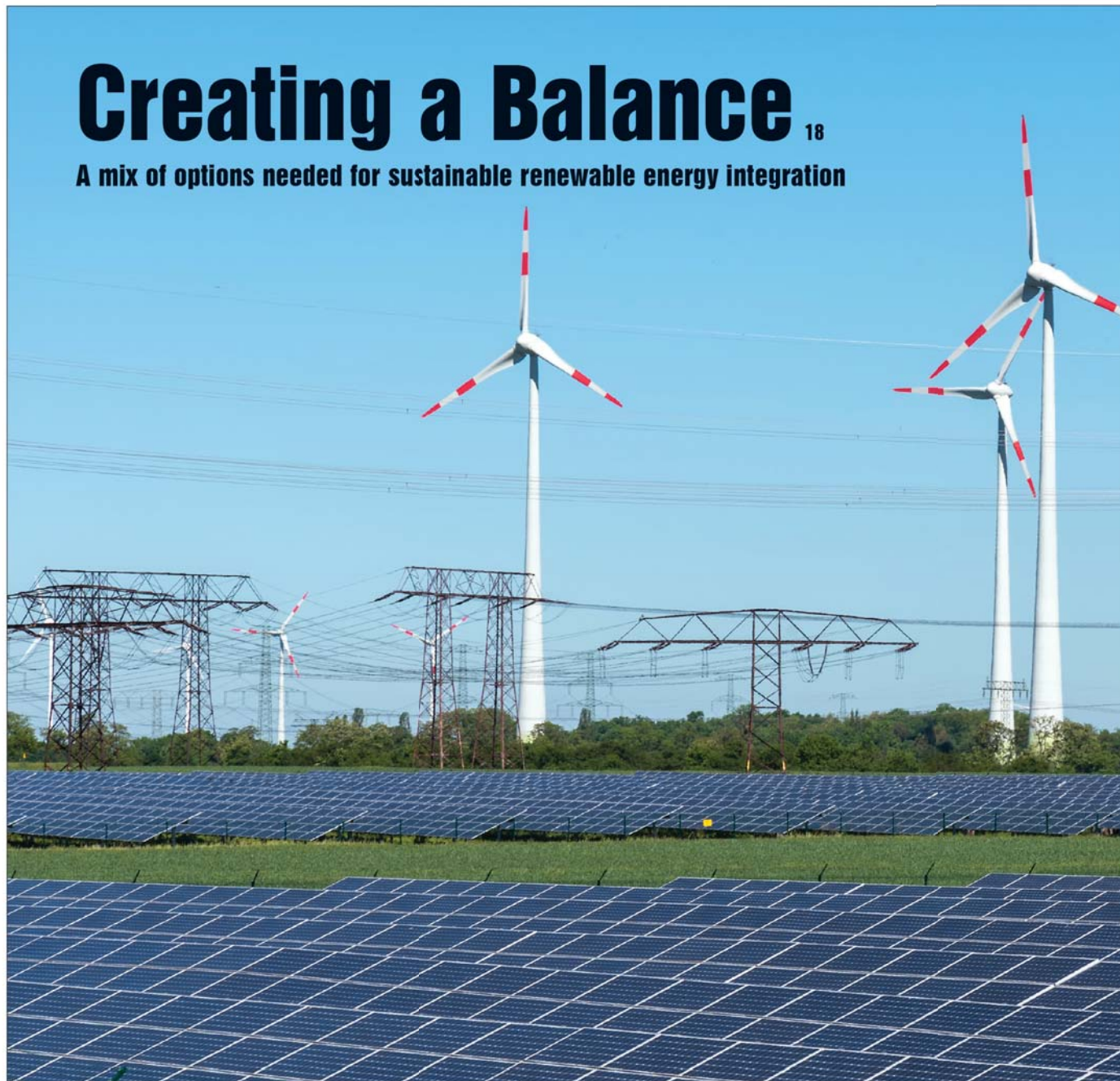


RenewableWatch

Volume 11 • No. 9 • July 2021

Creating a Balance ¹⁸

A mix of options needed for sustainable renewable energy integration



Perspective

Views of Indu
Shekhar Chaturvedi

36

Technology Focus

Energy Storage
Systems

41

Spotlight

PV Manufacturing
Technologies

48

Plus

Gujarat offers incentives to spur EV adoption 22

OSOWOG aims for a global renewable energy grid . . . 26

EESL leads in the distributed clean energy space 30

Financing limitations slow down EV uptake 32

RenewableWatch

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EDITORIAL

With the impact of the disastrous second wave of Covid-19 infections slowly receding, India's economic activity is getting back to normal. While the government has granted extensions for renewable energy project commissioning to account for the delays caused by the second wave, there have been a lot of encouraging developments on the project development front. In fact, many large tenders and projects have been announced and successful auctions completed in the month of July alone.

The biggest announcement came from state-owned energy major NTPC Limited. NTPC Renewable Energy Limited, a 100 per cent subsidiary of NTPC, has received approval from the Ministry of New and Renewable Energy to set up a mega solar park of 4,750 MW in the Rann of Kutch in Gujarat. Moreover, the company will generate green hydrogen on a commercial scale using renewable energy produced from this park. Another state-owned agency, GAIL Limited has announced that it will invest about Rs 50 billion towards the development of 1 GW of renewable energy projects. Of the total amount, Rs 8 billion-Rs 10 billion will be invested in building biogas and ethanol plants.

