ITALY: HOW A SUPPLIER MASTERED THE TOUGH WIND POWER BUSINESS

FRESH BREEZE

While companies in the solar power sector are struggling to survive, prospects are looking bright for producers of wind turbines. Planning and construction projects are underway for new wind parks both on land and off coastlines. This development is of particular benefit to specialized companies. A leader on the market for gearboxes (photo), Bonfiglioli is known for its precision work and customized solutions.

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Wind power has been used for millennia to sail the seas, grind grain, spin cotton, saw wood, and drain swamps. During the Industrial Age, however, oil-, coal-, and gas-fired facilities became the dominant sources of electricity, while wind-powered methods fell dormant. But when the oil crisis hit in the 1970s, people realized that unlike fossil fuels, wind power would never be depleted and so they turned back to this type of energy technology with renewed interest.

“We have made enormous technical progress in our use of wind power,” says Fausto Carboni, general manager in charge of the mobile drive and wind power business at Italian specialist Bonfiglioli. Today's wind turbines, which stand as high as the Cologne Cathedral with blade spans longer than a football field, have little in common with windmills of the past. “The only reason wind power is considered less competitive than nuclear power these days is because the follow-up costs for producing nuclear energy are left out of the equation,” says Carboni. →
A specialist for everything that goes up, down, and revolves, company founder Clementino Bonfiglioli realized 30 years ago that his family’s experience in developing customized gearboxes and drive systems for conveyor systems, chair lifts, cranes, elevators, and winches could be applied to wind power systems as well. “We already had the planetary gears needed for that,” says Carboni. Small versions of these gears are used in shift mechanisms on bicycle hubs, and larger versions in the drive systems of buses and trucks. They regulate the transmission of engine power into slower or faster speeds. Bonfiglioli has combined its gearboxes with electric motors, creating drive systems that are more efficient while at the same time more environmentally friendly. Carboni is very proud of this, noting that “we’re the only ones to offer them.”

In 2002, this niche in the market became a core business for the company. The first customer was the Danish company Vestas, long the world’s number one wind turbine maker. Today, Bonfiglioli supplies nearly all the major makers—from Siemens to Gamesa, Senvion and Nordex. “The manufacturers don’t want just a supplier; they also want a technology partner,” reports Carboni. “Of course, we always ask our customers what each individual project has to accomplish. Then we develop customized solutions, although clearly we can draw on our existing product range as well.” Engineers at the main factory in the northern Italian city of Forlì have developed compact, easy-to-install drive systems that control the gondolas and align the rotor blades to the wind. In addition, they’ve combined the system with an inverter that feeds the power right into the grid.

One out of every four wind turbines these days has a gearbox from Bonfiglioli, making the Italian company the undisputed leader in the industry. True, pessimistic reports keep emerging from the energy sector about wind parks struggling with technical problems caused by rough seas or by not being connected to the grid at the right time, about environmentalists demonstrating against the construction of new wind parks, or politicians calling for subsidies to be discontinued. For Bonfiglioli, however, this is no reason to doubt the upswing in the industry.

In Germany, for example, the threat of lower subsidies for wind energy has triggered frenzied activity in the industry. In an effort to take advantage of the old subsidies, more wind turbines have been set up recently than at any time since the boom year of 2002. After China and the USA, Germany is the world’s third-largest producer of wind power, and the country has had wind turbines for 25 years now. In particular, Bonfiglioli is setting its sights on the lucrative renewal business, which consists of providing existing systems with larger rotor
blades and more powerful drive systems. This raises energy yields at a fraction of the cost of building new turbines.

Even more wind power systems are being built throughout Europe. Spain’s first offshore wind park off the coast of Gran Canaria joined the grid in late 2013, and is expected to meet the energy needs of around 7,500 households. Turkey is planning new parks to power 250,000 households. In mid-2013, the United Kingdom strengthened its leadership in the European offshore market by opening the world’s largest wind park, which will serve half a million households. Even the French—traditional advocates of nuclear power—are pushing ahead with an expansion of wind power.

In the USA, uncertainty over government subsidies in recent years had led to stagnation in this sector. “Business in North America is strongly dependent on subsidies,” says Carboni. But there’s clear sailing now that the federal government in Washington has set the target of raising the share of electricity acquired from wind power from three to twenty percent by 2030, and is promoting this aim by providing tax breaks to the industry.

Following the nuclear disaster in Fukushima, Brazil has turned away from nuclear energy and toward wind power as well. Over the past two years, the largest country in Latin America has tripled its wind power capacity. Because trade winds are turning wind power into an economical source of energy, it looks like the boom will continue. With one minor disadvantage for Bonfiglioli, however. The Brazilian government requires that producers generate the majority of their energy locally. So by 2015 at the latest, the first Bonfiglioli gearboxes will roll from domestic production lines.

