CLAIMS

1 Device (40) for producing sodium hypochlorite or hypochlorous acid for water treatment, said device being suitable for being connected directly on a pipeline of water to be treated under pressure, the device (40) comprising:

- a cylinder (16) for storing salt in solid form, the cylinder being suitable for being supplied directly by the pipeline of water to be treated under pressure, the cylinder comprising one or more tubes forming one or more electrolysis chambers (15);
- one or more electrolytic cells received in one or more of the electrolysis chambers (15), the one or more electrolytic cells (15) comprising electrodes;

the one or more tubes of the cylinder being perforated to allow the one or more electrolytic cells (42) to be brought into contact with salt-saturated water, avoiding electrodes of the one or more electrolytic cells (42) being short-circuited by the solid salt originating from the cylinder;

- on the cylinder (16), a flat part (13) over almost its full height to allow connecting and sealing of the electrolysis chamber or chambers (41) receiving the electrolytic cell or cells (42);
- a pipe union (7) that allows the upper part to be dismantled and to be detached from the pipeline of water to be treated under pressure.

2 Device (40) for producing sodium hypochlorite or hypochlorous acid according to claim 1, characterized in that the salt is not in the water to be treated.

3 Device (40) for producing sodium hypochlorite or hypochlorous acid according to claim 1 or 2, characterized in that the one or more electrolytic cells are inserted into one or more electrolysis chambers, being received by screwing into the one or more electrolysis chambers.

~~4 Device (40) for producing sodium hypochlorite or hypochlorous acid for water treatment in general, according to claims 1 to 3, characterized in that the device comprises:~~

- ~~on the cylinder (16), a flat part (13) over almost its full height to allow connecting and sealing of the electrolysis chamber or chambers (41) receiving the electrolytic cell or cells (42);~~
- ~~a pipe union (7) that allows the upper part to be dismantled and to be detached from the pipeline of water to be treated under pressure.~~

45 Device for manufacturing sodium hypochlorite or hypochlorous acid, according to claims 1 to 34, comprising:

- three parts over the height, including a bottom part (19) that serves as general support, a central part comprising storage of the salt (16) and intended for carrying out electrolysis there for producing sodium hypochlorite or hypochlorous acid starting from salt-saturated water and a top part comprising the closure (9) of the cylinder (16) and the union (7) to the pipeline of water to be treated, allowing the upper part to be dismantled and to be detached from the pipeline of water to be treated.

56 Device for manufacturing sodium hypochlorite or hypochlorous acid, according to claims 1 to 45, comprising:

- an electrovalve (8) intended to be opened regularly to allow the gases produced to escape and to be closed when the device (40) stops, so that the water contained in the cylinder is almost never in direct contact with the water that circulates in the pipeline of water to be treated under pressure.

67 Device according to one of claims 1 to 56, in which the tube or tubes of the cylinder are perforated to allow the one or more electrolytic cells (42) to be brought into contact with salt-saturated water, while avoiding bringing the electrolytic cell or cells (42) into direct contact with the solid salt stored in the cylinder.

78 Device according to one of claims 1 to 67, in which the one or more electrolytic cells have alternating polarity (42).

89 Device according to one of claims 1 to 78, in which the one or more electrolytic cells are composed of one or more plates (29) preferably from 2 to 20 units made of titanium covered with metal oxides.

910 Water treatment system comprising

- a device for manufacturing sodium hypochlorite or hypochlorous acid, according to claims 1 to 89;
- a pipeline of water to be treated under pressure;
- a union (5) of the pipeline and of the cylinder (16) of the device;

- a control unit (80) controlling the manufacture of sodium hypochlorite or of hypochlorous acid.

1011 Treatment system according to claim 910, comprising a flow detector (2) which is positioned on the pipeline, upstream of the union for detecting whether or not there is flow of water in the pipeline for starting or not starting the device (40) by the control unit (80).

1112 Treatment system according to claim 1011, comprising in the pipeline:

- after the flow detector (2) and upstream of the union (5) and of the device (40), a redox or amperometric electrode (3) for analysing the oxidizing power of the water for regulating the oxidizing power of the water by allowing or not allowing the production of sodium hypochlorite or of hypochlorous acid;
- after the redox or amperometric electrode (3), a pH electrode (4), which makes it possible to analyse and regulate the pH of the water to be treated.

1213 Treatment system according to claims 910 to 1112 comprising:

- a pressure controller (11) positioned on the cylinder (16) of the device (40) in its top part (9) for detecting an excessive pressure, at which the control unit (80) controls the stopping of the manufacture of sodium hypochlorite or of hypochlorous acid;
- a drain cock (18) at the bottom, to allow maintenance of the device.

1314 Treatment system according to one of claims 910 to 1213, the pipeline comprising, downstream of the union with the device:

- an inverted ball valve suitable for stopping the circulation of water in the pipeline, for aspirating the air and for purging the pipeline.

1415 Unit for remote processing of the data from a device for manufacturing sodium hypochlorite or hypochlorous acid, said unit comprising:

- a system according to one of claims 910 to 1314; and a system for remote data transmission (88) to a centralized data storage on a server or to a remote troubleshooter comprising a remote communication device selected from the group comprising a carrier current connector transmitter/receiver, GPRS transmitter/receiver, WIFI transmitter/receiver.

15~~16~~ Unit for remote processing of the data from a device for manufacturing sodium hypochlorite or hypochlorous acid, said unit comprising:

- the system according to one of claims 9~~10~~ to 13~~14~~ whose control unit (80) comprises a unit for collecting data on the state of operation and malfunction of the device (40);
- a system for remote data transmission (88), the system being external to the control unit (80) and designed for communicating by carrier current with the data collecting unit, the system for remote data transmission (88) comprising a modem for remote sending of the data collected by the collecting unit and received by the control unit (80).
- software for processing the data transmitted by the system for remote data transmission (88) by means of the modem.

16~~17~~ Method of water treatment comprising:

supplying a device (40) for producing sodium hypochlorite or hypochlorous acid according to one of claims 1 to 8~~9~~;

connecting the device to a pipeline of water to be treated under pressure so as to form a water treatment system according to one of claims 9~~10~~ to 13~~14~~;

production of sodium hypochlorite or of hypochlorous acid using the water treatment system;

disinfection of the water to be treated using the production of sodium hypochlorite or of hypochlorous acid.

17~~18~~ Method of treatment according to claim 16~~17~~, in which the pipeline of water to be treated under pressure is a delivery pipe of a swimming pool installation.

18~~19~~ Method for remote processing of the data from a device for manufacturing sodium hypochlorite or hypochlorous acid, using the treatment unit according to claim 15~~16~~, said method comprising:

- collecting data on the state of operation and of malfunction of the device (40) by the unit for collecting data from the device;
- communicating the data collected by the data collecting unit, via carrier current, to the system for remote data transmission (88);
- remote data transmission by the system for remote data transmission (88), via its modem, the data being processed by the processing software.

1920 Method of treatment according to claim 1819, the method further comprising, after the processing of the data transmitted remotely:

- adaptation of the control of the device (40) by sending instructions for adaptation of the control of the device to the system for remote data transmission.