~~A method for repairing a wall structure and a wall element~~
Method for repairing a wall structure and a wall element

Field of the invention

The invention relates to a method and a wall element for repairing a cabin wall structure according to the preambles of the independent claims presented below.

Background of the invention

Fire safety requirements related to ship cabins set certain requirements for the wall structures of the cabins. For example cabin walls compliant with fire proof class B-15 of International Maritime Organization (IMO Resolution A.754(18) regarding Fire Resistance Tests) typically have a thickness of about 30 mm, and a wall structure comprising an inner and an outer metal surface, and a mineral wool insulator layer between the metal surfaces. This structure causes problems especially in the sanitary units of the cabins, where the metal surface toward the humid sanitary unit easily rusts. Thus, the wall structures of sanitary units have to be renewed for visual reasons and because corroded wall surfaces no longer fulfil the fire safety regulations. Similar problems can be faced with other fire proof classes such as C-0 and B-0, commonly used in ship cabins.

The repair of corroded wall structures is traditionally performed by demolishing the old wall structures and building a new wall step by step on location. Additionally, the sanitary fixtures must also be detached and generally renewed in connection with the demolishing.

In connection with a normal visiting of a cruise ship to the harbor, the visiting time is generally short, wherefore performing the multistage and time-consuming repairs according to the traditional way is difficult. When the ship is in use and it has a lot of passengers, rebuilding the wall structures is difficult, since the repairing comprises several work stages, which cause noise and dust problems. In other words repairing the cabins while the ship is in use is practically impossible by using the traditional way. In a large cruise ship, there can be a remarkable number of cabins to be repaired, so a part or even all of the cabins are out of use in connection with the repair. Repairing

Claims

1. A method for repairing a ~~cabin~~ wall structure (202) of a sanitary unit of a cabin comprising at least an inner metal sheet (406) forming the wall surface of the sanitary unit, an outer metal sheet (402) and an insulator layer (404) between the inner and outer metal sheets, which method comprises at least the following steps

- removing the inner metal sheet (406) in such a way that installation frames formed on the inner metal sheet are left in the wall structure,
- removing the insulator layer (404) from a place where the inner metal sheet has been removed,
- installing a wall element (420) comprising a metal sheet (422), ~~and~~ an insulator layer (424) attached to the metal sheet and fast connectors (432) for sanitary fixtures in the place of the removed wall structure in such a way that the edges of the metal sheet (422) of the wall element are placed overlappingly with the installation frames.

2. The method according to claim 1, ~~**characterized** in that~~ wherein the wall structure (202) is a fire proof ~~and/or sound proof~~ wall structure.

~~3. The method according to claim 1 or 2, **characterized** in that the wall structure (202) is a wall of a sanitary unit of a cabin.~~

~~4. The method according to any of the preceding claims, **characterized** in that the inner metal sheet (206) of the wall structure (202) is the wall surface of the sanitary unit.~~

~~5~~3. The method according to ~~any of the preceding claims, **characterized** in that~~ claim 1, wherein the installation frame ~~of 10-100 mm, preferably 30-60 mm, most preferably about 50 mm~~ formed on the inner metal sheet (406) ~~is left in the structure~~ has a width of 10-100 mm.

~~6~~4. The method according to ~~any of the preceding claims, **characterized** in that~~ claim 1, at least two opposed edges of the metal sheet (422) of the wall element (420) are placed overlappingly with the installation frame.

~~7~~5. The method according to ~~any of the preceding claims, **characterized** in that~~ claim 1, wherein the wall element (420) is attached to the installation frame using glue.

6. The method according to claim 1, wherein the wall structure (202) is a sound proof wall structure.

7. The method according to claim 3, wherein the installation frame formed on the inner metal sheet (406) has a width of 30-60 mm.

8. The method according to claim 7, wherein the installation frame formed on the inner metal sheet (406) has a width of 50 mm.

~~8. A wall element (420) for repairing a cabin wall structure comprising at least an inner metal sheet (406), an outer metal sheet (402) and an insulator layer (404) between the inner and outer metal sheets, **characterized** in that the wall element (420) comprises at least~~

~~- an insulator layer (424) having a first side and a second side, and~~

~~- a metal sheet (422) attached to the first side of the insulator layer,~~

~~and in that the area of the metal sheet (422) of the wall element is greater than the area of the insulator layer (424) of the wall element, in such a way that the edges of the metal sheet (422) extend over the edges of the insulator layer (424), in order for the wall element (420) to be installable to the repairable wall structure by means of these edges.~~

~~9. The wall element according to claim 8, **characterized** in that at least two opposed edges of the metal sheet (422) extend over the edges of the insulator layer (424).~~

~~10. The wall element according to claim 8 or 9, **characterized** in that the thickness of the metal sheet (422) is about 0.7-1.5 mm.~~

~~11. The wall element according to any of the preceding claims 8 to 10, **characterized** in that the insulator layer (424) is made of hard rock wool.~~

~~12. The wall element according to any of the preceding claims 8 to 11, **characterized** in that the thickness of the insulator layer (424) is about 25 mm.~~

~~13. The wall element according to any of the preceding claims 8 to 12, **characterized** in that the edges of the metal sheet (422), which extend over the edges of the insulator layer (424), have a width of 10-100 mm, preferably 30-60 mm, most preferably about 50 mm.~~

~~14. The wall element according to any of the preceding claims 8 to 13, **characterized** in that the wall element (420) comprises fast connectors (432) for sanitary fixtures.~~

~~15. The wall element according to any of the preceding claims 8 to 14, characterized in that the wall element (420) comprises at least one reinforcement element (430) attached to the inside of the metal sheet (422).~~

~~16. Use of the wall element according to any of the preceding claims 8 to 15 to repair a wall structure of a sanitary unit of a cabin.~~