In one aspect, ~~Said objectives, among others, are resolved by~~ the present ~~invention~~disclosure relates to~~, the object of which is~~ an underwater water treatment unit which is suitable for injection into a hydrocarbon field, said unit including:

- means for supplying the underwater unit with power;

- an underwater water treatment system which includes at least one filtration membrane, a water intake which is suitable to bring a flow of water drawn from the environment of the system into the underwater unit, a pipe connecting said water intake and said filtration membrane, a discharge pipe for treated water and at least one supply pump which is suitable for filtering the water;

- a hydraulic circuit for cleaning said membrane, forming a loop between the inlet and the outlet of said membrane, and having a discharge pipe;

- at least two water storage tanks, each water tank being connected to the cleaning circuit;

- at least one tank for storing a cleaning product selected from among an acid and a base, the cleaning product tank being connected to the cleaning circuit;

- at least one cleaning pump which is suitable for setting the liquids in the cleaning circuit into motion;

said filtration membrane being provided with at least one heating means, and at least one of the water tanks being provided with at least one means for heating the tank.

~~A further object of the invention is~~In another aspect, the present disclosure relates to a method for cleaning the filtration membrane of an underwater unit such as defined previously, said method including the steps consisting in:

a) cutting off the inlet of water into said filtration membrane;

b) injecting water contained in one of the water storage tanks into the hydraulic cleaning circuit, and making said water circulate in a loop in the hydraulic cleaning circuit using the cleaning pump;

c) heating the filtration membrane up to a temperature of between 15°C and 40°C inclusive using the heating means;

d) injecting a cleaning product contained in at least one storage tank into the hydraulic cleaning circuit;

e) discharging the contents of the hydraulic cleaning circuit via the discharge pipe;

f) injecting water contained in one of the water storage tanks into the hydraulic cleaning circuit again, and making said water circulate in a loop in the hydraulic cleaning circuit;

g) discharging the contents of the hydraulic cleaning circuit via the discharge pipe again.

9. The method for cleaning as claimed in claim 8, characterized in that the cleaning product injected into the hydraulic cleaning circuit during step d) is an acid.

10. The method for cleaning as claimed in either of claims 8 or 9, characterized in that said method includes, between step f) and step g), the steps consisting in:

d') injecting a cleaning product that is different from the product injected during step d) into the hydraulic cleaning circuit, said product being contained in at least one storage tank;

e') discharging the contents of the hydraulic cleaning circuit via the discharge pipe; and

f') injecting water contained in one of the water storage tanks into the hydraulic cleaning circuit again, and making said water circulate in a loop in the hydraulic cleaning circuit.

11. The method for cleaning as claimed in claim 8, characterized in that said method includes, between step f) and step g), the steps consisting in:

d') injecting a cleaning product that is different from the product injected during step d) into the hydraulic cleaning circuit, said product being contained in at least one storage tank;

e') discharging the contents of the hydraulic cleaning circuit via the discharge pipe; and

f') injecting water contained in one of the water storage tanks into the hydraulic cleaning circuit again, and making said water circulate in a loop in the hydraulic cleaning circuit,

and ~~The method for cleaning as claimed in claim 10,~~ characterized in that the cleaning product injected into the hydraulic cleaning circuit during step d) is a base

and the cleaning product injected into the hydraulic cleaning circuit during step d') is an acid.

12. The method for cleaning as claimed in any one of claims 8 to 11, characterized in that said method subsequently includes the steps consisting in:

h) resuming the water treatment in the water treatment system of the unit; and

i) replacing the water which has been used during steps b) and f), and possibly f'), by injecting water obtained leaving the treatment system into the water storage tanks.