

All set to power the Indian market

The Gujarat Prime Mover company was set up in 1986 at Baroda, India, specifically to manufacture single-stage, 1-megawatt turbines implementing the KK&K (Kuehnle Kopp & Kausch) technology. Today, when the robustly growing industrial sector in India is plagued with a deficit in power supply, the Vadodara Steam Turbine Factory, along with the newly acquired KK&K turbine business, spearheads the Siemens turbine manufacturing activities in India.



In 2006, Siemens celebrated 50 years of local manufacturing in India. To mark this historic occasion, Siemens Ltd., as part of its investment-led growth strategy, announced the establishment of a greenfield steam-turbine factory at Maneja, Vadodara, in the Gujarat province. This new factory, with an investment of about 50 million euros, also included enhancing the existing manufacturing capabilities at Vadodara.

The factory commenced operations in January 2007, and today has a workforce of around 200 employees working on a number of industrial steam turbine models of up to 50 megawatt (MW) capacity. Spread over an area of 60,000 m², the new facility has two manufacturing halls that house a turbine assembly bay and a condenser bay, respectively. The factory is presently producing around 70 turbines per year, predominantly for the sugar, metal-processing and pulp-and-paper industries. The new facility also provides after-sales and repair services.

And there is room for expansion too. If the market grows as expected, by 2010 Siemens will double the output with commensurate increase in headcount.

Serving Indian industry

India is a booming market and Siemens is all geared up to be a part of the great Indian growth story. The recently constituted Siemens Turbomachinery Equipment business, formed by the integration of KK&K into the Siemens group, is also a part of the group's ambitious growth strategy. Having absorbed the low-range market share — previously the province of KK&K — the turbomachinery business has gained even more prominence as it now covers the entire range of industrial steam turbines. In addition, the new factory at Vadodara, with enhanced manufacturing capacity and service workshop facilities, is also well poised to serve existing and new customers in the local and international markets.

Bags of bagasse to sweeten the bottom line of the business

Among the typical customers of Siemens' steam-turbine business in India, sugar mills such as Shree Krishna Khandsari represent a major share. The factory is located in Taloda in the Nandurbar district of Maharashtra and was supplied a SST-050 by Siemens in September 2005. Beginning with a production capacity of 200 tons per day (tpd) in 1973, the Shree Krishna Khandsari sugar mill has since then grown to the present capacity of 1100 tpd. Thriving on quality and supported by a committed workforce of 300 employees, it has successfully endured the competition posed by other sugar mills located in the vicinity.



The factory produces Khandsari sugar with molasses as a by-product for use in other applications. The sugar cane is procured from suppliers nearby in Maharashtra, and as the demand for the sugar product is high, the factory has excellent future prospects. Currently catering only to the domestic market, the factory is already planning for a distillery in the near future.

The SST-050 turbine supplied from Vadodara was originally from the stable of KK&K and sold by Siemens under license. Having an output of up to 2 MW, this model of turbine was considerably smaller than the established range of Siemens' industrial turbines. But its importance for the Indian market, and the type of industry which the Shree Krishna Mills represents, was and is undeniable. Siemens was glad to add this turbine to its range. Now, of course, Siemens has access to a complete spectrum of STE turbines that range from 45 kilowatts to 10 megawatts, and thus has a broader variety to adapt to its customers' needs.

The turbine supplied to Shree Krishna Khandsari is used for captive consumption while the steam generated is used for the sugar process. The turbine is normally used for a period of five months, mainly between November and March, when the sugar crop is available. Apart from the cane crusher and sugar manufacturing unit, the steam turbo-generator set is the main equipment at the mill.



The steam, having an exhaust back pressure of 1.5 kg/cm²[g], is used for the sugar manufacturing process. The remaining power from the turbo-generator set is used for the house load of the plant.

