[0012] According to one embodiment, the invention provides a device for checking the tightness of a sealing component such as a single-layer membrane, for example a metallic membrane, or a multilayer membrane, for example a composite membrane, for a fluid storage tank, wherein the checking device comprises a box comprising:

- a peripheral partition,
- a cover made of a transparent material, the cover being connected to the peripheral partition such that the cover and the peripheral partition are able to define, with a sealing component, an inner chamber,

the peripheral partition comprising:

- an inner peripheral wall having a bottom end equipped with an inner peripheral seal intended to be positioned against the sealing component all around the inner chamber; and
- an outer peripheral wall positioned outside the inner peripheral wall so as to define, between the outer peripheral wall and the inner peripheral wall, an intermediate chamber extending exclusively in the peripheral partition all around the inner chamber, the outer peripheral wall having a bottom end equipped with an outer peripheral seal intended to be positioned against the sealing component all around the inner peripheral seal;
- a depressurizing device which is connected, for example directly or indirectly, to the inner chamber and to the intermediate chamber and is configured to depressurize said inner chamber and said intermediate chamber.

[0013] By virtue of these features, the vacuum box has a sufficient tightness to perform a tightness test on a membrane notably by virtue of the presence of two peripheral seals, inner and outer, separated from one another by an intermediate chamber that is also depressurized during the test. In fact, the inner seal and the outer seal contribute to enhancing the tightness of the vacuum box with respect to a traditional box having only a single seal. Furthermore, because of the depressurization in the intermediate chamber, there is no appearance of stray bubbles in the portion to be tested during the tightness test all around the inner seal forming the periphery of the inner chamber. Only stray bubbles can form at the outer seal, that is to say in the intermediate chamber, due to the pressure difference between the outside and the intermediate chamber.

[0014] Finally, the intermediate chamber does not extend in the transparent cover as in the patent KR101644126 which makes it possible not to degrade the visibility in the observation through the transparent cover of the tightness test. In fact, the intermediate chamber can be the source of dirt or sludge which could hamper the observation through the transparent cover. In some cases, when the present invention is considered with the use of surface active agents to identify any holes or orifices in the sealing component

[0026] According to one embodiment, the checking device comprises one or more pressure regulators, for example a valve, placed at the communication channel, said pressure regulator or regulators being configured so that, when the depressurizing device is started up, the inner chamber is set to a pressure P2 lower than atmospheric pressure and higher than the pressure P1.

[0027] Thus, the pressure regulator makes it possible to obtain a pressure differential between the inner chamber and the intermediate chamber. In fact, the pressure of the inner chamber is higher than the pressure of the intermediate chamber. Because of this, a gas cannot pass from the intermediate chamber to the inner chamber, for example by passing under the inner seal, and therefore risk making stray bubbles. Consequently, the pressure regulator makes it possible to improve the reliability of the tightness test with the checking device.

[0028] According to one embodiment, the depressurizing member is a first depressurizing member and the air evacuation pipe is a first air evacuation pipe, the checking device comprising a second air evacuation pipe which is connected, on one side, to a second depressurizing member of the depressurizing device and, on the other side, to the inner chamber so as to set the inner chamber to a pressure P2 lower than atmospheric pressure and higher than the pressure P1.

[0029] Thus, the first depressurizing member and the second depressurizing member make it possible to obtain a pressure differential between the inner chamber and the intermediate chamber. In the same way as for the pressure regulator, the first depressurizing member and the second depressurizing member therefore make it possible to improve the reliability of the tightness test with the checking device.

[0030] According to one embodiment, the depressurizing member, the first depressurizing member and/or the second depressurizing member comprises a pump or a system that uses the Venturi effect.

[0031] According to one embodiment, the difference between the pressure P2 and the pressure P1 is between 100 and 5000 Pa, preferably substantially equal to 1000 Pa. For example, the pressure P1 can be equal to -200 mbarg (approximately $8.325\ 10^4$ Pa) and the pressure P2 can be equal to -190 mbarg (approximately $8.425\ 10^4$ Pa).

[0032] According to one embodiment, the checking device comprises:

- a carrying handle fixed to the box;
- a control member that can be actuated manually to produce a control signal, the control member being positioned on or in immediate proximity to the carrying handle so as to be

the control member 24 is directly situated on the handle 23. This control signal 26 is transmitted to a control unit 28. The control unit 28 is configured to, in response to this control signal 26, switch over a controlled valve 27 situated at the depressurizing device in order to switch this valve 27 from an open state to a closed state and vice versa.

[0091] In the open state, the controlled valve 27 allows the fluidic connection of the inner chamber 13 and the intermediate chamber 14 with the depressurizing member 18. In the closed state, the controlled valve 27 isolates the inner chamber 13 and the intermediate chamber 14 from the depressurizing member 18.

[0092] Control valves having a form other than a pushbutton can alternatively be envisaged, for example a capacitive touch button, a rocker lever, or any member that can be actuated manually.

[0093] In a seventh embodiment illustrated in figure 9, the checking device 4 comprises a first control member 24 that can be actuated manually to produce a first control signal 26 and the checking device 4 further comprises a second control member 25 that can be actuated manually to produce a second control signal 26. The control unit 28 is thus, here, configured to switch over the controlled valve 27 to the open state in response to the first control signal 26 coming from the first control member 24 and to the closed state in response to the second control signal 26 coming from the second control member 25. In addition, in this embodiment, the control members 24, 25 are not situated on the carrying handle 23 but in immediate proximity thereto so as to be able to be actuated by a hand of a user holding the carrying handle 23.

[0094] Returning to the fifth embodiment, the checking device 4 also comprises a plurality of lighting devices 22 that can be seen in figure 6 which are positioned on the inner peripheral wall 9 so as to light the inner chamber 13.

[0095] The checking device 4 also comprises a safety valve 29, illustrated in figures 6 and 7, connected to the intermediate chamber 14 and that can be switched over to a closed state when the pressure in the intermediate chamber 14 is higher than or equal to a pressure Pmin and an open state when the pressure in the intermediate chamber 14 is lower than the pressure Pmin to connect the intermediate chamber 14 to the outside. Thus, the safety valve 29 prevents the formation of an excessive and unnecessary vacuum for the check in the intermediate chamber 14 and, all the more so, in the inner chamber 13, making it possible to avoid any damage to the checking device 4 or separation of the membrane 1.

[0096] The fifth embodiment illustrated in figures 6 and 7 has a checking device 4 for a flat test zone. In fact, the inner and outer peripheral seals 11, 12 have a seal end 30 forming