Claims

1. An integrated antenna device, comprising a protective casing of hydrodynamic shape delimiting an inner cavity closed by an upper closing plate, the protective casing comprising on its upper part an upper fixing interface suitable for being fixed mechanically on a carrier structure, the integrated antenna device further comprising a sonar antenna entirely housed inside the inner cavity and fixed to the internal wall of the protective casing at the level of at least one fixing point of the protective casing, an assembly of cables comprising power supply and signals reception cables linked to the sonar antenna, the integrated antenna device being deprived of any mechanical interface between the sonar antenna and the carrier structure, wherein the inner cavity comprises a pressurized non-ionic protective liquid in which the sonar antenna is immersed, and wherein the protective casing is closed in a hermetic manner by the upper fixing interface and the upper closing plate comprises means for leaktight passage of the cables inside the protective casing.

2. The integrated antenna device as claimed in claim 1, wherein the protective casing comprises a lower dome fixed to the upper closing plate in a leaktight manner.

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

4. The integrated antenna device as claimed in any one of claims 1 to 3, wherein the protective liquid is chosen to ensure the acoustic matching of the sonar antenna.

5. The integrated antenna device as claimed in any one of claims 1 to 4, wherein the non-ionic fluid is an oil.

6. The integrated antenna device as claimed in any one of claims 1 to 5, wherein the protective liquid is pressurized by applying a chosen setpoint pressure.

7. The integrated antenna device as claimed in claim 6, wherein the protective casing comprises a pressurizing nozzle, and the protective liquid is pressurized by means of a pressurization pump linked to the pressurizing nozzle by a pressurization pipe.

8. A carrier structure assembly comprising a carrier structure and an integrated antenna device, the carrier structure being at least partially immersed, the carrier structure comprising a platform emerged above a water level and a bottom wall, wherein it comprises a chimney passing through the bottom wall of the structure and opening out on the platform, the chimney having a lower aperture at the level of the bottom wall of the structure and an upper aperture above the water level, the chimney having a transverse cross section of chosen dimensions, the integrated antenna device comprising a protective casing of hydrodynamic shape delimiting an inner cavity closed by an upper closing plate, the protective casing comprising on its upper part an upper fixing interface, the integrated antenna device being mechanically fixed via the upper fixing interface to a bottom wall of the carrier structure, the integrated antenna device further comprising a sonar antenna entirely housed inside the inner cavity and fixed to an internal wall of the protective casing at at least one fixing point of the protective casing, an assembly of cables comprising power supply and signals reception cables linked to the sonar antenna, the integrated antenna device being deprived of any mechanical interface between the sonar antenna and the carrier structure, wherein the protective casing is closed in a hermetic manner by the upper fixing interface and the upper closing plate comprises means for leaktight passage of the cables inside the protective casing, wherein the inner cavity comprises a pressurized non-ionic protective liquid in which the sonar antenna is immersed, the fixing interface of the integrated antenna device being fixed on the bottom wall of the carrier structure

of the surface vessel at the level of the lower aperture of the chimney, the chimney being configured to allow the passage of the cables leading from the antenna device to the platform of the carrier structure.

9. The carrier structure assembly as claimed in claim 8, wherein it comprises a matching piece provided at the level of the lower aperture of the chimney and matching the shape of the bottom wall of the structure at the level of the lower aperture of the chimney, the fixing interface of the integrated antenna device being able to be fixed on the matching piece of the carrier structure.

10. A method for mounting an integrated antenna device on a carrier structure at least partially immersed comprising a platform emerged above a water level, a bottom wall and a chimney passing through the bottom wall and opening out on the platform, the chimney having a lower aperture at the bottom wall and an upper aperture above the water level, wherein it comprises:

- providing an integrated antenna device comprising a protective casing of hydrodynamic shape delimiting an inner cavity closed by an upper fixing interface, the integrated antenna, the integrated antenna device further comprising a sonar antenna housed entirely inside the inner cavity and fixed to an internal wall of the protective casing at at least one fixing point of the protective casing, 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 the upper closing plate comprising means for leaktight passage of the cables inside the protective casing, the inner cavity comprising a pressurized non-ionic protective liquid in which the sonar antenna is immersed;,
- positioning the integrated antenna device in the vicinity of the lower aperture of the chimney;
- routing the cables of the integrated antenna device along the chimney up to the platform, and
- fixing the upper fixing interface of the integrated antenna device to the bottom wall of the carrier structure, the integrated antenna device being

deprived of any mechanical interface between the sonar antenna and the carrier structure.

11. The method of mounting as claimed in claim 10, further comprising:

- providing an upper fixing interface on the integrated antenna device; and
- 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,

and wherein positioning the antenna device comprises positioning the antenna device in the vicinity of the fixing interface of the bottom wall of the structure while fixing comprises 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.