

2026



SPRERI
Striving for Excellence

SPRERI's NEWSLETTER

First Quarter 2026 (January-March)

Spotlight on SPRERI's Green Kitchen Technologies

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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

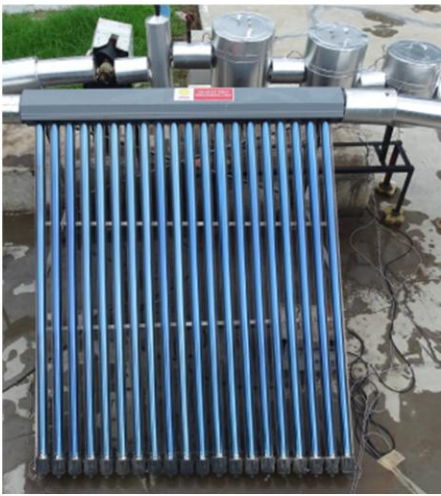
Research and Development

SPRERI's Indoor Green Cooking Technologies

Solar Thermal-based Indoor Cooking

Efficient, Reliable, Practical

SPRERI's Green Indoor Solar Kitchen offers a practical solution towards low-carbon cooking by enabling complete indoor solar cooking. Based on solar evacuated tube collector (ETC) technology, the system decouples energy generation from cooking with a 3.5 m² collector installed outdoors and the cooking activity carried out indoors, ensuring safety, convenience, and familiarity with conventional practices. Designed for day-time operation, the system achieves stagnation temperatures up to 170 °C, supporting boiling, steaming, and light frying. Its modular architecture allows scaling from households to community kitchens, hostels, and mid-day meal programs. Each unit delivers significant environmental benefits, with 3.2 tonnes CO₂ avoidance annually, while reducing LPG/biomass use and improving indoor air quality. With applications spanning households, institutions, and agro-processing, it represents a scalable, decentralized, and user-centric solution for mainstream adoption of indoor solar thermal cooking.



Key Highlights

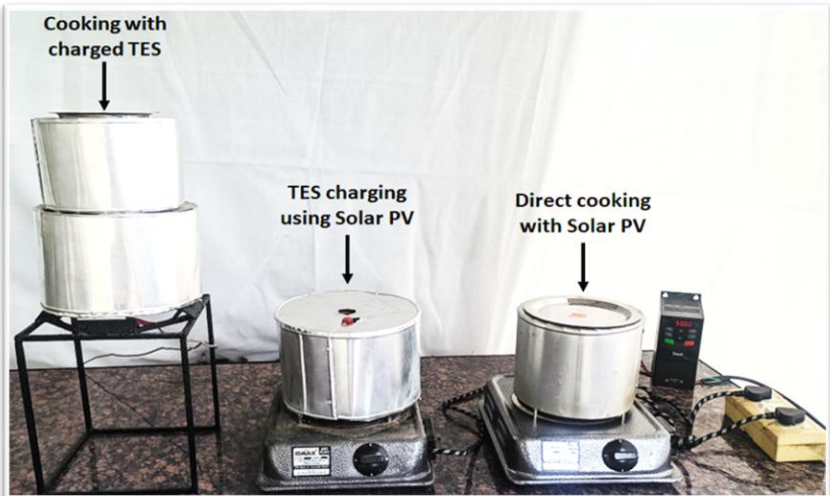
- Indoor solar cooking enabled with outdoor energy collection
- 3 indoor cooking units (5 L each); suitable for 8–10 people
- 45 L/day water boiling capacity
- High efficiency design
- Avoidance of 3.2 tCO₂/year emission per unit

Research and Development

Solar PV-based E-Cooking without Electrical Battery

Powering Kitchens beyond Daylight

The SPRERI-developed Green Solar PV-based E-Cooking System is a next-generation clean cooking solution enabling seamless indoor cooking - day and night - using solar energy. Integrating a 2.6 kWp solar PV system with phase change material (PCM)-based thermal energy storage (TES), it ensures reliable and continuous operation for a typical 4–6-member household. During the day, electric stove is powered directly from solar PV, delivering zero-emission performance. Excess solar energy is stored in PCM as thermal energy of capacity 2.5 MJ, which is then utilized for night-time cooking, ensuring uninterrupted indoor use independent of sunlight availability. With capability for boiling, steaming, frying and roasting; the system offers a clean, safe, and user-friendly alternative to LPG, achieving ~0.25 tonne CO₂ reduction per household annually. Scalable, low-maintenance, and efficient, it represents a future-ready solution for sustainable, round-the-clock indoor cooking.



