

Wind Turbines: A Paradise for Automation Technology

Companies offering automation technology are increasingly able to profit from the booming wind industry. At the same time the range of applications for automation components in wind turbines is quite extensive, as experts from Beckhoff, Harting, Kübler, Lapp and Phoenix Contact make clear. On the occasion of the leading Trade Fair 'Wind' they tell us about their experiences, assessments, development trends as well as their product ideas.

Over the last five years the Wind Energy sector has grown in importance for many suppliers of automation technology. Despite the good growth prospects the market segment is clearly finite when it comes to the target group.

What are the deciding criteria when it comes to selecting a supplier: technology, price, experience/references or a good name?

Carsten Wendt, Product Manager, Industrial Communication and Power Networks (ICPN) at Harting knows only too well that "One of the key criteria is the quality of the products". He goes on to explain that "A turbine has a lifetime of around 20 years. During this period a high level of availability is very important, in other words there should not be any downtimes as a result of defective components." Alongside this he cites delivery capacity as an important criterion: the supplier must have the ability to produce high volumes and to deliver these worldwide on time - where necessary using local production facilities. "Of course the components themselves must meet the technical requirements," he continues. In the process, ideas and system solutions are often developed in close collaboration with the customer. "This is why qualified technical help and support for the user is so indispensable", he explains.

Stefan Gallmann, Global Industry Manager Wind Energy from the Business Unit Automation at Phoenix Contact Electronics GmbH, also sees long term product availability and cooperation where the partners trust each other as important criteria in the choice of supplier. "It is especially this latter point that is crucial here," he points out, "as we incorporate into our automation solutions demands from our customers that reflect their expertise and contribute to their unique selling points in the market. Knowing that we will treat this information in confidence and that they can rely on us, in addition to our innovations, all give our customers a feeling of assurance that they can also promote these attributes themselves in the marketplace". He also acknowledges that innovative technologies along with rugged and reliable products play a significant role too.

"Customers are well aware, which technologies their customers offer and which advantages and disadvantages these bring with them. For this reason customers have to be persuaded by the engineering expertise," agrees Markus Brunner, Business Development Manager Wind at Fritz Kübler GmbH. If a certain technology affords the customer benefits, then in this market segment he is more likely to accept a higher price. However he qualifies this by saying "In countries though where the customers are more price-sensitive you are going to run into difficulties". C. Wendt supports him on this point: "The prices for wind turbines are dropping and in Asia there is a lot of price pressure. So, when all is said and done, price is always a factor." "Parallel to this, application know-how is vital," adds M. Brunner and continues: "It is always helpful to have good references."

Jörg Kairies, Program Manager Renewable Energy at U.I. Lapp GmbH, comments “From our viewpoint, a good price/performance ratio along with experience are key. In addition to these, the all-round service package offered must be right, and here I am including the ability to supply – and on time.”

“At the end of the day it is a combination of all four criteria – engineering, price, experience/references and a good name – that determines the choice of supplier” sums up Dirk Kordtomeikel, Sector Manager Wind Energy at Beckhoff Automation. Looking back, he remembers that Beckhoff took its first steps in the Wind Energy market around 10 years ago with its PC-based Control- and Fieldbus technology. Since that time the company has gathered experience with its ‘New Automation Technology’ in projects around the world. “That we are today well-established in the Wind Energy sector is all down to the informed sector-specific know-how of our employees. In 2010 alone we equipped more than 6,000 wind turbines worldwide with our control technology”, he points out. (...)

Kübler: Trend towards bus-compatible encoders and Safety

As the most successful ‘Wind Product’ at Kübler, M. Brunner names their absolute encoder Sendix with the 58-size housing. “We sell these in five-figure quantities every year to the Wind Industry,” he says. It is used to measure the pitch-angle of the blade and adjust it on the basis of the wind speed. “We plan to develop this product further over the next few years and refine the technology successively, in order to offer our customers even greater benefits,” he reveals. He also feels that safety and availability will continue to play a significant part in pitch systems “and it is here that encoders will play a key role”, he explains.