On the tendering side, the Solar Energy Corporation of India has invited bids for the development of 1,200 MW of ISTS-connected solar projects in Karnataka under ISTS Tranche X. These projects will inject power at ISTS substations in Gadag and Koppal districts. In addition, NHPC has floated a tender for EPC companies to set up a 600 MW ISTS-connected solar project along with the transmission infrastructure in Jaisalmer district, Rajasthan.

Meanwhile, Maharashtra State Electricity Distribution Company Limited completed two successful auctions. Its 500 MW solar auction saw ACME Solar and ReNew Solar emerging as winners for 300 MW of capacity at a quoted tariff of Rs 2.42 per kWh and 200 MW at Rs 2.43 per kWh respectively. Its 500 MW solar-wind hybrid auction saw Tata Power win a capacity of 300 MW and Azure Power a capacity of 200 MW at a quoted tariff of Rs 2.62 per kWh for both. In another recent auction conducted by Rewa Ultra Mega Solar Limited for 550 MW of solar projects to be developed at the Agar Solar Park in Madhya Pradesh, Avaada Energy won 200 MW at Rs 2.46 per kWh and O2 Power won 350 MW at Rs 2.44 per kWh.

After the delays and upheaval caused by the pandemic, these announcements certainly generate a sense of hope for the sector. This not only indicates a strong project pipeline but also points to competitive tariffs, which show sustained investor confidence in the sector. Aside from solar power, an impetus is being given to other niche segments such as green hydrogen, ethanol and hybrids, which demonstrates that India's renewable energy sector is maturing and diversifying, set to witness impressive growth in the new decade.