Research and Development

Biomass-based Cooking

Clean, Efficient, Indoor

SPRERI's Biomass Cookstoves provide a clean, efficient, and fully indoor cooking solution. Designed for low-smoke operation and higher thermal efficiency, these cookstoves significantly reduce fuel consumption and cooking time, while improving indoor air quality and user comfort. The domestic natural draft model achieves 27% efficiency, reducing fuel use by 30–35% and avoiding 3.2 tonnes CO₂ annually. The community-scale forced draft system offers even higher efficiency (34%), making it ideal for institutional and large-scale cooking, with CO₂ avoidance up to 9.2 tonnes per year. With their clean combustion, indoor usability, and fuel-saving performance, SPRERI's biomass cookstoves present a practical and scalable pathway for sustainable, low-emission cooking.



Domestic Natural-draft Cookstove



Community Scale Forced-draft Cookstove

From Waste to Kitchen

Reliable Indoor Biogas based clean cooking

SPRERI's patented odorless biogas technology with 3.5 days retention time offer a reliable indoor clean cooking solution built on circular economy principles, converting organic waste into methane-rich biogas (60–65%) for efficient fuel use. With capacities ranging from 1 to 300 m³/day, these systems ensure round-the-year, smokeless cooking energy. By replacing LPG and conventional fuels, they significantly reduce fuel costs while delivering CO₂ avoidance up to 350 tonnes per year. The systems also generate nutrient-rich organic manure as a valuable by-product, enhancing overall economic viability. Well-suited for rural, institutional, and agro-industrial applications, SPRERI's biogas solutions enable clean indoor cooking, efficient waste utilization, and sustainable livelihoods, providing a dependable pathway toward integrated, low-carbon cooking systems.



Events

National Seminar on “Advances in Microalgae for Carbon Capture, Biofuels and Value-added Products”

SPRERI with financial support from the Gujarat State Biotechnology Mission, organized a National Seminar on “*Advances in Microalgae for Carbon Capture, Biofuels and Value-Added Products*” on January 9, 2026. The event witnessed participation from 130 delegates representing academia, research institutions, and industry, reflecting strong and growing interest in microalgae-driven sustainable technologies. The seminar was inaugurated by Prof. Indra Mani, Vice-Chancellor of Vasant Rao Naik Marathwada Krishi Vidyapeeth (VNMKV), Parbhani, Maharashtra with Dr. Anasuya Bhadalkar, Joint Director, GSBTM and Dr. Vinod K. Bhargava, Project Co-ordinator, ICAR-AICRP on EAAI, as Guests of Honour. Eminent experts, including Dr. Manish Das, Director DMAPR and Dr. Datta Madamwar, Scientific Advisor, CHARUSAT contributed to insightful technical deliberations. Two focused sessions addressed key themes such as carbon capture potential, biofuel production, and biorefinery approaches for microalgal valorization. A panel discussion on “*Harnessing Algae for Climate Action and Bioeconomy*” highlighted the need for policy support, targeted R&D, and clear commercialization pathways. Key recommendations emphasized innovation, collaboration, and market-oriented product development, alongside the importance of co-product strategies and enhanced public awareness. Addressing funding gaps for scale-up emerged as a critical priority. The seminar concluded with expert recommendations reinforcing the strategic role of microalgae in advancing climate solutions and strengthening the bioeconomy.



