Moreover, the leaktightness elements between the interfaces between the antenna, the dome and the surface vessel (26, 27, 28) demand regular monitoring and maintenance related to the criticality in terms of risk of water entry for the surface vessel.

General definition of the invention

The invention improves the situation. For this purpose, it proposes an integrated antenna device comprising a protective casing of hydrodynamic shape delimiting an inner cavity and an upper fixing interface suitable for being fixed mechanically on a carrier structure. The device furthermore comprises an antenna housed inside the ~~craft~~inner cavity and fixed to the internal wall of the casing at the level of at least one fixing point, an assembly of cables comprising power supply and signals reception cables linked to the sonar antenna. The protective casing is closed in a hermetic manner and traversed in a leaktight manner by the cables.

According to a characteristic, the casing can comprise a lower dome and a closing plate which are joined together in a leaktight manner by means of joining elements.

The dome can have a circular drum shape or a streamlined hydrodynamic shape.

The cavity can comprise a protective liquid in which the sonar antenna bathes, the protective liquid being chosen to ensure the acoustic matching of the antenna.

In particular, the fluid can be a non-ionic fluid. The non-ionic fluid can in particular be an oil.

The protective liquid can be pressurized by applying a chosen setpoint pressure.

housed inside the ~~craft~~inner cavity, an assembly of cables comprising power supply and signals reception cables linked to the antenna, the protective casing being closed in a hermetic manner and traversed in a leaktight manner by the cables,

- positioning the antenna device in the vicinity of the lower aperture of the chimney;
- routing the cables of the antenna device along the chimney up to the platform, and
- fixing the antenna device to the bottom wall of the structure.

The method can furthermore comprise the steps consisting in:
- providing an upper fixing interface on the integrated antenna device;
- providing a conjugate fixing interface mating with the fixing interface of the integrated antenna device on the bottom wall of the carrier structure, at the level of the lower aperture of the chimney,

the step of positioning the antenna device comprising the step consisting in positioning the antenna device in the vicinity of the fixing interface of the bottom wall of the structure while the fixing step comprises the fixing of the antenna device to the bottom wall of the structure by mechanically joining the fixing interface of the antenna device to the fixing interface provided on the bottom wall of the carrier structure.

The invention thus provides an antenna device integrated into a closed and hermetic protective casing which can be filled with a liquid and placed under pressure. This antenna device can be mounted as a single unit on any structure intended to be immersed such as a marine platform (surface vessel, submarine, etc.) and in any environment (dry, at sea, quayside, etc.) without requiring any specific tooling or any post-mounting leaktightness checking step. The fixing of the device to a naval structure requires only a fixing interface.

Moreover, such a device can be easily dismantled in whatever environment the carrier structure is situated for example to replace the antenna in case of fault (for

Claims

1. An integrated antenna device (3), characterized in that it comprises a protective casing (300) of hydrodynamic shape delimiting an inner cavity and an upper fixing interface suitable for being fixed mechanically on a carrier structure (10), the device furthermore comprising an antenna (31) housed inside the ~~craft~~inner cavity and fixed to the internal wall of the casing at the level of at least one fixing point, an assembly of cables comprising power supply and signals reception cables (350) linked to the antenna (31), and in that the protective casing is closed in a hermetic manner and traversed in a leaktight manner by said cables (35).

2. The integrated antenna device (3) as claimed in claim 1, characterized in that the casing (300) comprises a lower dome (30) and a closing plate (33) which are joined together in a leaktight manner.

3. The integrated antenna device (3) as claimed in claim 2, characterized in that the dome has a circular drum shape or a streamlined hydrodynamic shape.

4. The integrated antenna device (3) as claimed in one of the preceding claims, characterized in that the cavity comprises a protective liquid (32) in which the antenna (31) bathes, said protective liquid being chosen to ensure the acoustic matching of the antenna.

5. The integrated antenna device (3) as claimed in claim 4, characterized in that the protective liquid (32) is a non-ionic fluid.

6. The integrated antenna device (3) as claimed in claim 5, characterized in that the non-ionic fluid is an oil.

7. The integrated antenna device (3) as claimed in one of claims 4 to 6, characterized in that the protective liquid is pressurized by applying a chosen setpoint pressure.

- providing an antenna device comprising a protective casing (300) of hydrodynamic shape delimiting an inner cavity, the device furthermore comprising an antenna (31) housed inside the ~~craft~~inner cavity, an assembly of cables comprising power supply and signals reception cables (350) linked to the antenna (31), the protective casing being closed in a hermetic manner and traversed in a leaktight manner by said cables (35),
- positioning the antenna device (3) in the vicinity of the lower aperture of the chimney;
- routing the cables of the antenna device (3) along the chimney (37) up to the platform, and
- fixing the antenna device (3) to the bottom wall of the structure.

13. The method of mounting as claimed in claim 12, characterized in that it furthermore comprises the steps consisting in:
- providing an upper fixing interface on the integrated antenna device (3);
- providing a conjugate fixing interface mating with the fixing interface of the integrated antenna device (3) on the bottom wall of the carrier structure, at the level of the lower aperture of the chimney,

and in that the step of positioning the antenna device (3) comprises the step consisting in positioning the antenna device (3) in the vicinity of the fixing interface of the bottom wall of the structure while the fixing step comprises the fixing of the antenna device (3) to the bottom wall of the structure by mechanically joining the fixing interface of the antenna device (3) to the fixing interface provided on the bottom wall of the carrier structure (39).