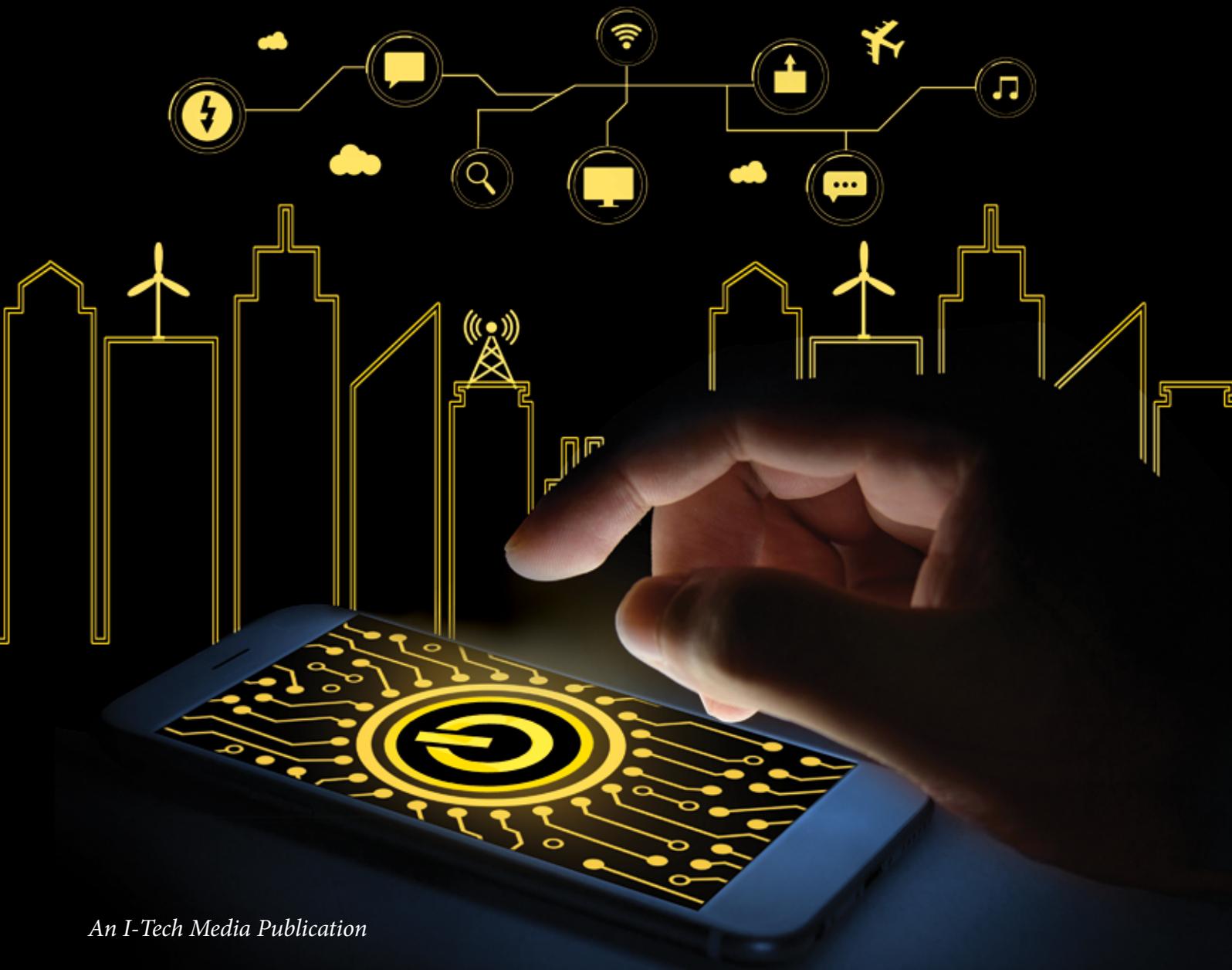


EPR

electrical & power review

SMART CITIES WITH SMART POWER SUPPLY





Is India renewable ready for smart city challenges?

Discussion on how India's renewable energy sector ready to take on smart city challenges

Power requirement will never be less since many initiatives such as infrastructures development, smart cities are lined up. Specifically talking about smart cities then smart cities are expected to shape the near future of India as they may transform cities into sustainable. Some of the major aspects of smart cities are transportation, recycling of waste, proper HVAC systems, clean environment uninterrupted power supply and much more.

As power is one of the major components of the smart cities one cannot think of smart cities without power supply. Smart cities require clean and continuous supply of power and for this there is a need to develop alternative energy sources to make the cities financially and ecologically viable. The power sector in the country is developing rapidly and the government is promoting various energy sources such as wind, solar, hydro, and nuclear – and is also introducing new technologies to harness power from renewable energy and use to generate power and to supply uninterrupted power to the new development taking place in the country like smart cities. Though there are developments taking place but is India's renewable sector prepared to take up the smart cities challenge?

