

## PRESS RELEASE

2013

### **LM Wind Power first in the wind industry to implement ultra-low styrene content gelcoat**

April, 2013

If there's will, there's a way. LM Wind Power pushed the development of an innovative low styrene emission gelcoat, rigorously tested it, and implemented it in its plants worldwide in less than 2 years. The company is now the first to apply this innovative product in its manufacturing, setting the standard for improved work environment in the industry.

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Every year, LM Wind Power produces thousands of wind turbine blades in its manufacturing facilities worldwide. Thus, it is arguably one of the greenest companies in the world measured in the clean energy generated by its products. It is, however, still a manufacturing company and the processes of creating its high technology blades use potentially hazardous chemicals such as styrene, in the gelcoat that is sprayed in the moulds before glass layup. Styrene is a widely used solvent which, correctly managed in manufacturing, causes no apparent health effects but it has been the focus of attention in some national regulatory bodies, not least because it has a strong odor at quite low concentrations. Despite comprehensive ventilation systems and having strict practices in place on the handling of styrene, LM Wind Power had no doubt that it was compelled to investigate alternatives to live up to the ambition of continuously raising the HSE standards in the company's operations and improving the work environment for its employees.

Changing a key material going into a product the size and complexity of a wind turbine blade is not something that is easily done. But innovation is not new for LM Wind Power. A cross-functional group was given the challenging task to find an alternative gelcoat solution that would reduce styrene emissions in the plants by at least 50%. The only requirement was that it wouldn't compromise the quality of the product in any way.

"We applied a completely open approach," says LM Wind Power's Senior Manager for Global Equipment Engineering, Dan Lindvang, who managed the project. "Basically we were willing to try anything, even solutions that would require different processes and manufacturing methods as long as we could meet the target to reduce emissions. We wanted to be able to think completely out of the box." Dan continues: "Ideally, the gelcoat would not contain styrene at all. However, that would require some other solvent which would just

create other and maybe unknown HSE challenges. Therefore, we focused on solutions that would cause a significant reduction of styrene emissions taking us a huge step on the way. But maybe it will be possible longer term to find completely styrene free solutions.”

First step for Dan and the team was to scrutinize the range of existing low styrene content products already on the market. The results were not encouraging, and ultimately made LM Wind Power ask their key suppliers to give it their best shot. A couple of them took up the challenge with Scott Bader leading the efforts. Several comprehensive lab tests and 2 million cycles on a full scale 43.8 meter blade later, the company was ready to implement Scott Bader’s new ultra-low-styrene content gelcoat in its 12 plants worldwide. Full roll out was completed in 2012, in combination with new features on the mould that prevent the styrene from dispersing out over the sides, and the target of at least 50% reduction in styrene emissions was fully achieved.

In the end, LM Wind Power didn’t have to change any of its processes with Scott Bader’s new ultra low-styrene content gelcoat as it has the same properties and curing time as the standard gelcoat. The biggest difference is that there is no smell in the workshop which is well appreciated by the employees. The new ultra low styrene content gelcoat is more expensive than the previous one but LM Wind Power is confident that the investment pays off.

VP Global Manufacturing, Richard Bevan states: “We have every interest in providing the best possible work environment for our employees. Styrene has been on the list of chemicals that we would like to eliminate if possible for quite some time. Implementing the ultra-low styrene content gelcoat has taken us a large step on the way. It illustrates how high ambitions for HSE can foster innovation and hopefully make a difference for other industry players too.”

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