Seminar Highlights

Events

SPRERI Foundation Day 2026: Celebrating 47 Years of Excellence in Renewable Energy

The Sardar Patel Renewable Energy Research Institute commemorated its 48th Foundation Day on January 27, 2026, celebrating 47 years of sustained contributions to renewable energy and sustainable development. Established in 1979, the institute has consistently advanced clean energy technologies and promoted their adoption, especially in rural and decentralized sectors. The event was held at the Dr. Amrita Patel Conference Hall, SPRERI, and witnessed the presence of distinguished guests, scientists, staff members, alumni and stakeholders. The programme began with the ceremonial lighting of the lamp, followed by a welcome address by the Director, setting a reflective and

forward-looking tone. A detailed presentation showcased SPRERI's journey over the past four decades, highlighting key achievements in solar energy, biomass conversion, and integrated energy systems. It also outlined the institute's strategic vision in alignment with India's energy transition and net-zero targets. The event was graced by eminent dignitaries including Chief Guest Prof. Indrajit Patel, Vice Chancellor (Provost), CVM University, Anand; Special Guest Dr. V Siva Reddy, Director (Technical), National Institute of Solar Energy (NISE), Gwal Pahari, Gurgaon, Haryana, Guest of Honour Dr. Saji Philip, Ex-Deputy Director, SPRERI and Special invitee, Dr. A. Mahesh, Board member, SPRERI. Their addresses emphasized the growing importance of institutions like SPRERI in scaling sustainable energy solutions and addressing future energy challenges. A key highlight of the event was the felicitation of retired employees and recognition of long-serving scientists for their invaluable contributions. The announcement of the SPRERI Alumni Chapter marked an important step toward strengthening engagement and collaboration. The programme concluded with a vote of thanks and a group photograph, reaffirming SPRERI's commitment to innovation and a sustainable future.



Highlights of the Foundation Day

Events

AICRP workshop on Energy in Agriculture and Agro-based Industries (ICAR-AICRP on EAAI)

SPRERI successfully hosted the 29th Annual Workshop of the ICAR–All India Coordinated Research Platform on Energy in Agriculture and Agro-Industries (AICRP-EAAI) from January 29–31 2026. The workshop commenced on January 29, 2026 at 10:00 AM with a traditional lamp-lighting ceremony at the Auditorium Hall of BVM Engineering College, attended by over 250 participants from across the country. The inaugural session was graced by Hon'ble Minister of Agriculture & Farmers Welfare Shri Jitubhai Vaghani as the Chief Guest, with Shri Yogesh Patel (MLA, Anand) as Guest of Honour. The session was chaired by Dr. S. N. Jha, DDG (Engineering), ICAR, New Delhi, in the presence of Dr. K. P. Singh, ADG (Farm Machinery), ICAR. Dr. K. B. Kathiria, Vice Chancellor, Anand Agricultural University, joined as Special Guest, along with other dignitaries including Er. Bhikhubhai B. Patel, Chairman, CVM & SPRERI, Dr. V. K. Bhargava, Project Co-ordinator, ICAR-AICRP on EAAI and Dr. Anil Kumar Dubey, Director SPRERI. The central objective of the workshop was to strengthen coordination among AICRP centers and foster collaboration between researchers, industries, and farmers to promote sustainable energy solutions in agriculture. It aimed to review ongoing research, identify gaps, and align future activities with national priorities, particularly focusing on bioenergy technologies, resource efficiency, and climate-resilient agricultural practices. The programme also emphasized translating research into field-level applications to directly benefit farmers.



