

# Wind Energy Engineering Services

When you think ISP, think PSI



ISO 9001:2008  
CAGE 5N884

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**PSI REPAIR SERVICES, INC.**



## IGBT



PSI reengineered every possible failed component within an IGBT. Each rebuilt IGBT includes the following—advanced fault protection, water cooled heat sink with finned interior, heavy bus bars and balanced emitter circuit impedance, high voltage isolation, stronger mounting brackets, and custom IGBT driver board for longer life. Each rebuilt IGBT is shipped with shorting wires to protect the IGBT and includes new hose clamps and bus mounting hardware.

## Blade Bearing Automatic Grease Dispenser Upgrade



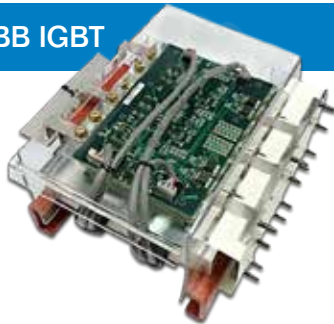
PSI made significant product improvements to Blade Bearing Automatic Grease Dispensers. The quasi-resonant controller has been remanufactured to reduce switching losses. In addition, the planar magnetics have been improved for lower losses. A new skip cycle mode provides over current protection. Additionally, PSI added a hiccup mode for continuous overload protection.

## Satcon Solar Circuit Card



PSI developed a custom repair and test solution to significantly reduce the extremely high failure rate of Satcon Solar Circuit Cards. These proprietary customizations from PSI, have dramatically improved the mean time between failure (MTBF).

## Gamesa ABB IGBT



PSI created a custom ABB IGBT Test Fixture. The custom system allows PSI to repair and fully test IGBTs and driver boards from Gamesa turbines that utilize ABB inverters. Other Gamesa ABB repairs include—active crowbars, IGBT modules, and inverters.

## Siemens Yaw Module



PSI repairs, rebuilds and improves Siemens Yaw Modules. Our remanufacturing services include—an upgraded 30 Amp IGBT with 45 Amp device, and recalibrated current sense resistors. Every yaw module is tested on a custom stand with full motor load. These improved units provide additional current handling for peak energy and better cooling.

## PSI Xantrax Inverter



PSI developed a drop-in replacement for this obsolete, but critical component found in GE Turbines. This next generation technology results in greater reliability and improved efficiency. PSI's replacement unit has operated successfully for several years in multiple wind farms.

## Line Reactor



PSI repairs both copper and aluminum line reactors. Aluminum reactors are converted to copper windings, which are more efficient. PSI's winding has a larger air gap between windings for better cooling and more copper to improve efficiencies.

## VRCC Rotor Current Controller

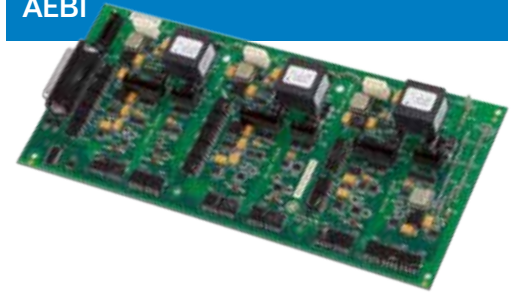


New snubber board manufactured by PSI.



PSI manufactures an improved, redesigned VRCC Rotor Current Controller snubber board. This new design integrates mechanically secured capacitors to prevent damage due to vibration and failed solder joints. All VRCCs and resistor baskets are balanced to G2.5 custom external mounted weights and are mechanically secured to heat sink. Our custom designed high voltage test fixture allows for full testing of inputs and outputs on all VRCC units.

## AEBI



PSI repairs AEBI cards by simulating the input signals and looking for the correct output response. This custom designed system allows PSI to test improvements—such as improved headroom for the Optoisolators, and detecting functional but degraded components. PSI has repaired over 3,000 of these components with great success.

## Proportional | Servo Valve



PSI performed root cause analysis and corrective action to eliminate a recurring and troublesome blade oscillation problem. PSI repairs have performed very well in this highly strenuous application.

## H Bridge | HUB Converter



PSI's custom upgrades prevent failures from high heat loads and stripped ground screws. PSI's Switching Driver replaces the OEM part and efficiently translates into less heat, while reducing mean time between failures by 80%. Steel inserts are used to create more durable ground lug threads. PSI field tested this upgrade on over 3,000 field installations.

## Oil Level Sensor



PSI reversed engineered this component and developed a repair and test procedure that eliminates the high fail rate, as well as the need to purchase a costly replacement unit. The result is a repaired unit that operates as good as a new unit, for a fraction of the price.

**When you think ISP, think PSI.** PSI Repair Services, Inc., is a leading independent service provider (ISP) to the wind industry. PSI offers component repair and engineering services for GE, Vestas, Gamesa, Siemens, Suzlon, RePower, and Clipper wind turbines. PSI covers the critical electronic, hydraulic and precision mechanical components that drive the turbines' pitch and yaw systems and down-tower electronics. Commonly repaired components include printed circuit boards, pitch drive systems, inverters, IGBTs, PLCs, VRCC units, AEBIs, proportional valves, hydraulic pumps, pitch and yaw motors, encoders, slip rings, transducers, yaw modules, 3-phase bridge rectifiers, blade bearing automatic grease dispensers, active crowbars, line reactors, oil level sensors, battery chargers, cold climate converters, and more. PSI uses the latest diagnostic tools to detect failures down to the microchip level. PSI is your source for component repair and remanufacturing. To learn more about Wind Energy Life Cycle Solutions, call 800.325.4774, or email [windpower@psi-corp.com](mailto:windpower@psi-corp.com).

[psi-repair.com](http://psi-repair.com)





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