



3D model of RomaxWIND gear system

By Nick Lerner

## You're So Vane

Becoming more proficient through advanced training and technical support has enabled wind energy expert consultancy RomaxWIND to evolve its productivity, capability and ability to efficiently deliver to the wind energy industry.

**B**ased in Nottingham UK and with facilities across Europe, Asia and the US, Romax WIND offers its clients with design services, technical consultancy and simulation technology for the development of wind turbine drivetrain systems.

### YOU DON'T NEED A WEATHERMAN

Using its own specialist software coupled with Dassault Systèmes CATIA and a nascent ENOVIA SmarTeam capability, the company provides design and analysis of gearboxes, bearings and drivetrain systems to manufacturers and operators in the wind energy industry. Using a combination of their technical team and Romax simulation technology RomaxWIND is able to offer a wide range of services to its clients including, product design, expert assistance for gearbox certification, technical due diligence on bearing and drivetrain design, manufacturing support, strategic consulting, technology transfer, and training.

Key to the company's work is a strong design capability that produces significantly increased drivetrain efficiencies in wind turbines. This is achieved through understanding gear and supplementary systems and their optimisation through analysis and iterative development.

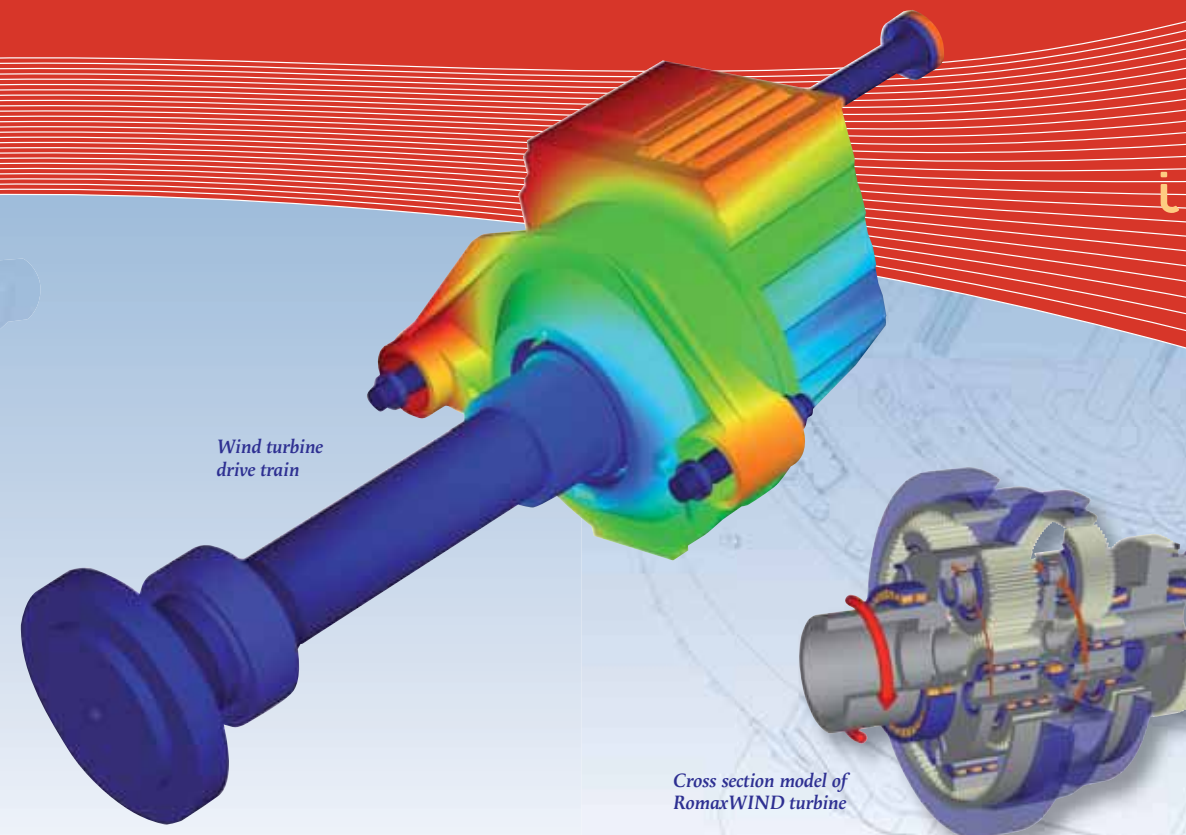
David Reetham, Senior Project Engineer at RomaxWIND explained some of the complexity of ensuring maximum efficiency: "Equal load sharing between planetary or epicyclic gears is