Visit of the State Agriculture and Farmers Welfare Minister, Shri Jitubhai Vaghani

Events

SPRERI's 17th Open House

SPRERI successfully organized its flagship event, the 17th Open House, on February 25–26, 2026, to showcase a diverse range of renewable energy technologies developed by the institute. The two-day event witnessed an enthusiastic footfall of around 1,800 participants, including students, researchers, industry professionals, and other stakeholders. Visitors were engaged through guided tours and live demonstrations, providing practical insights into sustainable energy solutions. The inaugural session was graced by Dr. Manish Das, Director, DMAPR as Chief Guest, along with Er. Bhikhubhai Patel, Chairman CVM & SPRERI, Shri Vishalbhai H Patel, Hon. Jt. Secretary, CVM and Dr. Anil Kumar Dubey, Director, SPRERI as distinguished dignitaries. Several engaging sub-events enriched the Open House. A poster competition for college students saw participation from around 20 contestants, evaluated by Dr. Vishal Singh, Principal at ADIT, and Dr. Vina Chauhan, Prof. Mechanical Department, BVM with prizes awarded to top performers. The “Green Spark” inter-school quiz competition featured 12 students from six schools and included multiple rounds to assess knowledge and aptitude, with winners receiving medals and cash prizes. Additionally, a technology exhibition featured six stalls by organizations such as Agro Economic Research Institute Centre, Sattva Organic, Adarsh Plant Protection Ltd, and Esha Biodegradable, showcasing innovative and sustainable products. The event effectively promoted awareness, collaboration, and innovation in renewable energy.



Inauguration, Poster Session, Quiz Competition and Technology Exhibition

Events

Outreach Programmes

SPRERI Technologies on Display at “Gram Samvad” 2026

SPRERI showcased its technologies at the “Gram Samvad” programme organized by Foundation for Ecological Security on March 11, 2026, at Bhadrasa village, Thasra and Kheda. The event focused on promoting awareness of sustainable development among local communities. At the programme, SPRERI presented key innovations including the Micro Solar Dome and SPRERITECH cookstove, which drew significant interest from participants. The initiative also received media visibility, with coverage by Doordarshan Girnar, highlighting SPRERI’s efforts in advancing clean and sustainable technologies at the grassroots level.



Technology Demonstration in “सह-SANKALP” National Exhibition-cum-Technical Meet



SPRERI participated in the National Exhibition-cum-Technical Meet (सह-SANKALP) held on March 18, 2026 at Dr. Ambedkar International Centre, New Delhi, under the aegis of the Office of the Principal Scientific Adviser, Govt. of India, in collaboration with Indian Council of Agricultural Research and Council of Scientific and Industrial Research.

SPRERI showcased innovative technologies including improved cookstoves, solar dryers, refrigeration systems, composting, BBQ fuel, and banana fiber extraction, promoting sustainable energy solutions and rural livelihoods through stakeholder interactions.

Exhibition of SPRERI Technologies at “Industrial Meet and Start-Up Conclave” at DMAPR

The institute exhibited its renewable energy technologies to industrialists, students, and researchers, demonstrating practical applications and recent advancements. The event provided a valuable platform for interaction, knowledge exchange, and exploring collaboration opportunities. An MoU was signed between SPRERI and ICAR-DMAPR to initiate collaborative agricultural research involving farmers.



Events

Scheduled Caste Sub-Plan (SCSP) Initiative at SPRERI

SPRERI organized an outreach programme titled *"Promoting Green Livelihood Opportunities for SC Community through Renewable Energy Innovation"* on 21 March 2026 at Bhadrasa village, Kheda under the SCSP initiative, supported by ICAR-AICRP on Energy in Agriculture and Agro-based Industries. The programme aimed to promote renewable energy-based livelihoods and sustainable rural development. The event was graced by the presence of Dr. Vinod Kumar Bhargava, Project Co-ordinator, ICAR-AICRP on EAAI, as chief guest and Mr. Dipakbhai Rohit, District organization Minister, Kheda, Mr. Indrajeet Chavda, District Secretary, Kheda and Dr. Anil Kumar Dubey, Director SPRERI. Around 150 villagers, farmers, and women SHG members from the SC community actively participated. As part of the programme, Technology Grant Certificates were distributed to beneficiaries, including a solar dryer to Rathorpura FPO, a biogas system to an individual beneficiary, a biochar kiln to Pari Sakhi Mandal, and a solar green cooking system to the Primary School, Bhadrasa. Additionally, 20 biomass cookstoves and 10 micro solar domes were distributed to households to encourage clean energy adoption. The programme also included awareness sessions on women's health and hygiene and financial literacy for the SC community. The event concluded with a strong commitment to advancing sustainable, energy-efficient, and livelihood-oriented development in the village.



