Claims

1. A draining arrangement of a propulsion unit such as an azimuthing propulsion unit of a marine vessel, the propulsion unit comprising a shell structure mounted below a hull of the marine vessel such that the shell structure is at least partly immersed in water, when the marine vessel floats in water,

wherein the shell structure limiting at least one bottom section configured to receive liquids formed within the shell structure and/or liquids entering the shell structure from the outside of the shell structure, and

wherein the draining arrangement comprising a pneumatically operated drainage arrangement in fluid connection with said at least one bottom section, wherein the pneumatically operated drainage arrangement is configured to at least partly drain said at least one bottom section and to transfer liquid from said at least one bottom section to a collector arrangement provided within the hull of the marine vessel,

characterized

by the pneumatically operated drainage arrangement comprises

an intermediate tank within the shell structure, wherein the intermediate tank is located at a vertical level that is above said at least one bottom section,

a pressurizing arrangement functionally connected to the intermediate tank and configured to selectively provide a vacuum in the intermediate tank or an excess pressure in the intermediate tank,

a first liquid line that is provided between the intermediate tank and said at least one bottom section, wherein the first liquid line is provided with a first check valve configured to prevent liquid to flow from the intermediate tank to said at least one bottom section and configured to allow liquid to flow from said at least one bottom section to the intermediate tank, by said at least one bottom section is located at a vertical level below a propeller shaft, and

a second liquid line that is provided between the intermediate tank and the collector arrangement within the hull of the marine vessel, wherein the second liquid line is provided with a second check valve configured to prevent liquid to flow from the collector arrangement provided within the hull of the marine vessel to the intermediate tank and configured to allow liquid to flow from intermediate tank to collector arrangement provided within the hull of the marine vessel.

2. The draining arrangement according to claim 1, **characterized**

by the pressurizing arrangement comprising a pneumatic circuit that is in fluid connection with a pneumatic system provided within the hull of the marine vessel and that is in fluid connection with the intermediate tank, wherein the pneumatic circuit is configured to operate in a vacuum mode that applies a vacuum to the intermediate tank, and in a pressure mode that applies a pressure to the intermediate tank.

3. The draining arrangement according to claim 2, **characterized**

by the pneumatic circuit comprises an aspirator pump that is driven by the pneumatic system provided within the hull of the marine vessel and that is by a first gas line in fluid connection with the intermediate tank within the shell structure,

by the pneumatic circuit comprises a valve arrangement for selectively (i) feeding pressurized gas from the pneumatic system provided within the hull of the marine vessel in a second gas line to the aspirator pump so as to operate the pneumatic circuit in the vacuum mode and so as to provide a vacuum in the first gas line, or (ii) feeding pressurized gas from the pneumatic system provided within the hull of the marine vessel in a third gas line to the intermediate tank within the shell structure so as to operate the pneumatic circuit in the pressure mode, and

by the valve arrangement being functionally connected to a valve control means configured to switch the pneumatic circuit between the vacuum mode and the pressure mode.

4. The draining arrangement according to claim 3, **characterized**

by a collector tank of the collector arrangement provided within the hull of the marine vessel forming a part of the first gas line of the pneumatic circuit, wherein the collector tank of the collector arrangement provided within the hull of the marine vessel being in the first gas line of the pneumatic circuit arranged between the aspirator pump and the intermediate tank within the shell structure.

5. The draining arrangement according to claim 3 or 4, **characterized**

by the third gas line of the pneumatic circuit being at a connection point between the collector tank of the collector arrangement and the intermediate tank within the shell structure in fluid connection with the first gas line of the pneumatic circuit so that the first gas line and the third gas line between the connection point and the intermediate tank within the shell structure have common piping,

by a third valve in the first gas line of the pneumatic circuit between the collector tank of the collector arrangement provided within the hull of the marine vessel and the connection point, and

by the third valve being functionally connected to the valve control means configured to switch the pneumatic circuit between the vacuum mode and the pressure mode.

6. The draining arrangement according to any of the claims 3 to 5, **characterized**

by the valve arrangement comprises a first valve in the second gas line of the pneumatic circuit between the pneumatic system provided within the hull of the marine vessel and the aspirator pump,

by the valve arrangement comprises a fourth valve in the third gas line of the pneumatic circuit between the pneumatic system provided within the hull of the marine vessel and the intermediate tank within the shell structure, and

by the first valve and the fourth valve being functionally connected to the valve control means configured to switch the pneumatic circuit between the vacuum mode and the pressure mode.

7. The draining arrangement according to claim 6, **characterized**

by the valve control means being configured to switch the vacuum mode on by closing the fourth valve and by opening the first valve to feed pressurized fluid from the pneumatic system provided within the hull of the marine vessel to the aspirator pump to create a vacuum in the collector tank of the collector arrangement provided within the hull of the marine vessel and in the intermediate tank within the shell structure so as to effect suctioning of liquid from said at least one bottom section to the intermediate tank the first liquid line .

8. The draining arrangement according to claim 6 or 7, **characterized**

by the valve control means being configured to switch the pressure mode on by closing the first valve and by opening the fourth valve to feed pressurized fluid from the pneumatic system provided within the hull of the marine vessel to the intermediate tank within the shell structure so as to effect pressing of liquid from the intermediate tank within the shell structure at least one bottom section to the collector tank of the collector arrangement provided within the hull of the marine vessel in the second liquid line.

9. The draining arrangement according to any of the claims 3 to 8, **characterized**

by a second valve in the pneumatic circuit between the aspirator pump and the collector tank of the collector arrangement provided within the hull of the marine vessel, and

by the valve control means being, when switching on the vacuum mode, configured to open the second valve, and

by the valve control means being, when switching on the pressure mode, configured to close the second valve.

10. The draining arrangement according to any of the claims 3 to 9, **characterized**

by a pressure regulating valve in the pneumatic circuit between the pneumatic system provided within the hull of the marine vessel and the intermediate tank within the shell structure.

11. The draining arrangement according to any of the claims 3 to 10, **characterized**

by a fifth valve in the second liquid line,

by the valve control means being, when switching on the vacuum mode, configured to

close the fifth valve, and

by the valve control means being, when switching on the pressure mode, configured to open the fifth valve.

12. The draining arrangement according to any of the claims 3 to 11, **characterized**

by the collector tank of the collector arrangement provided within the hull of the marine vessel being provided with a check valve configured to regulate the pressure inside the collector tank.