Claims

1. A grease delivery system for delivering grease to a location, comprising:
first and second grease reservoirs,
a first grease reservoir output for outputting grease from the first reservoir,
a second grease reservoir output for outputting grease from the second reservoir, and
respective means for causing grease to output from each of said first and second reservoirs along the respective grease reservoir output,
wherein the system further comprises a common grease output for delivering grease to the location, the common grease output being connected to each of the first and second grease outputs, such that grease may be output simultaneously from the first and second reservoirs to the common grease output.

2. A grease delivery system according to claim 1, further comprising at least one additional grease reservoir and associated grease reservoir output and means for causing grease to output from said at least one additional reservoir, the at least one additional grease reservoir output being connected to the common grease output.

3. A grease delivery system according to either of claims 1 and 2, comprising grease supply means for supplying grease to each of the reservoirs.

4. A grease delivery system according to any preceding claim, wherein each respective means for causing grease to output from said respective reservoirs comprises a hydraulic fluid supply means for supplying hydraulic fluid to each of the respective reservoirs, to displace grease therefrom.

5. A grease delivery system according to claim 4, wherein the hydraulic fluid supply means comprises a hydraulic fluid valve associated with each of the reservoirs, the valves being operable to selectively enable hydraulic fluid flow therethrough to the respective reservoir or to return hydraulic fluid to a hydraulic fluid source.

6. A grease delivery system according to claim 5, wherein each hydraulic fluid valve is also operable to selectively block hydraulic fluid flow therethrough.

7. A grease delivery system according to either of claims 5 and 6, wherein each hydraulic fluid valve is hydraulically-piloted.

8. A grease delivery system according to either of claims 5 and 6, wherein each hydraulic fluid valve is ROV-operable.

9. A grease delivery system according to any preceding claim, comprising a grease valve located in each grease reservoir output being operable to selectively allow or block grease flow therethrough.

10. A grease delivery system according to claim 9, wherein each grease valve is hydraulically-piloted.

11. A grease delivery system according to claim 9, wherein each grease valve is ROV-operable.

12. A grease delivery system according to any preceding claim, wherein each reservoir includes sensing means for sensing the level of grease within the reservoir.

13. A well intervention module comprising a grease delivery system in accordance with any preceding claim, for attachment to an underwater hydrocarbon extraction facility.

14. An underwater hydrocarbon extraction facility comprising the grease delivery system of any preceding claim.

15. A method of delivering grease to a location, comprising the steps of providing:
first and second grease reservoirs,
a first grease reservoir output for outputting grease from the first reservoir,
a second grease reservoir output for outputting grease from the second reservoir, respective means for causing grease to output from each of said first and second reservoirs along the respective grease reservoir output, and
a common grease output for delivering grease to the location, the common grease output being connected to each of the first and second grease outputs,

the method further comprising the step of causing grease to output from each of the first and second reservoirs simultaneously to the common grease output for a period of delivery.

16. A method according to claim 15, wherein each respective means for causing grease to output from said respective reservoirs comprises a hydraulic fluid supply means for supplying hydraulic fluid to each of the respective reservoirs, to displace grease therefrom, and the method comprises the step of controlling hydraulic fluid flow to each reservoir, and grease supply from each said reservoir.

17. A method according to either of claims 15 and 16, wherein the location comprises a pressure control head of intervention equipment for use at an underwater hydrocarbon extraction facility.

CLAIMS

What is claimed is:

1. A grease delivery system for delivering grease to a location, the system comprising:

a first grease reservoir having a first grease output and a first output device configured to output grease from the first grease reservoir;

a second grease reservoir having a second grease output and a second output device configured to output grease from the second grease reservoir;

a hydraulic fluid supply fluidly connected to the first and second grease reservoirs, wherein hydraulic fluid from the hydraulic fluid supply displaces grease from the first and second grease reservoirs;

a common grease output for delivering grease to the location, wherein the common grease output is fluidly connected to the first and second grease outputs; and

an electronically actuated valve,

wherein the system is configured to, using the electronically actuated valve, output grease from the first grease reservoir to the common grease output in a first mode, from the second grease reservoir to the common grease output in a second mode, and simultaneously output grease from the first and second grease reservoirs to the common grease output in a third mode.