Inauguration of the Event



Participants at the Event



Chief Guest Addressing the SCSP Community



Technology Distribution

Events

Capacity Building and Training Programmes

With the objective of promoting sustainable livelihoods and rural development, a series of training programmes were organized focusing on value addition, renewable energy technologies, and efficient utilization of agricultural waste. These initiatives aimed to empower Self-Help Group (SHG) women and farmers by enhancing practical skills, encouraging eco-friendly practices, and creating income-generating opportunities.

Weaving Sustainability: Training in Banana Fibre Crafts for SHG Women

SPRERI conducted a hands-on training programme for ten women from Roshani Sakhi Mandal on March 27, 2026. Resource person Mrs. Dharti Dave trained participants in fiber braiding and preparation of simple handicrafts such as mirror frames. The programme demonstrated how banana waste can be converted into value-added products, supporting women's empowerment and additional income generation.



Value Addition of Agricultural Waste: Biochar and its Applications



A parallel session for farmers focused on biochar production and its role in improving soil health on March 27, 2026. Er. Bhavin Soni delivered a lecture along with a live demonstration on converting agricultural residues into biochar, including essential safety practices, highlighting sustainable waste management approaches.

Operation and Maintenance of Solar Drying and Refrigeration Technologies

SPRERI conducted a training in solar-based post-harvest technologies on March 30, 2026. Er. Asim Joshi demonstrated the SPRERITECH Solar Dryer, emphasizing its role in reducing post-harvest losses and enhancing farmers' income.



Events

Showcasing SPRERI Innovations at Gyanotsav 4.0

Sardar Patel Renewable Energy Research Institute (SPRERI) participated in Gyanotsav 4.0, organized by CVM University from February 4 - 8, 2026 at Shastri Maidan, Vallabh Vidyanagar. The event served as a vibrant convergence of academia, innovation, and industry, attracting a diverse audience and creating an energetic atmosphere of learning and collaboration. At the exhibition pavilion, SPRERI presented a wide portfolio of renewable energy technologies, highlighting practical and scalable solutions for sustainable energy access, rural development, and circular economy pathways. The stall witnessed enthusiastic engagement from students, researchers, start-ups, and industry professionals, leading to insightful discussions and exchange of ideas. The event provided an excellent platform for networking, fostering collaborations, and showcasing SPRERI's ongoing contributions to clean energy innovation. Interactions during the exhibition reflected a strong interest in sustainable technologies and their real-world applications.



Exhibition of SPRERI Technologies in the event

Strengthening Collaborations through Strategic MoUs

- SPRERI further strengthened its industry collaboration by signing a Memorandum of Understanding (MoU) with Satyajit Greentech Pvt. Ltd. on March 23, 2026, for the development of a horizontal trommel-type torrefaction system for agro-residue processing. This initiative contributes significantly to sustainability by enabling efficient biomass utilization, reducing open burning of agricultural residues, lowering greenhouse gas emissions, and promoting the production of cleaner, energy-dense biofuels.
- SPRERI expanded its research and academic outreach by signing a Memorandum of Understanding with ICAR–Directorate of Medicinal and Aromatic Plants Research (ICAR-DMAPR), Anand, on March 24, 2026. This collaboration aims to foster joint research, promote knowledge exchange, and strengthen interdisciplinary efforts in renewable energy and medicinal plant-based innovations.
- SPRERI strengthened academic collaboration by signing a Memorandum of Understanding with Birla Vishvakarma Mahavidyalaya (BVM), Anand, on March 24, 2026. This partnership aims to promote joint research initiatives, facilitate knowledge exchange, and enhance innovation in renewable energy and allied fields through shared expertise, resources, and academic engagement between both institutions.
- SPRERI signed a Memorandum of Understanding (MoU) with Prime Advance Polishing System Pvt. Ltd. (PAPS), Vadodra, on March 24, 2026, specifically to facilitate the technology transfer of the natural draft SPRERITECH cookstove. This initiative holds significant sustainability value by promoting cleaner cooking solutions, reducing fuel consumption, lowering emissions, and supporting environmentally responsible practices.



