

RENEWABLE ENERGY

Bridging the knowledge gap through expertise and testing

With a need to reduce costs and accelerate market delivery, we paired our plastic expertise with the knowledge gained of the application through testing to develop proprietary wind turbine solutions.

2021 CASE STUDY



MITSUBISHI CHEMICAL
ADVANCED MATERIALS

At Mitsubishi Chemical Advanced Materials
we're making ambitious ideas possible.
We partner with our customers to help get their
ideas to market faster using advanced engineering
materials that push our industry forward in ways
that also enhance the world.

Partners in the Renewable Energy Industry

We're helping our customers across key segments such as wind, batteries and solar reduce risk, ensure performance and meet their sustainability goals with:

- A deep understanding of the challenges facing the industry
- Extensive manufacturing capabilities
- Experts that specialize in the development of specific solutions
- Our own corporate commitment to sustainable practices



Advanced Fluid Management



Aerospace & defense



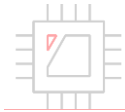
Architectural



Automotive



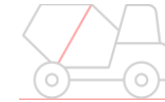
Building & construction



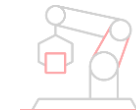
Electronics & semiconductor



Food & beverage



Heavy equipment



Industrial equipment



Medical & life science



Recreational vehicles



Renewable energy



Sports & leisure



Transportation

THE CHALLENGE

Reducing recalls through reliable materials

Wind turbines are traditionally designed and built using mainly metal, with less than 10% of their build made up of plastic.

For the last 30 years several wind turbine manufacturers have been researching plastics that may be suitable for use in Yaw Slide Bearings with the aim of cutting the overall system cost and reduce fatigue loading.

To find out more about critical-to-quality (CTQ) properties of plastic for potential use in this part, many OEMs consulted product data sheets.

THE CHALLENGE

In some cases, plastic parts OEMs designed worked well at first, but over time began to underperform and fail. When this happened during field testing, it resulted in delays. Worse, if discovered too late, where items had to be exchanged on the production equipment, it resulted in OEMs incurring high financial costs and loss of brand image.

After conversations with our customer's engineering teams, we realized that while the data sheets the particular OEM had consulted held valuable insights, the testing conditions were not comparable with the final applications. This meant the information was irrelevant when put into practice.

Identifying the missing test data meant that time to market was increased for OEMs as they needed to first prove the materials were fit for purpose.

OUR SOLUTION

Accurate material performance data through applied testing

To find a workable solution, Mitsubishi Chemical Advanced Materials engaged with the OEM's engineers to understand the applications and environments the material would be used in. Using our extensive knowledge of plastics, we initiated five testing programs to generate test data that was relevant to the market.



OUR SOLUTION

To ensure the chosen materials would deliver to the customer's needs, we ran functional application testing instead of lab tests. This method recreated the exact working conditions of the turbine to deliver more accurate insights.

We undertook 3.5 years of study and 2 years of testing, to fully understand the requirements and limitations of the material when in-situ within a turbine. This comprehensive study was essential to avoid future recalls as it allowed us to fully understand all of the requirements of the chosen materials.

By working directly with the OEM and taking a proactive approach to listening to and learning from their experience, we completely adapted our offering to other wind turbine OEMs. We were able to fully meet their needs in a way that was unprecedented in the market.



THE MCAM DIFFERENCE

Core to the success of the project was MCAM's engineers working closely with the OEM's engineers. The combined knowledge proved to be valuable not only in responding to the request for quotation on the parts, but in looking into the part in its entirety.

Our in-depth testing process meant we had a comprehensive understanding of the requirements, which allowed us to provide a solution based on the interaction of all mating parts within the turbine as opposed to just the bearing. Ultimately, we were able to provide a solution to a whole problem rather than just addressing one area within it.

THE CUSTOMER IMPACT

Faster to market and reduced costs

Our ability to deliver pre-qualified materials, meant that our customers were able to shorten their testing regimes while ensuring part durability, reducing their overall time to market.

Our customers were also able to save costs by eliminating unnecessary replacements of faulty parts. In addition, the use of engineering plastics in the Yaw Slide Bearing system versus roller bearing concept can deliver a cost saving of up to 20% (depending on the turbine dimensions).

Furthermore as some solutions run without grease, significantly reducing wear and noise, further savings can be made with longer service intervals.

- Reduction in time to market
- Cost savings at initial purchase and during use
- Lower running costs

Want to know what's possible in Renewable Energy?

Get in touch with our specialist teams.
We're ready to meet your next challenge.

contact@mcam.com

To find out more please visit: mcam.com

