

# State of the art

**Charles Yates**, the managing director of CmY Consultants, offers his take on the state of technology in the offshore wind industry



Charles Yates

As far as turbine development in the offshore wind market is concerned, I think things are looking really positive. We had a period where Siemens dominated the market and while they produce good turbines there wasn't much effective competition. Part of the reason for that was that big offshore turbines are very expensive and a relatively new technology, so developers were playing safe and going for big manufacturers with lots of financial and technical backup.

Siemens' turbine business, being part of a strong multinational, had a real advantage over Vestas who were much smaller, much less profitable and since they were focussed solely on wind turbines were more vulnerable to the downturn in a single business. Now that Vestas has the strength of Mitsubishi behind it the company is becoming a really strong competitor in the offshore wind market and its presence is driving dynamic competition and more effective innovation.

Now the industry has two leading players in Siemens and Vestas but it will be interesting to see how competitive the Gamesa joint venture turns out to be now they have contracts to install offshore wind turbines in French waters. Also you have GE teaming up with Alstom: GE delivers unrivalled financial strength and they are very big in onshore wind turbines in the US but not really very much of a player in Europe. They could potentially have a significant impact.

All the analysis suggests that 10MW turbines are feasible and economically attractive because installation is such a high cost: if you can build a 500MW wind farm with 25 per cent fewer turbines then that is a significant cost saving. It also means you need fewer and shorter visits for maintenance.

As far as the turbine technology is concerned, it is possible to scale up and there are real benefits from longer blades and a bigger swept area. The

challenge is as you get bigger and heavier turbines in potentially deeper waters, what do you do with the foundations? This is an issue that is important for the development of the industry and the big manufacturers have recognised that and Siemens and Vestas are trying to help the manufacturers of the towers come up with cost-effective designs and installation methods which will work with ever bigger turbines.

The industry is seeing a little weakening of some of the key links between developers and turbine manufacturers. For example, until about a year ago there were very strong links between Siemens and Dong. Now Dong is looking at Vestas 8MW turbines. As a result of the emergence of an important and credible new competitor in the market, there is less incentive to stick tightly to partnerships.

Naturally Round Three has helped the market to develop, but it isn't only about UK Round Three. Siemens,



Vestas and the others are looking at a global market for their product of which Europe is, at the moment, by far the biggest part and within Europe the UK is still the bulk of the market. Nevertheless, China has got some offshore turbines in the water and the Americans are beginning to take the sector seriously. Furthermore, India is looking at a number of projects and there is quite a lot of activity in Japan. It is a global market and the manufacturers are looking at global development.

When it comes to installation technology and processes my crystal ball is a little cloudier. I think there will be some big new challenges as we move to bigger turbines in deeper waters. Four or five years ago the costs of energy from offshore wind in the UK were actually going up as projects were moving into deeper water. Now people have learnt lessons: there are new designs for jackets coming out and installation vessels are getting bigger so they can be more productive and can install in a wider range of sea conditions.

For really deep water you have to have floating turbines and the Japanese are putting a lot of time into developing such technology because they have predominantly deep water sites. I don't see any problems that aren't solvable. It won't be an overnight miracle but I suspect they will get there; the government and big engineering companies are very determined.

Looking at the UK, it is a big step forward that Siemens is establishing a factory in Hull as a base for projects up and down the East Coast. Consider the Nissan car plant in Sunderland: not only has it expanded over time but more and more of the component makers who service Nissan have built factories nearby so they can deliver products just in time. Additionally there are more training facilities and a large pool of

skilled workers in the area. There is a good chance that something similar will happen in Hull and it will become a real offshore wind cluster.

It would be very helpful if politicians would commit to subsidies and targets beyond 2020 so stakeholders can invest at scale in new manufacturing plant. Also, the industry would benefit from greater clarity on the government subsidy framework.

Looking at a global context, I think there are real grounds for optimism. Projections for offshore wind to 2020 shows that market is growing at 22 per cent per year in UK and a little faster in the rest of Europe. In the Rest of the World it is growing at 45 per cent each year. This is exciting and a growing market will drive down cost and encourage developers in a similar way as happened in the solar industry.

