINRAJ Elite Certification Natural Language Processing 12 Weeks IIT Kharagpur	 A. KEINA PRAISY Elite Certification Edge Computing 8 Weeks IIT Kanpur	 P. LALITH KHALA Elite Certification Edge Computing 8 Weeks, IIT Kanpur

Programming in Java, 12 week IIT, Kharagpur

 R. NOWSHIKA MIRZA Elite With Gold (Topper 1%) Certification	 R. RAKSHITA Elite With Gold	 R. RAHINI Elite With Gold	 S.NIKITHA Elite With Gold
 R.KIRUTHIGA Elite With Silver	 V.SYED AAKHIL ELITE Data Analytics with Python 12 weeks IIT Roorkee	 K.SUREYAGIRISHNAN Elite Data Analytics with Python 12 weeks IIT Roorkee	 G. SRIRAM Successfully Completed Data Analytics with Python 12 weeks IIT Roorkee
 R. VISHNU PRIYA Successfully Completed Data Analytics with Python 12 weeks IIT Roorkee	 S RAMYA Successfully Completed Edge Computing 8 weeks, IIT Kanpur	 S.MONIKA Successfully Completed Blockchain its Applications 8 weeks, IIT Kharagpur	

The Department of Computer Science and Engineering proudly congratulates its students on their outstanding achievement in the NPTEL courses:

Data Mining for Decision Making – 4 Weeks, IIT Mandi

Design Thinking – A Primer” – 4 Weeks, IIT Madras

Edge Computing – 8 Weeks, IIT Kanpur

Data Analytics with Python – 12 Weeks, IIT Roorkee

Blockchain and Its Applications – 12 Weeks, IIT Kharagpur

Artificial Intelligence (AI) for Management – 12 Weeks, IIT Madras

This accomplishment reflects the students’ dedication, perseverance, and commitment to continuous learning beyond the classroom. By successfully completing these rigorous courses, they have demonstrated their eagerness to enhance their technical expertise and stay abreast of emerging technologies in the field of Computer Science. The department proudly congratulates all the achievers for their remarkable accomplishment.



MICRO AND NANO TECHNOLOGIES SERIES

APPLICATIONS OF NANOTECHNOLOGIES IN BIOMEDICINE, AGRICULTURE, AND THE ENVIRONMENT



EDITED BY
SURENDER KUMAR SHARMA
SONIA MALIK

We are pleased to share that a book chapter titled “Ecofriendly Nanoparticle Synthesis: Harnessing Corallocarpus epigaeus and Spermacoce hispida for Therapeutic and Environmental Applications”, co-authored by our faculty member, has been published by Elsevier in the book “Applications of Nanotechnologies in Biomedicine, Agriculture, and the Environment” (ISBN: 978-0-443-29902-5). This scholarly contribution highlights innovative ecofriendly approaches to nanoparticle synthesis and their potential applications in therapeutic and environmental domains, reflecting the institution’s commitment to advancing sustainable and impactful research.

The Faculty Industrial Training Programme conducted at TVS Tyres was highly informative and enriching. The training provided valuable insights into modern industrial practices, manufacturing processes, and quality management systems, thereby strengthening the participants’ industry-oriented knowledge and skills. The experience gained through this programme will contribute significantly to effective teaching, curriculum enhancement, and better preparation of students to meet contemporary industrial requirements.





Faculty Internship Training – Industry Exposure in Railway Equipment Manufacturing

The Faculty Internship Training Programme provided an excellent opportunity to bridge the gap between academic knowledge and industrial practices through valuable hands-on exposure to railway equipment manufacturing. The training offered insights into advanced manufacturing processes, including sheet metal fabrication, TIG and MIG welding, coating technologies, and bending operations employed in the production of components for Metro Trains, Vande Bharat Express, and Bullet Trains. The programme enhanced participants' understanding of modern manufacturing methods, industrial standards, and advanced fabrication technologies adopted in the railway sector. The practical knowledge gained through this internship will contribute significantly to effective teaching, curriculum enrichment, and the development of industry-ready engineering graduates.



Industry–Institution Interaction Meeting with BOSCH, Gangaikondan

Date: 21 May 2026

An Industry–Institution Interaction Meeting was organized with representatives from BOSCH, Gangaikondan, a leading manufacturer of automotive components, two-wheeler system components, and industrial and power tool components. The meeting witnessed the participation of industry experts and academicians from various institutions, fostering meaningful discussions on industry expectations and academic preparedness.

The BOSCH team comprised Mr. Chandrashekhar Anil (Technical Plant Manager), Mrs. Niranjana (Human Resources Representative), and Mr. Panju Arunachalam (Commercial Plant Manager).

During the interaction, the industry representatives emphasized the importance of creating dedicated platforms to strengthen communication, networking, and professional development opportunities for women. Discussions also focused on promoting diversity and inclusion initiatives, encouraging greater participation of women in manufacturing and core engineering sectors, and addressing challenges related to workplace communication and cultural barriers.

The experts highlighted that while students possess sound theoretical knowledge, there is a growing need to enhance practical skills and industrial application capabilities. The importance of continuous engagement between industry professionals and academic institutions was emphasized to bridge the gap between classroom learning and industrial requirements.

The interaction is expected to benefit the institution through increased internship opportunities, industry-oriented skill development programmes, industrial visits for Mechanical Engineering students, and enhanced placement prospects through strengthened industry collaboration.

The faculty members express their sincere gratitude to the Management, Principal, and Associate Dean – Industry Connect for facilitating this valuable interaction, which will significantly contribute to enriching student learning and strengthening industry–institution partnerships.



SRM TRP
ENGINEERING COLLEGE
An AUTONOMOUS Institution
Affiliated to ANNA UNIVERSITY
TIRUCHIRAPPALLI

COUNSELLING CODE : 3795



SRM TRP ENGINEERING COLLEGE
(SRM GROUP)

IRUNGALUR - 621105, MANNACHANALLUR - TALUK,
TIRUCHIRAPPALLI, TAMILNADU

PHONE : 0431 - 2258681, 2258947

<https://trp.srmtrichy.edu.in/>

 @Trichysrmtrp  @SRMTRPEngineeringCollege  @srm_trp  @TrichySRMTRP

 @srm-trp-engineering-college