

CLAIMS

1. A control system which is ancillary to a roll-on/roll-off vessel (RORO vessel), the ancillary control system including a controller configured to:

5 receive pressure or differential pressure readings from a selected area of the vessel and/or a cargo area during a fumigation, and in response to such readings, control air delivery to a selected area of the vessel in order to maintain a selected minimum pressure differential between the selected area and a cargo area with the pressure of the selected area being greater than the cargo area; and

10 maintain the pressure differential throughout fumigation and subsequent exhaust of the fumigant from the cargo area.

2. A control system as claimed in claim 1 wherein the selected minimum pressure differential is at least 50 Pa, or between 50 Pa and 100 Pa.

3. A control system as claimed in claim 1 or claim 2 wherein the selected minimum pressure differential is pre-selected.

15 4. A control system as claimed in any one of the preceding claims wherein the ancillary control system is responsive to one or more pressure sensors and/or differential pressure sensors and is further configured to control one or more air supply fans to supply air to the selected area to maintain the selected minimum pressure differential.

20 5. A control system as claimed in claim 4 wherein the ancillary control system is configured to control at least a speed of the one or more fans via a variable speed drive.

25 6. A control system as claimed in any one of the preceding claims wherein the ancillary control system is further configured to perform low range monitoring to detect one or more of: gaseous fumigant; carbon dioxide; carbon monoxide; and other volatile organic compounds (VOCs) within the selected area and/or at an air intake for the delivered air.

7. A method of pre-configuring a control system which is ancillary to a roll-on/roll-off vessel (RORO vessel), wherein the method includes pre-configuring a controller of the ancillary control system such that the controller is:

operable to receive pressure or differential pressure readings from a selected area of the vessel and/or a cargo area during a fumigation, and in response to such readings, control air delivery to a selected area of the vessel in order to maintain a selected minimum pressure differential between the selected area and a cargo area with the
5 pressure of the selected area being greater than the cargo area; and

operable to maintain the pressure differential throughout fumigation and subsequent exhaust of the fumigant from the cargo area.

8. The method as claimed in claim 7 further including preconfiguring the ancillary control system to maintain the selected minimum pressure differential of at least 50 Pa,
10 or between 50 Pa and 100 Pa.

9. The method as claimed in claim 7 or claim 8 further including preconfiguring the ancillary control system to maintain at least a pre-selected minimum pressure differential.

10. The method as claimed in any one of claims 7 to 9, further including preconfiguring the ancillary control system to control one or more air supply fans to deliver
15 the air to the selected area.

11. The method as claimed in any one of claims 7 to 10 wherein the method further includes pre-configuring the ancillary control system or an additional ancillary control system to perform low-range monitoring to detect one or more of: gaseous fumigant; carbon dioxide; carbon monoxide; and other volatile organic compounds (VOCs) within
20 the selected area and/or at an air intake for the delivered air, wherein the controller control air delivery in response to an output of the low range monitoring.

12. A method of configuring a system for fumigating a vessel, wherein the system is ancillary to the vessel, the method including:

configuring an air intake for an air pressure system which is operable to maintain
25 a minimum selected pressure differential between a selected area of the vessel and a cargo area such that a pressure within the selected area of the vessel is greater than a pressure within the cargo area of the vessel, wherein the air intake is configured to draw air from the quayside or at a location outwardly beyond the hull of the vessel.

13. The method as claimed in claim 12 wherein the air pressure system includes one or more fans, the method further including configuring the fans, quayside.

14. The method as claimed in claim 12 or 13 wherein the air pressure system includes a variable speed drive and a controller controls speed of the one or more fans
5 via the variable speed drive, the method further including configuring the variable speed drive, quayside.

15. The method as claimed in any one of claims 12 to 14 wherein the method further includes providing a source of fumigant for fumigating the vessel, wherein the source of fumigant is disposed quayside.

10 16. The method as claimed in any one of claims 12 to 15 wherein the method further includes configuring a mobile crew escape boom, quayside.