Is renewable energy sector ready to take on smart city challenges?

India is witnessing unparalleled transformation from rural to predominantly urban living over the last two decades. It is expected that the smart cities will include a large number of infrastructure services and smart solutions. "In particular, the elements that must form part of a smart city are assured electricity supply with at least 10 per cent of the smart city's energy requirement coming from solar and smart metering. In order to make smart cities a reality and to propel India into the future India needs sustainable, reliable and uninterrupted power supply," says Rahul Shah, Chief Executive Officer, Tata Power Renewable Energy Ltd.

Developing India's capability in the new and renewable energy space is a key requirement to ensure success of the smart cities project.

India has immense potential in this area and many efforts have already been initiated by the government for the development of solar energy. The government is promoting renewable power in a big way. The target of generating 20 GW through solar power has been enhanced to five times at 100 GW by 2022. The total installed capacity crossed the 5 GW mark recently and there is a clear line of sight to get to 20 GW in the next 18 months, which is commendable. India's challenges with harnessing renewable energy are unique. For example, accumulation of dust on solar panels and high per unit cost of energy are some of the challenges the renewable energy industry in India faces. Therefore it is important to increase and incentivise focus on developing indigenous technology and indigenous solutions. "With the announcement of smart cities, the smart grid technologies are expected to gain importance. The smart metering will be the first step towards this cause. However, these technologies need huge investment and the industry does not have the financial capacity to fund for the technologies," observes Shah.

"It has already been mandated that 10 per cent of the smart cities energy requirement will come from solar energy and at least 80 per cent buildings should be energy efficient and green buildings. With a plan to develop approximately 100 such cities, the rate of renewable energy usage will go up in the country," comments Kanav Sachdev, Brand Manager, Su-Kam.



Tata Power has already achieved proof of concept by installing a floating solar power plant sized plant on its lake in Lonavala.



Rahul Shah, Chief Executive Officer, Tata Power Renewable Energy Ltd



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Kanav Sachdev,
Brand Manager,
Su-Kam

While speaking about how India's renewable energy sector ready to take on smart city challenges Sachdev says, "The challenge in implementation is the area required for solar modules installation as mostly the smart cities will be dominated by high rise buildings with very less space on roof." A typical 3 bhk apartment have a roof space of 2000 sq. ft. which is roughly about 20 KW of solar power. On the brighter side, this could mean that the builders and architects may opt for solar to power the apartment complexes to provide the house owners with 24x7 electricity. So building can be designed in such a way that it support solar.

Central and state government plans to develop 109 smart cities in India. Under the mandate of the smart cities, 10 per cent of the city's energy requirement must be met by solar. Most of the local generation would take place via rooftop solar power plants. Government aims to install 40 GW of solar rooftop under the national solar mission by the year 2022 and as of now only 1 GW of solar has been installed. "Discoms are still not comfortable with solar rooftop installations and it will take some time for them to get used to the concept of net metering. Solar installations in smart cities would only succeed if both Discoms encourage distributed generation and customers are made aware about the benefits of rooftop solar," emphasises Kuldeep Jain, COO EPC Projects, Vikram Solar.

"In addition to these, renewable energy may be used to power electrical vehicle under the National Mobility Mission which would require multiple charging points across the cities. Developing this charging station infrastructure which runs on solar would also be crucial," adds Jain.

The objective of the smart city mission is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of



ACME is committed to setting up large grid – connected solar power plants across India.



Manoj Kumar
Upadhyay, Founder
& Chairman, ACME
Group

smart solutions. Therefore, the focus is on sustainable development and inclusive growth. Providing clean and smart energy solutions is the key to achieve the objective. "With the current state of renewable energy sector, we believe it is ready to serve smart cities customised for its purpose e.g renewable energy solutions integrated with storage solutions based on micro/mini-grid platform can serve the requirement of clean energy with very efficient Demand Side Management (DSM)," states Manoj Kumar Upadhyay, Founder and Chairman, ACME Group.

The current urban population is 1.5 billion and over a period of time, this can reach up to 60 per cent of total population contributing 75 per cent of GDP. In this context, making the city smart is both necessary and challenging.

The concept of smart cities revolves around smart energy, smart transport, smart water and waste management, maximisation of e-governance services and smart buildings.



We look forward to establishing a relationship with CEO's of the Special Purpose Vehicle, which would be responsible for monitoring the progress of smart cities.



