



## Hydro power gathers stream

**An overview of how new technologies will drive hydro power to come on stream**

India is going big on renewable. The scaling up of capacity of renewable energy to 175 GW by 2022, which will include 100 GW of solar power projects, 60 GW of wind power projects, 10 GW of biomass power project and 5 GW of small hydro projects, will bring in tremendous impetus to India's clean energy program. With our climate change commitment, this is going to be a major focus for the nation. Increasingly, renewable energy technologies are becoming more and more cost competitive with conventional energy sources like thermal and hydro, but also more reliable and safe.

Explaining how the new technologies will drive hydro power to come on stream, Anil Sardana, CEO and MD, Tata Power says, "In hydro power, with the help of technology, flowing water is used to create energy that can be captured and turned into clean electricity. Hydro power is a mature technology and will produce cost-effective, low carbon, renewable electricity. Technologies such as river-run, hydro systems, also called hydrokinetic power, sit in running waterways like rivers, irrigation canals and even wastewater ditches, and generate power without needing to build a massive dam that interrupts water flow completely. That allows other users of the waterway—from ships to fish—unobstructed access while power is generated." In line with this Tata Power and Norway-based SN Power entered into an exclusive partnership to develop hydropower

projects in India and Nepal with an intention to have a 20 – 25 per cent contribution from 'clean power sources'. "New technologies in the new and renewable energy space will play a critical role in fulfilling the needs of coming generations. It will facilitate the delinking of economic growth, energy demand and environmental effects," Sardana says.

With increase in renewable power generation, which is the future trend, there is a need to align with technology from the inception stage itself. So when various renewable energy mixes are added like wind and solar, it poses a big challenge to maintain grid stability, observes Neelav Samrat De, Asst. General Manager (Marketing and BD), ANDRITZ HYDRO Pvt. Ltd.

He states, "This is when the role of variable speed pumped storage plants (PSP) plays a very important part as this technology helps choose the optimal unit output which comes from the machine's variable speed technology. Secondly, the number of units can be reduced by increasing the unit output due to the flexibility of turbine operability."

More so, this technology leads to faster ramp-up/ramp-down response time and it allows from greater quantum change in variable generation contributed by solar and wind generation. The variable speed technology has been proven in terms of economics where with higher unit output, the cost per MW

lowers. This also leads to an overall reduction in the complete electro-mechanical costs.

Neelav adds, "Since India is increasing its renewable portfolio and crossed the installed capacity of hydro in 2017, pumped storage variable speed machines are needed which also help in minimised O&M costs and brings in a flexible mode of machine operability. Also with its functioning with bigger units, the overall civil costs of PSP hydro projects also reduce. Though the initial cost of hydro projects is high, India needs at least 20,000 MW of PSPs to maintain a stable grid. With mounting NPAs in the power market, the only challenge is the requirement of funds. How this issue can be tackled needs to be seen."



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Anil Sardana, CEO and MD, Tata Power





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