



GiantFOG development leads to new commercially available sensor : blueSeis_1C

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Rotational seismology starts in laboratory thanks to Giant Ring Laser Gyroscope (RLG), and then have been brought to the field thanks to portable sensor blueSeis_3A made of Fiber-Optic Gyroscope (FOG). However, all the applications where rotation measurements can bring a strong benefit are not addressed by these two available technologies. There is a gap to fill between ultimate precision reached by large, costly, and static RLG, and compact, portable 3C FOG.

iXblue has carried out an important development called 'GiantFOG' to study the limit of its design targeting ultimate performances, leading to sensors mockup up to metric scale. These developments first, help us to improve our knowledge to reach higher performances, and second, to better understand the need of potential users.

It appears that in the large scope of applications in this middle-range of performance, the need to have 3 component is less important than the possibility to integrate the sensor inside complex system (vacuum, size limitation, porthole access, thermal stability).

Consequently, the product we designed in this middle range, named blueSeis_1C, is a single axe, where the electronic boards (3W) can be up to 3meters away from cold ($<100\mu\text{W}$) sensor head, and the sensor coil is not gigantic, even not large, but only 40cm diameter, with empty space at this center. Same electronic board will be able to accept up to 3 remote sensor axis, leading to a total power consumption of 3W for 1 axis and 6W for 3 axis. Typical self-noise of this sensor will be 4-times better than blueSeis_3A reaching $5\text{rad/s}/\sqrt{\text{Hz}}$.