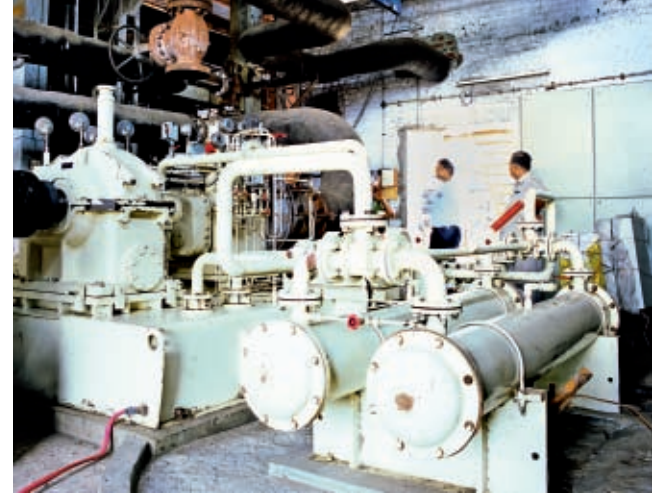
Increased reliability, improved economy

The new turbine was part of a refurbishment to help the customer cope with the increasing power requirements of the plant. The new turbo-generator set has improved the reliability of the complete sugar plant, and in turn has enabled the mill to be totally independent from the state grid (MSEB, Maharashtra State Electricity Board), which is plagued by constant frequency fluctuations as well as power shortage.

In-house bagasse is used as fuel, which allows power to be generated at a very economical price compared to the charges paid to the electricity board. The promoters of Shree Krishna Khandsari, Mr. Girish Agarwal and his brother Mr. Satish Agrawal, calculate that they are now saving 1.8 million Indian rupees (MINR) per month due to the turbogenerator set installed for captive power generation. The cost of power from the electricity board was 2.6 MINR per month, whereas the cost for the same amount of power generated by the turbogenerator is 0.8 MINR, thus making a clear saving of 1.8 MINR per month.

The Agarwal brothers have planned well for their company's economy. Reliable and economical electricity supply is a sure basis for future development along the route that they have mapped out for their growth. A small company maybe, but with a big future!

Steam-turbine (top) and condenser manufacturing (bottom) at Siemens' Vadodara plant, India.



Top: Undergoing service at Shree Krishna Khandsari sugar mill: the SST-050, a rugged, dependable work horse for small-scale manufacturing and process industries.

Left: Cane carts ready to collect December's harvest.



Khandsari sugar

India is the world's major producer of cane sugar, and its sugar industry continues to grow. Annual centrifugal production has reached 16 million metric tonnes raw value (mtrv), which includes nearly 1 million tonnes of khandsari sugar. India is also the world's major producer of non-centrifugal sugar, accounting for perhaps as much as two-thirds of the total. Practically all of this sugar is consumed in India; only rarely, after exceptionally good harvests, are small quantities exported.

Khandsari has fewer calories than sugar. It is a natural sweetener and is free of sulfur and chemicals. It is one of the significant agricultural products of small-scale industry in India. Originally confined to the State of Uttar-Pradesh, small-scale Khandsari sugar production is now country-wide.

Khandsari sugar is also known as "Cottage Sugar". It is obtained in unrefined crystalline form from small-scale sugar industries known as Khandsari units. There are about 7,500 such units in the country. Around 45 to 50 percent of the total sugar cane produced in the country is absorbed by the Khandsari industry, which provides employment to about 2.5 million people.

You're never too small for a big future.

In November 2006, Siemens acquired the business of Kuehnle, Kopp & Kausch (KK&K). Main products are steam turbines as well as compressors and fans for industrial applications. In June 2007 the company was renamed Siemens Turbomachinery Equipment (STE). VENTURE met with Werner Stoebener, head of steam-turbine engineering.

Q: "No one's too small for a big future." Is this how the predesigned steam-turbine business perceives becoming part of Siemens?

A: We have traditionally been a small player rather than a "global" one, but as part of Siemens we will indeed be part of a global network, with full integration into Siemens.