And what about China? Given the growing need for energy along with alarming levels of air pollution, the government in Beijing now requires half of all newly developed energy capacities to come from renewable sources. This sounds like very promising business prospects. But Carboni is skeptical. “China is the world’s largest market for wind power, but the entire market is in Chinese hands and most of it is controlled by the government,” he says.

So Bonfiglioli is initially focusing its attention in Asia on India and Vietnam. But the Italian company is always ready for new ventures. And to ride the winds.
At its main site in the northern Italian city of Forlì, Bonfiglioli produces a total of 210,000 high-precision track drive and wheel drive planetary gearboxes for heavy-duty construction vehicles every year, as well as swing drive planetary gearboxes for enormous wind turbines. “We’re extremely proud of these products,” says Marco Cesari, who directs the company’s operations in this sector. “But we also know that we can’t rest on past achievements if we want to consolidate and further expand our position on the market.”

When Cesari joined Bonfiglioli in 2009, he realized that although sales were rising, profits were noticeably declining. “We had to rethink the situation and change our strategy,” he recalls. But it wasn’t quite that simple. “Everyone was talking about change, but what they all meant was that the other departments were supposed to change,” he says with a smile. Cesari turned to Porsche Consulting for support. He had carefully studied the crisis that Porsche went through in the early 1990s and how the company emerged from it. “Just like for Porsche, our solution could not consist solely of increasing sales. Instead, we had to focus on our core products and streamline our product range,” he observes.

Together with Porsche consultants from Italy, Bonfiglioli devised a strategy to transform the company. According to Giulio Busoni, Principal at the Porsche Consulting subsidiary in Italy, “The aim was to have Bonfiglioli achieve excellence in all operational areas along the supply chain. And to do this from the inside out, which means starting with production, then moving to planning and procurement, and then on to development and sales.” So all of the products and processes that Bonfiglioli had previously considered perfect were subjected to rigorous analysis.

The consultants started the transformation process by examining production processes to determine where costs might be saved. How and where were personnel, materials, space, and time being wasted, and how much was this costing Bonfiglioli on an annual basis? The results were used to draw up a cost deployment plan that would extend over a period of one to three years with short- and long-term aims. “In order to convince everyone of the merits of change, you need lighthouse projects with rapid results,” notes Busoni. So Bonfiglioli and Porsche Consulting started by taking individual pilot production lines and optimizing their logistics, machine availability, and quality systems in order to prevent the waste they had previously identified. Management and staff were so quickly excited by these improvements that they themselves took the lead in rolling out the strategy at all the other plants worldwide. These new lean production processes have led to a 43-percent increase in production, 40-percent faster set-up times, and a 15-percent increase in machine efficiency.

If it weren’t for Bonfiglioli, a lot of wind turbines and heavy-duty excavators would not be running. This Italian company is the leading producer of gearboxes and electric motors on the market. In order to keep expanding its position, it works consistently on achieving operational excellence.
For the development department, Bonfiglioli and Porsche Consulting not only set up a lean product engineering process (PEP), but also carefully examined the existing product architecture and range. At first, this alarmed both development and sales personnel. “Salespeople are not at all happy on hearing the word ‘standardization’,” says Cesari with a grin. But as Busoni adds, “You can’t earn money with every single different type of product—which is what our analysis at Bonfiglioli showed, too.” The company was also facing increasing competition over prices. On seeing that equally good results could be achieved with a smaller number of different parts, Bonfiglioli’s engineers rethought their approach. And the sales specialists were also reassured. “Our products continue to be tailor-made for the needs of our customers, even though they are now composed of standardized parts,” says Cesari. This has enabled production costs to be reduced by an impressive 1.1 million euros a year.

For the sales department, operational excellence is based on a newly defined process plus improved planning and networking with production. A new measurement instrument known as the “sales dashboard” shows developments in demand as well as the associated utilization of production capacities. It also shows which customers are ordering how much, and whether individual products are covering their costs. This instrument makes it easier to monitor all the orders, and also simplifies reporting and communications between headquarters and field offices.

Cesari’s goal is for “our division to set an example for the company.” After all, his division accounts for the largest share of sales at Bonfiglioli, followed by the industrial gearbox and photovoltaic sector. The transformation that Cesari’s division has undergone is being successively rolled out every other division and plant. This will enable Bonfiglioli to be proud not only of its products, but also of its organization and every single one of its underlying processes.