2. The grease delivery system according to claim 1, further comprising at least one additional grease reservoir having an associated grease output and an associated output device configured to output grease from the at least one additional grease reservoir, wherein the associated grease output is fluidly connected to the common grease output.

3. The grease delivery system according to claim 1, further comprising a grease supply for supplying grease to the first and second grease reservoirs.

4. The grease delivery system according to claim 1, wherein the first grease reservoir is fluidly connected to the hydraulic fluid supply through a first hydraulic fluid valve and the second grease reservoir is fluidly connected to the hydraulic fluid supply

through a second hydraulic fluid valve, and wherein the first and second hydraulic fluid valves are configured to at least one of:

selectively enable hydraulic fluid flow to the respective first and second grease reservoir; and

to return hydraulic fluid to a hydraulic fluid source.

5. The grease delivery system according to claim 4, wherein the first and second hydraulic fluid valves are further configured to selectively block hydraulic fluid flow to the respective first and second grease reservoir.

6. The grease delivery system according to claim 4, wherein the first and second hydraulic fluid valves are hydraulically-piloted.

7. The grease delivery system according to claim 4, wherein the first and second hydraulic fluid valves are ROV-operable.

8. The grease delivery system according to claim 1, wherein the first and second grease outputs comprise a grease valve configured to selectively allow or block grease flow through the grease valve.

9. The grease delivery system according to claim 8, wherein the grease valves are hydraulically-piloted.

10. The grease delivery system according to claim 8, wherein the grease valves are ROV-operable.

11. The grease delivery system according to claim 1, wherein the first and second grease reservoirs comprise a sensor configured to sense a level of grease within the respective grease reservoir.

12. A well intervention module comprising a grease delivery system in accordance with claim 1, wherein the well intervention module is configured for attachment to an underwater hydrocarbon extraction facility.

13. An underwater hydrocarbon extraction facility comprising the grease delivery system of claim 1.

14. A method for delivering grease to a location using a grease delivery system, the method comprising:

providing a first grease reservoir having a first grease output and a first output device configured to output grease from the first grease reservoir, a second grease reservoir having a second grease output and a second output device configured to output grease from the second grease reservoir, and a common output for delivering grease to the location, wherein the common output is fluidly connected the first and second grease outputs, a hydraulic fluid supply fluidly connected to the first and second reservoirs;

outputting grease from the first reservoir through the first grease output in a first mode;

outputting grease from the second reservoir through the second grease output in a second mode;

displacing grease from the first and second grease reservoirs using hydraulic fluid from the hydraulic fluid supply; and

simultaneously outputting grease from each of the first and second reservoirs to the common output for a period of delivery in a third mode.

15. The method according to claim 14, the method further comprising:

controlling hydraulic fluid flow to each of the first and second reservoirs from the hydraulic fluid supply; and

controlling grease supply from each of the first and second reservoirs.

16. The method according to claim 14, wherein the first grease reservoir is fluidly connected to the hydraulic fluid supply through a first hydraulic fluid valve and the

second grease reservoir is fluidly connected to the hydraulic fluid supply through a second hydraulic fluid valve, and wherein controlling hydraulic fluid flow to each of the first and second reservoirs from the hydraulic fluid supply comprises at least one of:
to selectively enabling hydraulic fluid flow the respective first and second grease reservoir; and

returning hydraulic fluid to a hydraulic fluid source.

17. The method according to claim 14, wherein the first and second grease outputs comprise a grease valve, and wherein controlling grease supply from each of the first and second reservoirs comprises selectively allowing or blocking grease flow through the grease valve.

18. The method according to claim 14, wherein the location comprises a pressure control head of intervention equipment for use at an underwater hydrocarbon extraction facility.