When looking at the future M. Brunner is convinced he has the right range of products. “The market for bus-compatible system will grow.” The reasons behind this, according to him, are that the number of sensors and measurement systems for the monitoring and control of wind turbines is continually increasing. “Therefore sensors will also increasingly be integrated into bus systems, instead of having to wire up each sensor individually.”

He then goes on to talk about Safety as a further trend.

“The measurement of the rotor speed is the single most important measurement in the wind turbine when it comes to safety. In the future it will be safe sensors that are used for speed measurement instead of redundant systems – which, by the way, is what has been happening in other industries for some time now,” says M. Brunner.

The greater the diameter of the rotor and generator shafts, the more important it then is to measure the position of the rotor very accurately. “Here more and more high-resolution absolute encoders are utilised. These measurement systems allow for both the rotor speed and the rotor position to be monitored, not just when the turbine is operating but also when it is being shut down,” explains Kübler’s Business Development Manager Wind. (...)

Five Year Outlook

As far as their products are concerned, it seems that these automation specialists are well-equipped to deal with the future demands of the Wind Industry. But how do they see the market developing over the next five years and from which countries are they expecting the best growth prospects?

They seem to be all agreed in their view that the Wind Industry will continue to experience global growth in the years to come. “The worldwide demand for wind turbines is very high. Therefore we too are expecting strong growth” says C. Wendt, giving the basis for Harting’s view. D. Kordtomeikel supports him from Beckhoff’s side: “The outstanding cost-benefit ratio of wind power in the field of renewable energy leads us to expect continued global growth for this industry sector in the coming years.” “Of course, here we must differentiate between

countries where wind power will be installed and countries where the actual wind turbines are manufactured,” interjects M. Brunner. Looking at the individual countries, he concretizes: “China has been the strongest growth market now for a number of years and will almost certainly remain so in the near future.” S. Gallmann shares his opinion: “The enormous growth we have seen in China will level off somewhat in the years to come, as the development of the whole local energy infrastructure there must first catch up. At the same time, however, China’s energy needs will grow rapidly and the country wants to continue to meet these needs from an increasing share of wind power.”

“Further markets are already developing or will come along in the foreseeable future, for example India, Brazil and Korea,” thinks D. Kordtomeikel and is supported in this view by M. Brunner. “In India and South Korea there are up-and-coming initiatives. Overall, as a result of this, the market will continue to grow – though no longer as strongly as five years ago.” “The Asian region, especially China and India, is a large growth market. Nevertheless here one also has to take into account that local production – including local manufacture of turbines – is playing an ever greater role”, comments C. Wendt, giving us some cause for thought. Looking at the USA, he feels that currently this market is going through a weaker phase. But he is still convinced that “there is still great potential here in the future.” M. Brunner adds that “in the existing markets of Europe and the USA it will be primarily repowering that will spur on the production of wind turbines.”

For S. Gallmann too, Europe will take a leading role in respect of the cumulative installed output capacity, with the offshore business gaining strongly in performance. In Asia and America he expects the greatest growth rates to be in the onshore business. “All in all, the use of wind energy will also become established in many new countries. As a supplier, we focus primarily on the development and production locations of our customers. Here we see a growing trend amongst the manufacturers to build their production capacities in the customer’s own country,” said S. Gallmann.

In conclusion J. Kairies summed up the discussion from Lapp’s point of view. “We expect the strongest impulses to come from China, India and Brazil. Those are the biggest markets for wind energy. But we also see ongoing potential here in Germany, where new developments are always underway.”

Inge Hübner



Markus Brunner is Business Development Manager Wind at Fritz Kübler GmbH



Encoders for pitch and azimuth positioning or for speed measurement in wind turbines are exposed to harsh working environments. Kübler offers a range of suitably designed devices.