In order to isolate the metal structures exposed to potential low-temperature liquid leaks, these structures are covered beforehand with at least one layer of low-temperature insulating paint that preserves the structural integrity.

In the case of very low-temperature liquid storage vessels, other systems are also used to isolate the deck equipment with respect to any liquid leaks from the storage tanks, such as wood floors.

Such isolating systems are difficult to implement due to their complexity during manufacturing of the equipment, their implementation time, and their cost.

Embodiments of the invention seek to provide an isolating system making it possible to simply, inexpensively and very effectively protect a surface of a piece of low-temperature fluid storage equipment, able to be placed in contact with the fluid.

According to a first aspect of the present invention, there is provided a protective panel designed to be placed on a surface of low-temperature fluid processing equipment at a temperature below -100°C, comprising: a planar body; at least one element for detecting the presence of fluid in gas or liquid form, received in the body; ~~wherein~~ the panel ~~includes~~ including at least one element for heating the body, received in the body, wherein the body is manually deformable so as to be able to be wound and unwound.

The panel according to embodiments of the invention may comprise one or more of the following features, considered alone or according to any technically possible combination:

- it includes a control unit, received in the body, the control unit being connected to the detection element to measure a parameter for detecting the presence of a low-temperature fluid in gas or liquid form, the control unit being connected to the heating element, to activate the heating element;

- the control unit includes a communication assembly with an outside command unit, advantageously a wireless communication assembly of the Wi-Fi or Bluetooth type;

- it defines a lower face, designed to be pressed on the surface of the fluid processing equipment, and an upper face, situated opposite the lower face, the detection element being situated near or flush with the upper face, the heating element being situated near or flush with the lower face;

- the detection element is chosen from among a thermocouple or an optical fiber, the heating element being chosen from among a heating cable and/or heating resistance;

- as shown in the first aspect, the body is manually deformable, advantageously being able to be wound and unwound;

CLAIMS

1.- A protective panel designed to be placed on a surface of low-temperature fluid processing equipment at a temperature below -100°C, comprising:

- a planar body;

- at least one element for detecting the presence of fluid in gas or liquid form, received in the body;

~~wherein~~ the panel ~~includes~~ including at least one element for heating the body, received in the body,

wherein the body is manually deformable so as to be able to be wound and unwound.

2.- The panel according to claim 1, wherein it includes a control unit, received in the body, the control unit being connected to the detection element to measure a parameter for detecting the presence of a fluid in gas or liquid form at a temperature below -100°C, the control unit being connected to the heating element, to activate the heating element.

3.- The panel according to claim 2, wherein the control unit includes a communication assembly with an outside command unit, advantageously a wireless communication assembly of the Wi-Fi or Bluetooth type.

4.- The panel according to any one of claims 1 to 3, wherein it defines a lower face, designed to be pressed on the surface of the fluid processing equipment, and an upper face, situated opposite the lower face, the detection element being situated near or flush with the upper face, the heating element being situated near or flush with the lower face.

5.- The panel according to any one of claims 1 to 3, wherein the detection element is chosen from among a thermocouple or an optical fiber, the heating element being chosen from among a heating cable and/or heating resistance.

~~6.- The panel according to any one of claims 1 to 3, wherein the body is manually deformable, advantageously being able to be wound and unwound.~~

~~7.- The panel according to any one of claims 1 to 3, wherein the body is rigid.~~

~~8~~6.- The panel according to any one of claims 1 to 3, wherein the body includes an enclosure delimiting a cavity receiving the heating element and a filler material fixing the heating element in the cavity.

~~9~~7.- A protective assembly for low-temperature fluid processing equipment at a temperature below -100°C, wherein it includes:

- at least one panel according to any one of claims 1 to 3, designed to be pressed on a surface of the equipment;

- a control unit, positioned away from the panel, the control unit being connected to the panel, the control unit being able to collect at least one leak detection parameter measured by the detecting assembly, and being able to activate the heating element.

~~10~~8.- The assembly according to claim ~~9~~7, wherein it includes a plurality of panels designed to be applied on a surface of the fluid processing equipment, each panel being connected to the command unit.

~~11~~9.- Equipment for fluid processing at a temperature below -100°C, wherein it includes:

- a surface able to come in contact with the low-temperature fluid;

- a protective assembly according to claim ~~9~~7, the panel being applied on the surface.

~~12~~10.- A protective method for equipment for fluid processing at a temperature below -100°C, including the following steps:

- a protective assembly according to claim ~~9~~7, the panel being applied on a surface of the equipment that may come into contact with fluid at a temperature below -100°C;

- verifying, at regular intervals, the presence of fluid in gas or liquid form on the panel by means of the detection assembly.

~~13~~11.- The method according to claim ~~12~~10, wherein it comprises the following steps:

- detecting fluid in gas or liquid form at a temperature below -100°C on the panel using the detection assembly;

- activating the heating assembly to heat the panel.