

About the Author/BARNABY MYHRUM

Barnaby Myhrum is an Applications Engineer at Applied Bolting Technology in Belows Falls, Vermont. He has over 25 years of experience in engineering and manufacturing companies in roles as an engineer, manager, executive, and consultant. He earned a Bachelor of Science in Mechanical Engineering from the University of Vermont, and a Masters of Business Administration from Carnegie Mellon University. He can be reached via email at barnabym@appliedbolting.com.



A Busy Year For Applied Bolting

Two-thousand-nine was a busy year for Applied Bolting in the Wind Turbine Market. There were a number of significant projects utilizing Squirter DTIs. For the benefit of fastener distributors, here is a brief summary of three of those projects involving wind tower erection and Maintenance and Repair Operations (MRO).

The Eye of the Wind at Grouse Mountain

Grouse Mountain is a beautiful ski resort in North Vancouver, British Columbia. To demonstrate their commitment to sustainable energy, a Leitwind LTW77 1.5 MW wind turbine was installed on top of the mountain. The turbine, which has a view pod near the top for up to 37 people, will generate up to 25% of the resort's electricity needs. It will be running in time for the 2010 Winter Olympic games in Vancouver, with the goal of inspiring and educating people about alternative energy sources.

The LT-77 tower is 80 meters tall, comprised of three sections. Engineers, concerned about using

torque-based installation methods, specified Squirter DTIs in the tower flange bolts to guarantee that the assembly crew hit the minimum pretensions without exceeding proof load. During assembly, the M36 bolts were "snugged", bringing the flange surfaces into firm contact. The Squirters then guaranteed that the target pre-tension was achieved +/-10% as certified by Germanischer Lloyd.

Plantas Eolicas

Mesoamerica Energy owns and operates Plantas Eolicas, SRL, a 23MW wind energy project in Costa Rica. This project was the first utility-scale wind farm to be built in Central America. Despite the aged equipment (Kenetech KVS-33), the operations team continues to maintain 95%+ availability and capacity factors above 40%. This outstanding performance is a testament to the creativity and hard work of the operations crew.



Seeking a cost-effective means of achieving quality assurance in their bolting procedures, Squirter DTIs are used in their Maintenance and Repair Operations (MRO). In a recent upgrade, ¾” bolts in the pitch bearings were replaced with studs. Squirters were employed to guarantee that the proper pretension was achieved. According to Yohainer Solano, Chief of Maintenance and Operations, “The Squirters work great!”

Unalakleet Community Wind Farm

Remote areas of North America rely on locally generated power, as they lack the population density and distribution grid for large power plants. Traditionally they employ diesel generators which are very reliable, but can be costly to operate. More and more communities are investing in renewable energy sources to both reduce operating costs and limit environmental impact.



This summer, STG Incorporated erected six Northern Power Northwind 100 wind turbines for the Unalakleet Community Wind Farm. The turbines will supply electric power to this west central Alaska fishing town. Engineers on the project specified

Squirter DTIs for the 1” anchor bolts. The Squirters were engineered to provide the specified target tension and to ensure that they were achieved during installation within a 10% range.

An Opportunity for Distributors

Two-thousand-nine proved to Applied Bolting that owners, operators and OEMs in the wind energy market are looking for solutions to their problems regarding fastener sourcing and installation. While they have discovered that Squirter DTIs provide a level of quality assurance not provided by torque-based installation methods, many are still looking for domestic sources of high-quality, metric fasteners. Until domestic suppliers and distributors address this need, many fastener assemblies will continue to be sourced off-shore. ⬢