18

Creating a Balance

A mix of options needed for sustainable renewable energy integration



28

A Greener Grid

Views of POSOCO's K.V.S. Baba



48

Spotlight

PV Manufacturing Technologies



41

Technology Focus

Energy Storage Systems



CONTENTS

NEWS BRIEFS	8	scale vs distributed renewables	
TRENDS AND DEVELOPMENTS		Views of Indu Shekhar Chaturvedi: "We intend to launch a hydrogen mission later this year"	36
Creating a balance: A mix of options needed for sustainable renewable energy integration	18	Revival strategy: Potential of discom-based rooftop solar business models	38
Policy overdrive: Gujarat offers a range of incentives to spur EV adoption	22	Quality in question: A rating system is essential for deploying durable solar assets	40
Creating a vibrant market: MoP paper on MBED seeks to route all power procurement through the exchanges	23	TECHNOLOGY FOCUS: ENERGY STORAGE SYSTEMS	
A global grid: OSOWOG envisages an intercontinental renewable energy transmission network	26	A growing market: Recent developments in the energy storage space	41
COMPANIES		Powering up: Technology trends in energy storage systems	44
A greener grid: Views of POSOCO's K.V.S. Baba	28	Manufacturing incentive: PLI scheme for ACC batteries to help reduce import dependence	46
EESL: Leading presence in the distributed clean energy space	30	Battery benefits: Energy storage potential, applications and outlook	47
FINANCE		SPOTLIGHT: PV MANUFACTURING TECHNOLOGIES	
Financing barriers: Limited options and availability slow down EV uptake	32	Production line market: Trends and developments in solar cells and module manufacturing equipment	48
PERSPECTIVE		Production equipment technologies: New trends and techniques in the manufacture of solar cells and	50
The way forward: Industry debates the merits of utility-	34		

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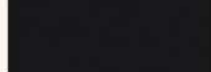
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Positive indicators for solar power growth



Page	Page	Page	Page
36	44	54	64

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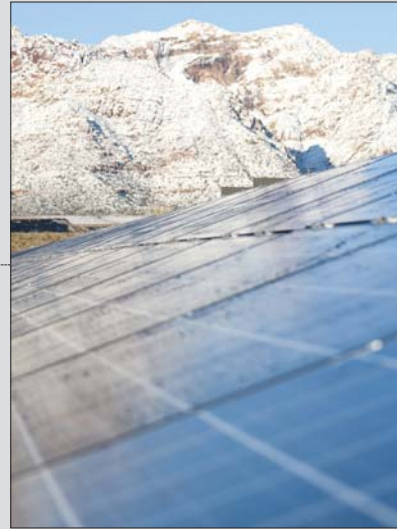
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36

**Views of
Indu Shekhar
Chaturvedi**

“We intend to launch
a hydrogen mission
later this year”



60

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Focus**

North-Eastern
States

CONTENTS

modules from wafers			
Controlling quality: Greater focus needed on improving processes, materials and modules	52		
“The future of solar is about advanced solar devices”: Interview with CubicPV’s Frank van Mierlo	53		
RECYCLE WORLD VIEW			
Offshore hubs: Transnational approach to harnessing clean energy in Europe	54		
Green energy foray: Saudi Arabia emerges as a renewable energy front runner in the Middle East	56		
RECYCLE STATE/UT FOCUS : NORTH-EASTERN STATES			
Tapping the northeast: Renewed efforts to unlock the region’s renewable energy potential	60		
Key statistics: Renewable energy potential and installations in the Northeast	63		
RECYCLE PRODUCT RELEASE			
Products in the market	64		
		RECYCLE PHOTOGALLERY	65
		RECYCLE PEOPLE	
		Irfan Choudhary, Genesis Ray Energy	66
		Hema Hattangady, Conzerv Systems	66
		RECYCLE DATA AND STATISTICS	
		Key statistics: Hydropower project pipeline	67
		Key statistics: Current and upcoming pumped storage installations	68
		Tender update: Recent issues and bid extensions	69
		Tender results: Winners of recent capacities auctioned	70

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Promoting Clean Technologies

Efforts by VJTI TECHNOLOGY BUSINESS INCUBATOR and their Startups

A clear global demand for environmentally-friendly power and advanced technologies have significantly fueled the growth of cleantech industries as well as startups alike. A report published by Asian Development Bank reveals that India has become one of the most attractive destinations in the world for cleantech investments with prospects of billions worth foreign direct investments being pumped into this emerging sector. India has been witnessing a lot of interest in this sector from scientists, academicians, technologists, industry experts and other stakeholders. VJTI Technology Business Incubator (VJTI-TBI) is one among these stakeholders focusing on promoting cleantech startups and helping them take their innovations to the market.

