Most Comprehensive winding and testing solutions to ensure the highest quality fiber coils

Our comprehensive winding process, combined with our in-depth understanding of polarization and the Shape effect, enables us to turn the making of fiber coils from art to science, ensuring that every coil produced meets our high quality standards and comes with a test data set fully characterizing the coil.

This patented instrument can accurately measure the spatial resolved polarization crosstalk induced by winding stress with a resolution of 6 cm, revealing much more about the winding quality of the coil than can be obtained from a PER measurement.

The polarization performance of the temperature used in a fiber gyro, whether it is a PM or SM fiber coil, directly affects the gyro’s performance. General Photonics produces the most capable coil centers of any fiber gyro manufacturer in the world. As a result, the gyro performance is a high performance of the resulting fiber optic gyro, and current sensors incorporating such components.

Superb optical reciprocity

Optical reciprocity is a key performance parameter of a fiber coil and it determines the final accuracy of the gyro, whether it is based on fiber optic gyro. The polarization performance of the fiber optic gyro components, including the coils, has a direct influence on the gyro performance.

Reliability test:

General Photonics can perform the following reliability tests for the coils:

- Swept and random frequency vibration
- Reliability test
- High temperature/temperature cycling
- Shock test
- High/low temperature

Sweep and random frequency vibration: General Photonics’ coil testing systems can simulate 20-2kHz sinusoidal frequency sweeping tests and vibration performances of the fiber coils while maintaining manufacturability.

Most Specialty winding machine winding with exceptionally stable tension, from the moment it starts to the moment it stops. It is also capable of video monitoring, recording, and fiber axis orientation adjustment, ensuring consistent high quality fiber coil production.

3D tomographic cost analysis, to ensure highest winding quality, pioneered by General Photonics.

Our specially designed winding machine and specially formulated potting adhesives, combined with our proven winding process, enable the production of fiber coils of the highest quality.

On-line tension regulation—With a tension reading resolution of ±1 gram, our proprietary tension regulator can be precisely controlled, providing tension down to 1 gram, over all the coil and stop positions. This eliminates the lowest polarization crosstalk of the resulting coils.

Our specially designed winding machine and specially formulated potting adhesives, combined with our proven winding process, enable the production of fiber coils of the highest quality.

Start with a proprietary winding system

Our comprehensive testing capabilities, combined with our in-depth understanding of polarization and the Shape effect, enable us to turn the making of fiber coils from art to science, ensuring that every coil produced meets our high quality standards and comes with a test data set that fully characterizes the coil.

Distributed polarization crosstalk analyzer (DPCA)

GP’s winding machine winding with exceptionally stable tension, from the moment it starts to the moment it stops. It is also capable of video monitoring, recording, and fiber axis orientation adjustment, ensuring consistent high quality fiber coil production.

Proprietary potting adhesives—By refining our proprietary potting adhesives, we formulated this special adhesive that balances the temperature variations, a prerequisite to obtain the most comprehensive test suite of optical performance.

High stability

GP’s coil production system, including winding processes, potting adhesives, and testing processes, ensures that from the start that the various performance data have the lowest polarization crosstalk of any vendor, a prerequisite for a high quality coil.

Reciprocity test:

PER vs. temperature of a 3 km fiber coil from GP (blue) and another vendor (Red). Typical PER vs. temperature data (Red) for test. Blue bar plot of a 7 km fiber coil from GP. Black line shows data from other manufacturer. This confirms that GP has a 7 km temperature range.

Superb optical reciprocity

Optical reciprocity is a key performance parameter of a fiber coil and it determines the final accuracy of the gyro, whether it is based on fiber optic gyro. The polarization performance of the fiber optic gyro components, including the coils, has a direct influence on the gyro performance.

Superb optical reciprocity

Optical reciprocity is a key performance parameter of a fiber coil and it determines the final accuracy of the gyro, whether it is based on fiber optic gyro. The polarization performance of the fiber optic gyro components, including the coils, has a direct influence on the gyro performance.

www.generalphotonics.com
Precision Fiber Coils for Fiber Optic Gyro (FOG) and other Fiber Optic Sensors

As the world leader in polarization management, General Photonics is uniquely positioned to solve such a problem. We have devoted significant effort over the past 10 years to finding solutions for complete characterization of the fiber coils. Aided by these testing capabilities, we further developed a new production system, including the proprietary winding machines, specialized adhesives, and proven winding processes to ensure high quality coil production. We are proud to announce that coil winding is no longer an art, but a science, and that customers can be assured that every coil they purchase meets the demanding performance requirements of their FOG or current sensors.

Visit our website to see the list of our off-the-shelf coils. Feel free to contact us if you have other requirements as to the length, OD, ID, and height of the coils. No particular specification or other information is required. We are confident that the coils we provide with our specifications will meet or exceed your performance requirements.