Renewable Energy Pathways for Rural Development

Overview:

Energy is one of the key factors in the development of rural areas; Government of India has taken several initiatives in the past like National Project on Biogas Development (NPBD), and the National Programme on Improved Chulhas. Recognizing the importance to address area specific nature of the rural energy problem along with taking into the account of the wide variations that exist in the socio-cultural environments in rural areas, an attempt towards decentralized area based energy planning at the block level has been made through the Integrated Rural Energy Programme.

The Course Objectives:

- ✓ Expose the participants to the fundamentals and design aspects of cost effective and energy efficient systems such as solar still, solar assisted cold storage, solar water heaters / solar driers, solar-lighting, micro wind turbine, and improved biomass stove /gasifier.
- ✓ Provide authentic learning opportunities through field visits and gain a shared social experience through questionnaire survey – to understand the grass root problems pertaining to the "Renewable Energy Deployment in Rural Areas."
- ✓ Facilitate workshop sessions to brainstorm feasible solutions for the identified grass root issues in rural areas; it is expected that through this two-week workshop, the participants would gain the needed knowledge / awareness to serve as "Ambassadors" in promoting the Mission of Government of India to facilitate "Power to all by 2022."

Date	**21st January to 01st February 2019**
Location	The Gandhigram Rural Institute (Deemed to be University), Gandhigram – 624 302, Dindigul District, Tamil Nadu, India.
Who Should Attend	a. PG students and Research Scholars from reputed UGC / AICTE approved Institutions b. Engineers / Scientists / Faculty Members from Private / Government Organization c. NGOs & CBOs
How to Register	*Step-1: One time Web Portal Registration at GIAN* Participants have to visit http://www.iitkgp.ac.in/GREGN/index for One-Time Online Registration (Fee - Rs. 500/- Rupees Five Hundred only). A copy of the filled-in registered form should be forwarded to the Course Coordinator. *Step 2: Course Registration* The Course registration form can be downloaded from **www.ruraluniv.ac.in.** Participants are requested to fill the Course registration form and send it to the Course Coordinator along with the Course Registration Fee.
Course Fee	Participants from abroad: US $500/- Industry / Research Organisations: Rs.5000/- Academics Rs.2,000/- Research Scholars / Students : Rs.500/- The above fee includes instructional materials only. The participants will be provided with accommodation on payment basis.
Sessions	**Contents**
1	**Introduction -** Introduction to renewable energy technologies, rural energy issues
2	**Solar Energy** Solar radiation at the earth's surface- Solar thermal & PV applications Rural application of Solar – Solar Water Pasteurizer, Solar Still, Solar Fruit / Fish Dryer, Remote Village Electrification Programme
3	**Bio Energy** Biomass - Classification and characteristics; Bio-fuels - Importance, production and applications. Bio & Thermo-chemical conversion - Rural Application of Biomass – Cook Stove – Biogas Units – Gasifier based Village Electrification Programme
4	**Wind Energy** Wind resource assessment, power conversion technologies and applications, Rural Application of Wind Energy – Micro Wind Turbine Design and Evaluation
5	**Hydrogen Energy & Fuel Cell** Sources of Hydrogen & Hydrogen production - Fuel cells – Principle of working, construction and applications.
6	**Alternative fuels for IC Engines** Bio fuel engine, bio fuel farming etc
7	**Micro / Pico Hydel** Hydro power plant for tribal habitats
8	**Energy Efficient Building –** Solar Passive Building with alternate building materials for Rural Housing
9	**Integrated Rural Energy Planning** To plan and implement the Energy related problems with Governmental Schemes and Polices through Participatory Rural Appraisal Technique
10	**Discussions and Examination**

Course Co-ordinator

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Teaching Faculty

Dr. Sumathy Krishnan, Professor, Department of Mechanical Engineering, North Dakota State University, USA, earned her Ph.D in Solar Thermal Engineering at Indian Institute of Technology, Madras, India. She obtained her B.E in Agricultural Engineering and M.E. in Bioenergy at Tamil Nadu Agricultural University. She has over 30 years of experience in solar thermal energy field in India, Korea, Hong Kong, Germany and the USA. She served as the organizing secretary for the Solar Unitization Training program sponsored by the United Nations University, Japan and Department of Science and Technology, India. Dr.Sumathy has received awards and honors, including Research Fellow of Alexander von Humboldt-Stiftung,Foundation, Korea Science & Engineering foundation, ASPEE foundation, and is a board member of International Energy Foundation.She is recipient of numerous research grants and has published more than 150 research papers which are highly cited. Her research focus is in solar absorption and adsorption cooling and integrated renewable energy (Solar, Wind & Biomass) systems.

Course Coordinator

Dr.V.Kirubakaran working as Assistant Professor, Centre for Rural Energy, Gandhigram Rural Institute – Deemed to be University. With the support of the Department of Science and Technology (DST) under the scheme of Young Scientist in the year 2006 he carried out the project titled "Design and Development of Gasifier for Poultry litter" In the year 2008, a Energy Efficient Wooden Log Stove for Noon Meal Centre has been designed, Developed and Distributed to 100 Noon Meal Centres of Authoor Block, Dindigul Dt Tamilnadu with the support of DST. He also carried out UGC Major / Minor Projects. With the support of AICTE under Unnat Bharat Abiyan (UBA), Capacity Building on Energy Conservation in Rural Industries has been undertaken. With the support of Ministry of New and Renewable Energy he has organised Skill Development Programme on Solar / Wind for Rural Youths