Awarded with the 'Smart Incubator of the Year' at ISGF Innovation Awards 2020, VJTI-TBI was established at the reputed technical institution Veermata Jijabai Technological Institute (VJTI), Mumbai in 2017 with the support of Department of Science and Technology, Govt. of India under the NIDHI-TBI Scheme. Already an alma mater to several industry leaders and successful entrepreneurs, VJTI decided to establish a formal platform to support the budding entrepreneurs working in the thematic areas including energy, cleantech, EV, IoT, AI/ML and cyber security of critical infrastructure. All incubated start-ups under the program are provided with co-working space, early seed support through CSR partners, access to state-of-the-art lab infrastructure and advisory services in business management, IPR, finance and accounting, legal and technical domains through collaborations with third party service providers and industry associations.

The incubator boasts of a state-of-the-art lab infrastructure including SCADA & Automation Lab, Power Electronics Lab and AI/ML and Embedded Systems Lab, that are well equipped to test products and prototypes in the domains mentioned above. Start-ups incubated with the incubator also get access to free tools including Solidworks, Altair, MatLab and Simulink licenses, AWS credits, ZOHO platform, Zendesk CRM, and MyOperator cloud telephony credits.

VJTI-TBI has also partnered with various industry bodies (India Electrical and Electronics Manufacturers Association, Cyber Peace Foundation, The Institute of Engineering Technology, India Energy Storage Alliance and India Smart Grid Forum) and corporates (Larsen and Toubro Infotech (LTI), Emerson, NVIDIA, Siemens and CISCO) to provide support the start-ups either through mentoring, funding and infrastructure support (including lab infrastructure). Through these strategic partnerships VJTI-TBI hopes to create a robust ecosystem that will help cleantech (and other) startups survive the initial difficult years of their entrepreneurial journey.



VJTI-TBI onboards startups through a robust 2-step process led by a panel of eminent experts from industry, academia and investment sector. Currently the incubation program at VJTI-TBI is supporting around 30

startups and entrepreneurs. Some of the promising cleantech start-ups and entrepreneurs incubated at VJTI-TBI are summarized below:

MARJAN MACHINERY LLP

A hardware technology startup founded by Samruddha Parkar, Team Marjan have developed autonomous solar module cleaning technologies that eliminate risks of accidents of roof cleaning personnel, provides smart operations and maintenance to owners, and importantly saves precious volumes of water (avg. 10,000 L water for cleaning 1 MW-generating solar panel).



The solar panel cleaning robot manufactured by Marjan Machinery has found customers in Europe and Middle East.

Mumbai-based Marjan Machinery has been awarded as 'Technology Innovation Pioneer' for 2020 at TIP Summit 2020 organized by the UAE Ministry of Economy and The Department of Economic Development, Abu Dhabi. The startup was also selected among the Top 30 finalists under EDF Energy Challenge

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2020 in the energy sector. Marjan also has been featured in 'Top 40 Startups in Data Innovation Bazaar 2020' organized by Western Digital & Startup India.

Contact Person: Mr. Samruddha Parkar

E-mail: parkar@marjansolar.com | Website: marjansolar.com

MONTER TECHNOLOGIES PVT LTD

Monter Technologies is a Pune-based cleantech startup and have developed a revolutionary multi-rotor micro wind turbine with inbuilt mechanical battery that can be clubbed seamlessly with solar to provide a hybrid source of renewable energy. This hybrid product can be used for micro-grid applications in rural areas and as rooftop solutions for industries and commercial buildings. The product is 14x better than their direct competitors in the market. Their proprietary technology has been granted a patent in India and is awaiting examination at other international patent offices. Named MHCES (Multi-source Hybrid Clean Energy System), the product is tested successfully till TRL level 5 and has also been validated by IIT Bombay.



Testing of Multi Source Hybrid Clean Energy System (MHCES) developed by Monter Technologies at their workshop in Pune

Monter has been a finalist in many national and international innovation competitions including Climate Launchpad, DAAD – Falling Walls Lab and was India's Top Fundable Startups of 2020 in the energy and cleantech space. They have so far raised around INR 57.5 Lacs from family, friends and angels and includes a grant support of INR 10 Lacs from IIT-Mandi and VJTI-

TBI respectively. The founders Ankit Singh and Rishabh Anand have put their sweat and blood for 4 years to develop this technology and have built the company with passion and integrity. Currently they are in negotiations to raise seed funding of INR 2 Cr from potential investors.