17. A system for fumigating a vessel, wherein the system is ancillary to the vessel, the system including:

a fumigant delivery system for delivering fumigant to a cargo area of the vessel;
15 and

an air pressure system for maintaining a selected minimum pressure differential between a selected area of the vessel above the cargo area and the cargo area, such that pressure of the selected area is greater than the cargo area.

18. The system as claimed in claim 17 wherein the vessel is a roll-on/roll-off vessel.

20 19. The system as claimed in claim 17 or 18 wherein the air pressure system includes a controller to maintain the pressure differential throughout fumigation and exhaust.

20. A system for fumigating a vessel, wherein the system is ancillary to the vessel, the system comprising:

25 a fumigant delivery system for delivering fumigant to a cargo area of the vessel at one or more delivery sites;; and

an air pressure system for maintaining a pressure within a selected area of the vessel which is greater than a pressure within a cargo area of the vessel, wherein an air intake for the air pressure system is remote from the one or more fumigant delivery locations and the one or more exhaust sites.

5 21. The system as claimed in claim 20 wherein the air intake is more than 30 metres from the one or more fumigant delivery locations and one or more exhaust sites for exhausted fumigant.

22. The system as claimed in claim 20 or claim 21 wherein the air intake is located quayside, outwardly of the hull of the vessel or at the forward end of the vessel.

10 23. The system as claimed in any one of claims 20 to 22 wherein the vessel is a roll-on/roll-off vessel.

24. The system as claimed in any one of claims 20 to 23 wherein the air pressure system includes a controller to maintain the pressure throughout fumigation and exhaust.

25. A method of fumigating a vessel, the method comprising:

15 delivering fumigant to a cargo area of the vessel;

wherein the vessel is a roll-on/roll-off vessel.

26. The method as claimed in claim 25 wherein the method further includes delivering air to a selected area of the vessel above the cargo area to maintain a selected minimum pressure differential between the selected area and the cargo area, such that
20 the pressure of the selected area is greater than the cargo area.

27. The method as claimed in claim 25 or 26 wherein the method further includes delivering the fumigant to the cargo area at one or more delivery sites.

28. The method as claimed in any one of claims 25 to 27 further including:

exhausting fumigant from the cargo area subsequent to fumigation from one or
25 more exhaust sites;

delivering air to a selected area of the vessel to maintain a selected minimum pressure differential between the selected area and the cargo area, such that the pressure of the selected area is greater than the cargo area, wherein an air intake for the air delivery is remote from the one or more fumigant delivery locations and the one or
5 more exhaust sites.

29. The method as claimed in claim 28 wherein the air intake is more than 30 metres from the one or more fumigant delivery locations and the one or more exhaust sites.

30. The method as claimed in claim 28 or 29 wherein the air intake is located
10 quayside, outwardly of the hull of the vessel or at the forward end of the vessel.

31. The method as claimed in claim 25, the method further including:

delivering the fumigant to fumigate the cargo area;

exhausting fumigant from the cargo area subsequent to fumigation;

delivering air to a selected area of the vessel to maintain a pressure within the
15 selected area which is greater than a pressure within the cargo area, wherein the air delivery is maintained throughout fumigation and exhaust.

32. A temporary bulkhead configured to fluidly seal an entryway of a vessel, the bulkhead comprising:

a body configured to be located in an entryway of the vessel;

20 a seal located about the body and configured to contact the entryway to fluidly seal the entryway; and

one or more openings within the body, said one or more openings being adapted to connect with fluid conduits.

33. The temporary bulkhead as claimed in claim 32 wherein at least some of the
25 one or more openings include respective valves.

34. The temporary bulkhead as claimed in claim 32 or 33 wherein the one or more openings are configured to deliver power and/or data across the bulkhead.

35. The temporary bulkhead as claimed in claim 32 wherein the bulkhead is configured to be sealingly connected to one or more air conduits.