crucial to ensure reliability and low vibration. By taking into account the effects of structural deflections, mounting conditions, gravity, assembly and manufacturing tolerances RomaxWIND uses software simulations to predict load sharing through each planet gear. Add this to gear contact patterns, durability calculations, phasing calculations and noise minimisation and the complexities increase."

### LET THE FOUR WINDS BLOW

"Once we have optimised the drive train specification and features, CATIA is deployed to develop and refine the concept and bring it to a manufacturable state. CATIA is also used to evolve the initial design so that production will be as closely related to the 3D digital model as possible. As the design develops re-analysis often takes place with the 3D model being transferred through various systems in a design/analysis feedback loop."

For this complex set of activities to proceed with ease, ENOVIA SmartTeam is being deployed with technical assistance and support from Dassault Systèmes Value Added Reseller, Applied PLM solutions. Applied also provide ongoing support for RomaxWIND's CATIA installation. Shaun Clark Managing Director of Applied said: "The introduction of ENOVIA SmarTeam will improve design productivity by offering enhanced configuration and release controls as well as providing sophisticated links between parts and assemblies. Designers will



Wind turbine drive train

Cross section model of RomaxWIND turbine

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be able to log parts and assemblies in and out while version control ensures that order and traceability are always maintained. This will allow designers to do more designing and also improve overall data security and quality."

### FAIR STOOD THE WIND

David Reetham commented, "Applied offers a number of training options to RomaxWIND which allow us to make the most of our Dassault Systèmes installation and to develop systems and methodology that suit our needs for seamless integration within and beyond our enterprise and our supply chains. We work on projects internationally with much work in Germany, Denmark, China, India and the US where major wind power developments are taking place. Dassault Systèmes software is ideal for this type of operation and Applied has been instrumental in ensuring that we achieve maximum productivity from its deployment."

Shaun Clark added, "Applied's expertise across many industry sectors ranging from automotive and aerospace, in the energy sector and beyond, has given us the experience to bring to RomaxWIND the training and support services

that enable them operate with great efficiency. Our knowledge and understanding of DS PLM allows RomaxWIND to gain maximum productivity from their software using the advanced methodology deployed at the highest levels of design and manufacture."

The globally expanding industry of generating energy from wind power is pushing technical boundaries, but RomaxWIND sought to meet this challenge by transferring the knowledge gained in the aerospace, automotive, marine and heavy industries, in which Romax has been operating for 20 years. Now with over five years experience and a large portfolio of wind energy projects RomaxWIND considers itself at the forefront of technical development in wind energy engineering.

### WIND IS OF SERVICE TO THOSE WITH DIRECTION

The business opportunities in the wind energy industry are significant and rely on innovative companies adopting technology transfer and marketing strategies that take advantage of the prevailing energy climate. It is with technology that new energy generation systems can be

developed and the reliance on fossil fuels reduced as a consequence.

Using CATIA and ENOVIA solutions in many projects has given RomaxWIND a strong understanding of the methods that deliver optimum results. Subtle alterations to the drive train, blade pitch and yaw, along with highly considered materials choices and their associated manufacturing techniques have positioned RomaxWIND in the forefront of wind turbine design and development while data control and management using Dassault Systèmes software helps maintain this enviable status.

David Reetham concluded, "Future developments in wind energy will come from the refinement of existing techniques and methodologies as well as from the use of new materials, control systems and their market acceptance. The situation that RomaxWIND has achieved through deploying Dassault Systèmes PLM and the support that we enjoy from Applied allows us great manoeuvrability and the confidence to work in the knowledge that our fully optimised designs can be manufactured to a standard that matches their ingenuity" • }

For more information:  
[www.romaxwind.com](http://www.romaxwind.com)  
[www.appliedgroup.com](http://www.appliedgroup.com)

Wind turbines delivering clean energy