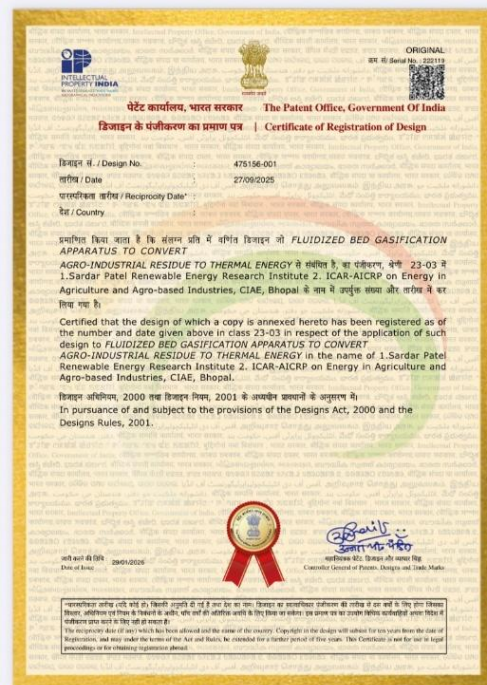
Signing of MoU with DMAPR



Signing of MoU with Prime Advance Polishing System Pvt. Ltd., Vadodra

Publications/Patents

SPRERI, supported by the Indian Council of Agricultural Research under the AICRP on Energy in Agriculture and Agro-based Industries (ICAR-AICRP on EAAI), has secured a design patent for its innovative “Fluidized Bed Gasification Apparatus to Convert Agro-Industrial Residue to Thermal Energy.” The design is registered under No. 475156-001, Class 23-03, dated September 27, 2025, with certification issued on January 29, 2026. This milestone highlights SPRERI’s progress in advancing sustainable biomass energy technologies. The patented system efficiently converts agro-industrial residues into usable thermal energy, enabling cleaner and controlled utilization of biomass. It addresses key issues such as residue burning and improper waste disposal while offering a dependable heat source for rural and industrial needs. By reducing reliance on fossil fuels and promoting value addition to agricultural waste, the innovation supports circular economy principles. This achievement reflects SPRERI’s continued focus on developing practical, scalable, and farmer-oriented renewable energy solutions.



Board of Management

SPRERI is governed by eminent Board of Management comprising distinguished leaders from academia, industry, government and research institutions

Shri Bhikhubhai B Patel Chairman	Chairman
Shri Manish S Patel Vice President, Charutar Vidya Mandal, VV Nagar	Member
Mr. Sydney Lobo Sr Technical Advisor, Clean Tech Space, Mumbai	Member
Dr. Datta Madamwar Scientific Advisor, CHARUSAT, Changa, Anand	Member
Ms. Bhaktiben Shamal Joint Secretary EPD, Gujarat Government	Member
Dr. K. Narsaiah Assistant Director General (Process Engg.), ICAR, New Delhi	Member
Dr. D. K. Tuli Former Executive Director IOC R&D & CEO Indian Oil Technologies Ltd and Chair DBT Energy Bioscience	Member
Dr. Anuradda Ganesh Chief Technical Advisor and Director, Cummins Technologies India Ltd. and Ex-professor, IIT Bombay	Member
Prof. Satish B Agnihotri Professor, CTARA, IIT Bombay	Member
Mr. Apoorva Oza Chief Executive, Aga Khan Rural Support Programme, Ahmedabad	Member
Mr. Vivek Amin CEO at Bomin Industries PVT. LTD Ahmedabad	Member
Dr. A. Mahesh Assistant Professor, C L Patel Institute of Studies and Research in Renewable Energy, Anand	Member
Dr. Anil Kumar Dubey Director, SPRERI, Anand, Gujarat	Member Secretary

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