

2026



SPRERI
Striving for Excellence

SPRERI's NEWSLETTER

Second Quarter 2026 (April - June)

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About SPRERI

Sardar Patel Renewable Energy Research Institute (SPRERI), an autonomous organization based in Anand, Gujarat, has been at the forefront of renewable energy research, development, and commercialization since its establishment in **1979**.

Recognized nationally and internationally, SPRERI is known for its pioneering contributions to renewable energy technologies through fundamental research, pilot-scale demonstrations, and the commercialization of innovative solutions.



Founded by **Late Dr. H. M. Patel (Former Home Minister, Govt. of India)** and **Late Mr. Nanubhai Amin (Veteran Businessman)**

Key Recognitions

DSIR-SIRO

Recognized as Scientific & Industrial Research Organization by Department of Scientific & Industrial Research, Govt. of India

TISS Empaneled

National CSR Hub for thematic area: Renewable Energy R&D. Listed as credible NGO for CSR funding (A Hub Code: A000263)

Regional Test Centre

Testing Solar Thermal Devices since 1985 till 2020. Supported by MNRE, approved by BIS and accredited by NABL.

Academic Centre

Recognized centre for M.Tech / PhD research with national and international presence

Vision

SPRERI aims to develop environmentally friendly renewable energy technologies that are efficient and economically sustainable for society.

Mission

To excel in research, development, and the commercial deployment of renewable energy technologies, while promoting environmentally sustainable solutions through education, training, and public-private partnerships for India and other developing global economies.

Divisions / Thrust Areas

Solar Energy
Division

Thermo-chemical
Conversions
Division

Bio-chemical
Conversions
Division

Extension &
Technology
Transfer Division

Research and Development

Bioash-based Carbon Capture and Sequestration Technology

SPRERI has developed a Carbon Capture and Sequestration (CCS) technology that utilizes bioash for CO_2 capture through mineral carbonation while simultaneously upgrading biogas. The developed system integrates a 2 kg/batch pilot-scale carbonation reactor with a 1 m^3 /day portable biogas plant, enabling continuous capture of CO_2 from raw biogas and its conversion into stable mineral carbonates. Unlike conventional CO_2 capture technologies that require energy-intensive chemical solvents, the SPRERI technology employs low-cost bioash as a reactive sorbent, transforming an agricultural waste by-product into a valuable carbon sequestration material. Under optimized operating conditions, the developed process achieved a CO_2 sequestration capacity of 168.2 g CO_2 /kg bioash. Pilot-scale validation demonstrated a reduction in CO_2 concentration from 38.7% to 28.9% and H_2S from 15 ppm to 6 ppm, resulting in simultaneous biogas purification and carbon capture. A unique advantage of the technology is that the captured CO_2 is sequestered as stable mineral carbonates within the bioash, eliminating the risk of re-emission while generating carbonated biomass ash with potential applications as a soil amendment and construction material.



Bioash-Based CO_2 Capture System

Recognitions

SPRERI Empaneled by GEDA as Third-Party Inspection (TPI) Agency for Solar Water Heating Systems and Solar Rooftop PV Systems

SPRERI has been empaneled by the Gujarat Energy Development Agency (GEDA) as a Third-Party Inspection (TPI) Agency for Solar Water Heating Systems (SWHS), Grid-Connected Rooftop Solar PV Systems installed on Government Buildings, and Climate-Friendly Crematoria across Gujarat. The scope of work includes site feasibility assessment, pre-dispatch factory inspections, post-installation verification, repair and maintenance inspections, technical compliance assessment, structural integrity evaluation, electrical performance testing, Performance Ratio (PR) verification, geo-tagged documentation, and digital reporting through the GEDA ERP portal. Since its empanelment, SPRERI has successfully completed 21 third-party inspections of Solar Water Heating Systems and 9



TPI for Solar Water Heating Systems



TPI for Solar Rooftop System

inspections of government rooftop solar PV installations across the state. Through independent technical verification, SPRERI ensures compliance with GEDA quality standards, strengthens quality assurance, enhances the safety, efficiency, and long-term performance of renewable energy installations, and supports the reliable deployment of clean energy technologies, contributing to Gujarat's transition towards a sustainable and low-carbon energy future.

Outreach Activities

Green Spark: Inter-School Quiz Competition

As part of its outreach initiatives, SPRERI organized four editions of "Green Spark", a quiz competition on renewable energy, in different schools across Anand district during April-June 2026. The programme attracted 120 student participants and 114 audience members. The competitions featured interactive questions on renewable energy technologies, energy conservation, climate change, and environmental sustainability, encouraging students to enhance their knowledge and environmental



**Glimpses of the Quiz Completion
Organized at Schools**

awareness. Winners were awarded prizes for securing first, second, and third positions, while audience members were actively engaged through spot-question rounds with attractive gifts. The initiative successfully promoted awareness of sustainable energy and inspired young students to contribute towards a greener future.

Demonstration of Renewable Energy Technologies

To promote the adoption of clean and sustainable energy solutions, demonstration and awareness programmes on renewable energy technologies such as cookstove, microsolar dome were conducted in six villages across Anand and Kheda districts. In Anand district, demonstrations were organized in Ramnagar, Ajarpura, Ajupura, and Kunjarav villages, with the participation of 60 males and 75 females. In Kheda district, 70 males and 20 females participated in the programme.