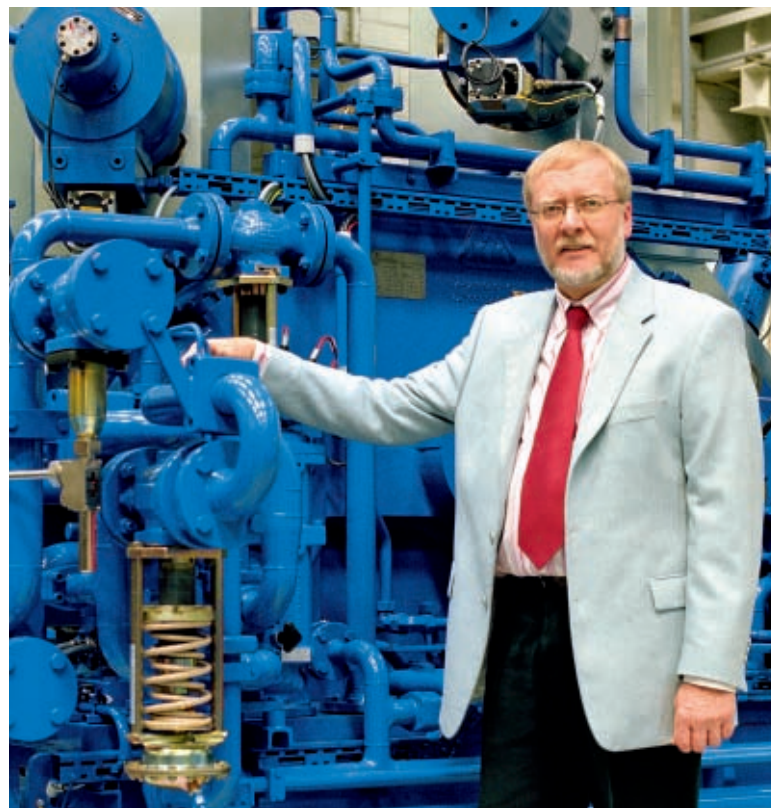
Q: Why did Siemens take over KK&K, and what's in it for you?

A: KK&K was up for sale, and Siemens were interested in our business and markets, which were complementary to theirs. As for us, we get a lot of additional requests and contracts via the Siemens global sales network. Plus, we get requests from parts of the world where we had no coverage in the past, for instance from the Americas and parts of Asia. In parenthesis I should like to say that becoming a part of Siemens has been welcomed by our workforce.

But there is another positive aspect: in the past, we were owned by financial institutions with only limited interest in our core business. We greatly appreciate being a strategic part of a concern and benefitting from synergies in technology. We believe the current constellation to be a far-reaching guarantee for the persistence of our business activities.

Q: What is KK&K's importance for Siemens? The first we heard of a relationship was in connection with a steam turbine marketed under licence in India.

A: Yes, that's correct. The SST-050, which is the Siemens designation, is



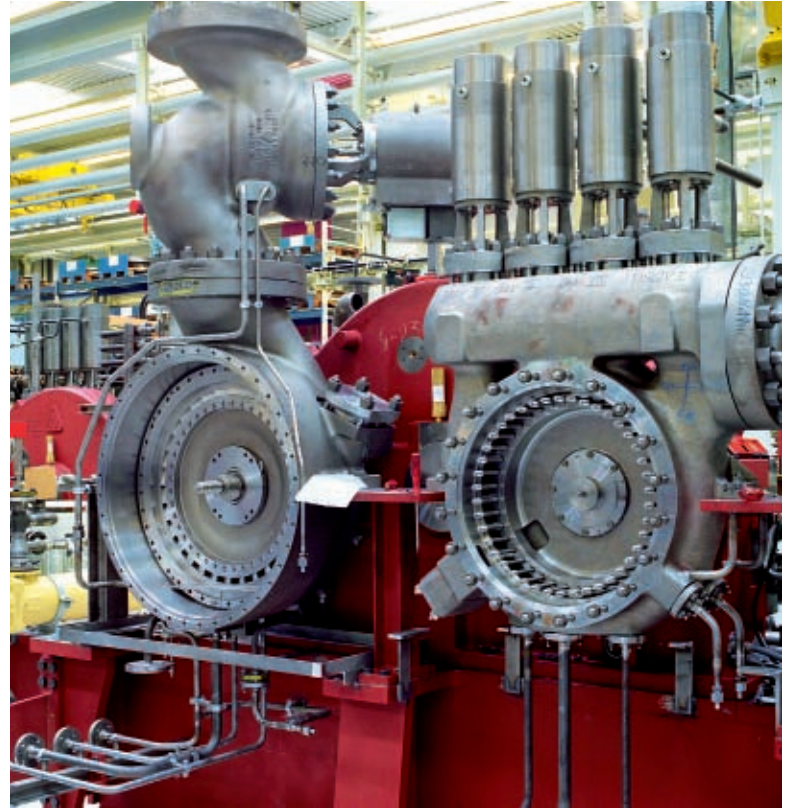
a turbine from the KK&K portfolio. A manufacturing licence for this turbine was issued to ABB in India at the end of the 1980's. As a result of corporate development, the licence was taken over by Siemens some five years ago, and the SST-050 became part of the Siemens steam turbine portfolio, marketed in India through Siemens' Vadodara operations. The SST-050 turbines are relatively simple, robust machines which are particularly suited for such applications as sugar mills, including mechanical drive of shredders or power generation.