Kuldeep Jain, COO
EPC Projects,
Vikram Solar

Renewable Energy Sources (RES) used in small-scale distributed generation systems are a promising alternative for additional energy supply toward smarter and more sustainable cities, believes Ketan Mehta, CEO, Rays Power Infra. He adds, "However, their proper integration as new infrastructures of the smart city requires understanding the smart city architecture and promoting changes to the existing regulation, business models, and power grid topology and operation. A step towards smart grid formation and recent advancement of technology in renewable makes it compatible to take smart grid challenges."

Solar power generation is better than any other source of energy believes Ashish Joshi, MD and CEO, Addin Power Ltd. He says, "India's renewable energy sector is ready to take on the smart city challenges because there is lots of sun radiation as well a perfect atmosphere for 30 years power generation. Government is also supportive for solar different kind of promotional scheme. Solar is durable, maintenance free, green clean and environment friendly energy which is far better than any other renewable energy source."

Are the players ready to take up this challenge?

ACME is major player in giving India many innovative solutions in energy conservation, energy management, energy generation, energy storage and hybrid solutions.

"In alternate energy sector, with an existing portfolio of over 1.5 GW solar PV power projects, ACME is committed to setting up



Our company's growth is exponential and within few years we are among the best renewable energy service provider.



Ketan Mehta, CEO,
Rays Power Infra

large grid – connected solar power plants across India," claims Upadhyay.

For smart city projects ACME offers power solutions, intelligent energy storage systems with various areas of application from kWh~MWH scale, site automation and remote monitoring system, hybrid solutions, lightening and surge protection devices and service offerings for various sectors like banking, insurance, telecommunications, hospitality, healthcare, high altitude applications etc.

Discussing on the readiness in this mission Mehta comments, "Our company's growth is exponential and within few years we are among the best renewable energy service provider."

"We are fully prepared to make this mission successful," adds Mehta. Rays Power Infra's R&D team keeps on working for the advancement of technology so that it can develop eco-friendly society and achieve sustainable growth.

Su-Kam has always supported the government in its initiatives for solarising India and will continue to do so in making of smart cities. It has a big range of household solar products that are easy on the pocket and simple to install.

Su-Kam has developed smart solar inverter which can be integrated with smart phone for operation and monitoring purpose. It is also working on hybrid technologies which can charge the batteries in the daylight and supply excess electricity back to the grid and in the evening, time the load can be run through battery. Also, it can smartly manage the load according to availability of solar power. For storage of solar power in a compact area the company is doing R&D on lithium ion batteries inspired by Tesla Power wall.

Tata Power Renewable Energy Ltd (TPREL) has reiterated its commitment to clean energy by increasing the share of non-fossil fuel energy to 30-40 per cent by 2025, up from its earlier target of 25 per cent. This move is in line with the government's set target of 100 GW from solar and 60,000 MW from wind.

TPREL recently acquired Welspun's renewable portfolio of 1,140 MW along with a 30 MW solar project in Maharashtra, and 100 MW solar in Karnataka under National Solar Mission. Every year, Tata Power strives to add about 150 MW of wind, and 30-50 MW of solar, depending on the market opportunities.

As the conventional grid connected and rooftop solar projects continues at its own pace, sector need to look at various innovative technologies to achieve the target for 100 GW of solar. "Tata Power has already achieved proof of concept by installing a floating solar power plant sized plant on its lake in Lonavala," informs Shah.

Vikram Solar expects that around 25-30 GW of solar installations may be required in smart cities across India to meet the 10 per cent of the smart cities energy requirement. Installing such capacity in these cities from the present 1GW in next 6 years may be an ambitious task where both central and state government will have to work closely. The company expect that with continuous decrease in solar module prices, the awareness about solar rooftop will increase and customers may start exploring the option of generating electricity at their rooftop.

Vikram Solar is actively looking at the market for smart cities being developed and helping the government achieve the 10 per cent target. "In addition to solar rooftop installations, we also look forward to tapping new opportunities like distributed energy generation in the smart cities. We look forward to establishing a relationship with CEO's of the Special Purpose Vehicle, which would be responsible for monitoring the progress of smart cities. With the necessary experience and expertise, we are ready to make smart city development a success," says Jain.

The demand for energy is rising with the rapidly increasing Indian population. Moreover, most of the rural belts of India have inadequate, minimal or no electricity, which is a vital ingredient in the development of any community.

Addin is focusing on solar energy, one of the best options in green solar renewable energy, to provide sustainable and economical power supply to rural India.



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Ashish Joshi,
MD and CEO, Addin
Power Ltd

To be the first choice PV and thermal products supplier for all clients locally and abroad and to be widely recognised for its high-quality products, services and contribution to a sustainable life.

"Our focus is to continuously improve our efficiency, quality, and technology. To fulfill this goal and make a bridge between us we are also collaborating with experts in engineering, operations and technology," says Ashish Joshi, MD and CEO, Addin Power Ltd. ⚡