Kutch, Gujarat, India ©Wind Power Works

Clean energy on India's horizon

In February 2015, the Indian government announced its plans to almost quadruple its renewable power capacity to 175 GW by 2022 as part of the plan to supply electricity to every household in the country. This includes 60 GW from wind energy. Further, India made a commitment at COP21 to raise the share of non-fossil-fuel power capacity in the country's power mix to 40% by 2030.

Consequently, these plans and targets make the Indian market a unique fast moving and growing market where competitive companies can have great business opportunities. But, they also come with a complex and unstable legal framework where manufacturers find many obstacles on the way.

Market developments

In 2016, India set a national record with 3,612 MW of new installations, bringing the country's total to 28,700 MW and consolidating its 4th position in the cumulative global rankings, according to the Ministry of New and Renewable Energy (MNRE) of India.

India was among the top 10 countries in terms of renewable energy investment, according to UNEP & Bloomberg New Energy Finance. Also, India's renewable energy sector held its position at the third spot for the second year in a row in the Renewable Energy Country Attractiveness Index (RECAI) released by EY globally, with China at second and the US on top. According to EY, this is primarily due to the strong focus of the Indian Government on renewable energy coupled with the actual timely implementation of renewable energy projects. The report also suggests that renewable energy is increasingly proving its mettle against conventional energy generation.

Additionally, after a historic solar power tariff, India's first reverse bidding wind auction last February, allocating 1 GW of wind projects, defied all expectations and will make the wind market more efficient. The auction witnessed aggressive bidding despite an advisory issued by industry body to avoid bold bids. As per recent reports, the Indian government is expected to tender out 4 GW of additional wind capacity next year and following this record-breaking success, the sector is likely to shift entirely towards auction-based allocation.

But, economic growth, increasing prosperity, a growing rate of urbanisation and rising per


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capita energy consumption has increased the energy demand of the country and this increase must be accompanied by a suitable conditioning in the transmission systems. Otherwise, the electric system stability could be compromised. In this regards, due to its rapid growth, the Indian electricity system faces many challenges in terms of grid stability. In order to achieve this grid stability and the controllability required to operate in weak grids, Ingeteam has successfully developed, designed, manufactured and commissioned its INGECON® WIND DFIG 2000LV power converter in India. Not only ensuring the fulfilment of one of the most restrictive and demanding grid codes, but also minimising the wind turbine's Levelised Cost of Energy (LCoE).

Repowering vs Life Extension

Wind turbines are typically designed for a 20 year life service and commercial wind power generation in India began in 1986. Many of the older low capacity wind turbines installed more than 15 to 17 years ago and occupy some of the best wind sites in India will soon need to be replaced with more efficient, larger capacity machines – repowering - or remain operational beyond this age. The decision what to do with the end-of-life assets must be carefully weighted: dismantling and disposing of functional turbines or extending wind farm life-time by increasing assets value, maximising revenue and reducing LCoE.

Until recently, the market seemed to favour repowering over life extension, but this trend, however, may change in the near future due to a lack of policy guidelines and incentives for repowering. Consequently, limited progress has been achieved in the absence of national or state level policy guidelines for repowering. Life extension, on the other hand, generates much less regulatory and permitting hurdles than repowering and can be achieved at a fraction of the cost the full repowering demands.

A few months ago, Ingeteam generated broad market attention with the introduction of INGECON® WIND FIX2VAR SPEED, a ground-breaking autonomous power conversion system that increases the Annual Energy Production (AEP), lifetime and grid-performance of fixed-speed wind turbines by enabling them to transform to variable-speed machines to best match wind conditions without the need to recondition both the original generator and wind turbine programmable logic controller (PLC).

Leadership positions

The leading top 5 turbine suppliers in India are Gamesa, Suzlon, INOX, Regen and WWI, according to MAKE Consulting. Gamesa continues to reinforce its position in India, where the company has ranked as the leading OEM for the third year running, further increasing the gap with respect to the number-two OEM and lifting its market share from 25% in 2014 to 34% in 2015.

Strengthening its footprint in the Indian power converter market, Ingeteam reached a peak volume of 1,268 MW in 2016, ending the year with more than 35% of the wind power capacity installed in the country. To date, 9% of all wind power capacity in India is equipped with Ingeteam's technology. Overall, 2016 was a record-breaking year for the company with nearly 5 GW of new capacity added in 2016 alone, a total of 36,414 MW of wind turbines have been equipped with Ingeteam's technology since 1995, making the Spanish company the world's number one supplier of wind power converters.