Contact Person: Mr. Ankit Singh

E-mail: ankits.monter@gmail.com | Website: montertechnologies.com

SANDBIRD RESEARCH AND DEVELOPMENT PVT LTD

Based out of Chennai, Sandbird has developed a 'Smart Power Tiller' with the aim of disrupting the power tiller rental market in the country. The startup is confident that its smart



Sandbird's MAGMA will provide Indian farmers with an affordable IoT-enabled EV power tiller

power tiller named 'MAGMA' will significantly reduce the life time expense of rental agencies who provide power tillers on rent and will also reduce financial burden on the low-income farmer. Also, the product is run by electric batteries and can be remotely managed through a smart IoT-based platform making it an attractive cleantech product in agri-space.

Bala Surya and Ajith Kannan, cofounders of Sand Bird started working on this product with the motto of making farmers life easier and more profitable. They have already raised grants of upto INR 25 Lacs from IIT-Madras under Carbon Zero Challenge, NIDHI-PRAYAS Grant under DST, Govt of India and Tamil Nadu Innovation Grand Challenge. Sandbird is already a part of leading incubator and accelerator programs in the country including VJTI- TBI, Amrita-TBI, KCG- TBI, IESA and FLCD which has been implemented by UNIDO.

Contact Person: Mr. Bala Surya

E-mail: sbsurya003@gmail.com | Website: sandbird.in

VJTI-TBI is currently looking to partner with industries and businesses focusing on developing innovations in the energy and cleantech domain for promoting innovation challenges and hackathons. The incubator has already forged partnerships with LTI, ITD Cementation India, SIDBI Capital Ventures and Technoalent Engineering India and raised CSR funding of upto Rs 187 Lakhs for providing seed support to startups and for creating co-working space and prototyping labs. Partnerships with these stakeholders in the relevant domains plays a key role to help the entrepreneurs tide the difficult part of the journey in their initial years. The incubator also plans to onboard between 10-15 startups working in the thematic areas of energy, cleantech, AI/ML, IoT, EV and cybersecurity.

Author: **Dr. Roshan Yedery**, Chief Executive Officer, VJTI Technology Business Incubator



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- ❖ EV Manufacturers' Perspective
- ❖ Electrifying Municipal and Corporate Fleets
- ❖ Integrating Renewables and Storage in EV Charging
- ❖ Case Studies: Best Practices and Strategies to Roll Out an Efficient Charging Network

The confirmed speakers so far include

(in alphabetical order, company-wise):

- ❖ **Abhishek Ranjan**, Vice President, System Operations and Head, Renewable, Smart and DSM Projects, BSES Rajdhani
- ❖ **Dr. Rahul Walawalkar**, President & MD, CES India
- ❖ **Vinay S Kandagal**, Research Scientist, CSTEP
- ❖ **Ghanshyam Chand**, Addl. Commissioner Transport cum Secretary State Transport Authority, Department of Transport, Himachal Pradesh
- ❖ **N Mohan**, Deputy General Manager, Head, EV Charging Infrastructure, EESL
- ❖ **Awadhesh Jha**, Vice President, Fortum Charge and Drive
- ❖ **Sanjay Krishnan**, founder, Lithium Urban Technologies
- ❖ **Maxson Lewis**, Managing Director and Co-founder, Magenta Group
- ❖ **Sudhendu J Sinha**, Advisor, Infrastructure Connectivity, Transport and Electric Mobility, NITI Aayog
- ❖ **Sandeep Bangia**, Business Head, Tata Power
- ❖ **Kartikey Hariyani**, Founder and CEO, TeCso Energy and EV Charging Zone
- ❖ **Jasmeet Khurana**, Manager, REMobility, World Business Council for Sustainable Development
- ❖ **Pawan Mulukutla**, Director, Electric Mobility, Sustainable Cities, WRI

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