Q: What is the sales volume of these machines in India?

A: About 20 to 25 turbines per year, the main share going to the sugar mills or comparable industries. Before becoming part of Siemens, KK&K steam turbines for the Indian market were marketed from Frankenthal or via local agents. But it will be a lot easier, of course, having a local affiliate and local manufacturing facilities. In future the Vadodara facility will build the SST-050 together with a range of other machines in the Indian market. We expect to expand our market share considerably through this local presence. India is a booming market, and we want to be part of the boom!

Q: Were KK&K and Siemens competitors on the Indian market in the past?

A: Not really. Siemens' presence in the Indian market was on an entirely different scale compared to ours. We marketed different machines for different applications. Whereas we marketed steam turbines for smaller



industrial applications, Siemens marketed larger turbines for power utilities or larger process facilities.

Q: So the product lines dovetail neatly in a single portfolio?

A: KK&K had a very good market position in its class of turbines and compressors, just as Siemens was very successful in marketing the higher power ratings. Our portfolios matched perfectly without overlapping, and could be merged without product redundancies and without market delays. It means that Siemens now has an integrated offering for a full range of steam turbines with any required power rating, including the low-scale range where they did not previously operate.

Q: The compressors you mentioned are turbocompressors, is that right?

A: Correct, KK&K has exclusively manufactured turbo-machines, including exhaust-gas turbochargers for the automotive industry until a couple of years ago. Today, we manufacture steam turbines up to 10 MW, and ventilators for power plant and water processing applications. Our turbocompressors are mainly employed in process plants and water treatment plants.

Q: How about the unique selling proposition of the former KK&K turbines? What sets them apart from competition?

A: The vast majority of our sales are single-stage steam turbines with integrated gearbox. A somewhat unique technology to mention is our twin

turbine, i.e. two turbines working with a single gearbox, the turbines being able to work at different speeds. This enabled us to build a dual-pressure turbine similar to a 2-stage turbine, which has been well accepted by the market. While these twin turbines offer all the possibilities of multi-stage turbines, they have the extra benefit of small single-stage turbines, including start-up without complicated procedures. But they also have the advantage of a better efficiency than conventional single-stage turbines. This is the development that has had the most positive resonance in the market.

Q: Any additional projects and goals for the years to come?

A: The continuous improvement of efficiencies is a major focus. In addition, we want to further develop our machines to match market-specific standards and specifications, including the oil and gas market, where we do not yet have a significant presence. Moreover, we would like to expand our production-in-market.

Q: Put in a nutshell: what's in for the customer?

A: First and foremost: customer proximity. It is essential for our business, as is local content in a number of countries. As part of Siemens our products will be available virtually everywhere in the world. Additionally Siemens' worldwide service network ensures a service point is within reach on a global scale.