Regulatory framework

Expert opinion by Iñaki Soto, Managing Director of Indversis Management Consulting, S.L., a specialist consulting company dedicated to enterprise promotion and business project development in India.

More information: http://www.indversis.com/en/

In order to encourage investment and development of the renewable energy sector, the Indian government has created a favourable regulatory framework enabling fiscal and financial policies, under the umbrella of the Make in India project, availing of incentives such as generation-based incentives (GBIs), capital and interest subsidies, viability gap funding (VGF), concessional finance, fiscal exemptions etc.

While recognising that the MNRE has actively contributed to RE usage, regulations require a similar dose of clarity

Ingeteam Power Technology Headquarters – Energy in Spain

'To date, 9% of all wind power capacity in India is equipped with Ingeteam's technology.'

and stability in order to create the desired effect. Government does not only have the responsibility to promulgate laws and policies, but also to enforce them.

Here is where most of the foreign companies have faced their biggest hurdle. Even though regulators have provided Excise Duty or Special Additional Duty exemptions to "Wind operated electricity generator, its component and parts thereof including rotor and wind turbine controller", the reality has been far more complex and ambiguous. Procedures or structures were not the obstacle, whereas the practical application of the benefits was, since they are subject to the correct understanding of the norms by the local officers. A large number of memorandums, circulars and amendments have been published seeking to enlighten companies and officials about the correct application of the rules, and explain what a wind turbine consists of, or who are supposed to be the beneficiaries of the exemptions.

In such a dynamic environment, challenges many times run faster than solutions. Today, the Indian wind industry may have overcome their teething problems, but they are yet to face other and bigger ones. India is about to embark on the largest tax reform ever faced in the country. The Goods and Services Tax (GST) implementation will undo most of the existing tax benefits for the wind industry. Additionally, the sector will observe how some other privileges like income tax holidays, accelerated depreciation or generation based incentives, will become history as well.

Market outlook

India already has a strong track record in onshore wind and its intention to enter the offshore wind sector was outlined in a national offshore wind energy policy in October 2015. The National Institute for Wind Energy (NIWE) is the nodal agency for implementing the policy and creating the necessary ecosystem for the sector. Facilitating Offshore Wind in India (FOWIND) is a European Union supported four-year project; led by the Global Wind Energy Council (GWEC) consortium to implement. In close consultation with the Ministry of New and Renewable Energy (MNRE) and State governments, this project will facilitate offshore wind power development in India.

Offshore wind planning activities are expected to be expedited in the next few years and both onshore and offshore wind energy are anticipated to contribute to India's transition towards use of clean technologies in the power sector.

Challenges, hurdles or any other obstacle aside, the Indian market is one of the most attractive markets for any foreign company in the business. Skilled English speaking manpower is well available in the principal metro locations and well trained engineers are approaching a fast moving emerging sector. Land is yet available at reasonable cost and construction cost is far from other emerging countries.

India seems to be convinced that renewable energy is the correct way to overcome power generation deficit and ensure future demands; India's energy security has become a key driving force of its economic policy. With substantial expansion required in energy infrastructure, India now has the opportunity to create a clean energy industry to increase installed capacities while reducing the deleterious impact on human health, environment and the climate.

Although for India to reach its full potential and to boost the necessary investment in renewable energy, it will be essential to continue introducing comprehensive, stable and long-term support policies, carefully designed to ensure that they operate in harmony with existing state level mechanisms so as to avoid reducing their effectiveness.

The 60 GW target from wind energy will require duplicating the existing capacity in the next six years. Policy makers, wind turbine manufacturers and the entire supply chain will face an endless number of challenges in the time to come.

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About Ingeteam

Ingeteam, an independent supplier of electrical conversion equipment, offers power converters, generators, turbine controllers, CMS, SCADA management systems and O&M services for wind turbines up to 12 MW for onshore and offshore applications.

The company is committed to investing in technology and innovation as the drivers of future growth.

Since 1995, almost 24,000 wind power converters have been commissioned with Ingeteam's technology, accounting for 36 GW of installed wind power capacity worldwide and a 7.5% market share.

The company's global footprint includes manufacturing facilities in Europe, North and South America, and sales and service centres strategically located all over the world. In 2016, 5% of net sales were invested in R&D, the backbone of Ingeteam's business activity.