**Cookstove Demonstration at
Ajarpura**



RET Demonstration

Training Programmes

Banana Fiber-Based Paper Making for Rural Women

As part of its efforts to promote Renewable Energy Technologies (RETs) for a cleaner and more sustainable rural environment, SPRERI organized demonstration and awareness programmes on improved cookstoves and Micro Solar Domes in six villages across the Anand and Kheda districts of Gujarat May 13, 2026,. The programmes aimed to familiarize rural households with clean energy solutions that can reduce dependence on conventional fuels, improve indoor air quality, lower greenhouse gas emissions, and enhance the quality of life. In Anand district, the demonstrations were conducted in Ramnagar, Ajarpura, Ajupura, and Kunjarav villages, with the participation of 135 villagers, including 60 men and 75 women. In Kheda district, 90 villagers, comprising 70 men and 20 women, participated in the programme. The demonstrations and awareness sessions promoted the adoption of renewable energy technologies for cleaner and more sustainable rural households.



Training Program with Roshni Sakhi Mandal



Final Products Made during Training Program

Biochar Production from Crop Residues

SPRERI, Anand, successfully organized a two-day training programme on "Biochar Production from Crop Residues and Utilization in Agriculture" on June 19–20, 2026, with financial support from the Climate Change Department, GEDA, Government of Gujarat. The programme brought together farmers, entrepreneurs, researchers, academicians, and industry representatives for



Glimpses of the Training Programme

expert lectures, live demonstrations, and hands-on training on SPRERI-developed biochar production technologies, including continuous pyrolysis and pilot-scale biochar kilns. Participants gained practical knowledge on biochar production, characterization, agricultural applications, crop residue management, and carbon sequestration promoting sustainable , biomass utilization and climate-resilient farming practices.

Training Programmes

Operation and Maintenance of the Solar Rooftop System for Govt. Officials

SPRERI, in collaboration with the Gujarat Energy Development Agency (GEDA), is implementing a state-wide Capacity Building and Awareness Programme on the Operation and Maintenance of rooftop solar PV systems installed on government buildings. Under the initiative, 50 training programmes are being conducted across 17 districts of Gujarat. So far, 27 programmes



Glimpses of the Training Programme

have been successfully completed in 13 districts, equipping government officials with practical skills in system operation, maintenance, safety, performance monitoring, and ensuring the long-term sustainability of solar installations.

Collaborations through MoU/MoA

- SPRERI expanded its research and academic outreach by signing a Memorandum of Understanding with “Gujarat Ecological Society” on April 15, 2026. This collaboration aims to foster joint research, promote knowledge exchange, and strengthen interdisciplinary efforts in renewable energy and ecological development.
- SPRERI signed a MoA with “The One Gujarat Organic Farm Producer Co-operative Society Ltd” on June 8, 2026, for collaboration work by providing land for the installation of solar dryer under DST SEED SUNIL project and rural development activities.



MoA Signing between SPRERI and The One Gujarat Organic Farm Producer Co-operative Society Ltd.

Patents/ Publications

- SPRERI has secured a design patent (No. 473716-001) for its “Solid State Rotary Drum Reactor for Enzymatic Hydrolysis of Agri-residues”, with support from ICAR-AICRP on EAAI. The patented reactor enables efficient high-solids enzymatic hydrolysis of agricultural biomass to produce concentrated sugars for biofuel production, marking a significant milestone in advancing scalable biomass conversion and renewable energy technologies.

INTELLECTUAL
PROPERTY INDIA

सत्यमेव जयते

ORIGINAL

नं./ Serial No.: 230390

दि./ Date: 16/09/2025

पेटेंट कार्यालय, भारत सरकार

The Patent Office, Government Of India

डिजाइन के पंजीकरण का प्रमाण पत्र |

Certificate of Registration of Design

डिजाइन नं. / Design No.

473176-001

तारीख / Date

16/09/2025

परस्परिका तारीख / Reciprocity Date*

देश / Country

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो **SOLID STATE ROTARY DRUM REACTOR FOR ENZYMATIC HYDROLYSIS OF AGRI-BASED INDUSTRIES** से संबंधित है, सब पंजीकरण, यानी 23-03 में 1.Sardar Patel Renewable Energy Research Institute 2. ICAR-AICRP on Energy in Agriculture and Agro-based Industries, CIAE, Bhopal के नाम में उपर्युक्त सूचना और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 23-03 in respect of the application of such design to **SOLID STATE ROTARY DRUM REACTOR FOR ENZYMATIC HYDROLYSIS ON AGRI-RESIDUES** in the name of 1.Sardar Patel Renewable Energy Research Institute 2. ICAR-AICRP on Energy in Agriculture and Agro-based Industries, CIAE, Bhopal.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यायीन प्राधान्यों के अनुसार है।

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

अधीक्षक जनरल
पेटेंट, डिजाइन और ट्रेड मार्क्स

Controller General of Patents, Designs and Trade Marks

जारी करने की तिथि

Date of Issue: 18/09/2026

*परस्परिका तारीख (दि. 01-01-00) किसी अंतर्गत दि. गुरु है तथा देश का नाम। डिजाइन का आवधिकार कोषांतरण की तिथि तारीख से दस वर्षों के लिए होता है, जिसे कुछ विकास कक्षाएं, अधिकृतता प्राप्त विधियों के अन्तर्ग, अपने ही अधिकृत अवधि के लिए किया जा सकता है। इस समय यह एक आनुवंशिक आवधिकारिता अन्तर्गत निवेश में डिजाइन प्राप्त करने के लिए निर्धारित है।
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- R K Singh, B Soni, A Pawar, G Kumari, A comparative analysis of slow, fast and oxidative pyrolysis of banana tree waste: a comprehensive study on process performance and product quality. Biomass Conversion and Biorefinery, 2026. 16:249

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Chief Executive, Aga Khan Rural Support Programme, Ahmedabad

Member-Secretary

Dr. Anil Kumar Dubey

Director, SPRERI, Vallabh Vidyanagar

Let's work together to achieve net zero mission of country's future!



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