CLAIMS

1. A fluid management system for handling pressurized fluid within a fluidized process comprising:

a length of unreinforced polymer conduit having a lumen therein dimensioned to carry the pressurized fluid;

a two-part valve body encapsulating a portion of the length of unreinforced polymer conduit, the two-part valve body having a first half and a second half connected to one another via a hinge and having a fastener configured to secure the first and second halves in a closed state around the portion of the length of unreinforced polymer conduit, the two-part valve body having a moveable actuator disposed in one of the first half or the second half and configured to selectively engage with the segment of unreinforced polymer conduit and adjust a size of the lumen of the unreinforced polymer conduit;

a plurality of two-part jackets disposed along the remaining length of the of unreinforced polymer conduit, wherein each of the plurality of two-part jackets comprises a two-part rigid jacket comprising a first half and a second half joined together via a hinge, the first half defining a semi-circular inner surface, the second half defining a semi-circular inner surface, the first half and the second half configured to mate with each other to define a circular passageway through the two-part jacket; and

at least one fastener disposed on at least one of the first half or the second half of each of the plurality of two-part rigid jackets, the at least one fastener configured to hold the first half and the second half of each respective two-part rigid jacket securely about the unreinforced polymer conduit; and

wherein substantially all of the length of unreinforced polymer conduit is surrounded by the two-part valve body and the plurality of two-part jackets.

2. The fluid management system of claim 1, wherein at least one of the plurality of two-part rigid jackets is straight.

3. The fluid management system of claim 1, wherein at least one of the plurality of two-part rigid jackets is curved.

4. The fluid management system of claim 1, wherein at least one of the plurality of two-part rigid jackets is Tee shaped.

5. The fluid management system of claim 1, wherein the fastener comprises a threaded latch and knob disposed on the threaded latch.

6. The fluid management system of claim 1, wherein the fastener comprises a tie.

7. The fluid management system of claim 1, wherein the length of unreinforced polymer conduit comprises a thermoplastic elastomer (TPE), thermoplastic rubber (TPR), or silicone.

8. The fluid management system of claim 1, wherein at least one of the two-part rigid jackets comprises end flanges disposed at respective ends of the first half and the second half and wherein the unreinforced polymer conduit comprises respective flanges configured to fit within the end flanges of the two-part rigid jacket.

9. The fluid management system of claim 1, further comprising a sensor housing disposed in one of the plurality of two-part rigid jackets the sensor housing configured to receive a pressure sensor therein configured to measure the pressure inside the lumen of the unreinforced polymer conduit.

10. The fluid management system of claim 1, wherein the plurality of two-part rigid jackets are formed from a polymer.

11. The fluid management system of claim 1, wherein adjacent two-part rigid jackets are connected to one another at points of connection.

12. The fluid management system of claim 11, wherein the adjacent two-part rigid jackets are further connected via a clamp.

13. The fluid management system of claim 11, wherein the one of the two-part rigid jackets includes a male end that is secured to a female end of the adjacent two-part rigid jacket, wherein the male end is contained within and encapsulated by the female end of the first two-part rigid jacket when in a closed state.

14. A fluid management system for handling pressurized fluid within a fluidized process comprising:

a segment of unreinforced polymer conduit having a lumen therein dimensioned to carry the pressurized fluid therein;

a two-part valve body encapsulating a portion of the segment of unreinforced polymer conduit, the two-part valve body having a first half and a second half connected to one another via a hinge and having a fastener configured to secure the first and second halves in a closed state around the segment of unreinforced polymer conduit, the two-part valve body having a moveable actuator disposed in one of the first half or the second half and configured to selectively engage with the segment of unreinforced polymer conduit and adjust a size of the lumen of the unreinforced polymer conduit; and

a plurality of two-part rigid jackets encapsulating substantially all of the remaining portion of the segment of unreinforced polymer conduit, each of the plurality of two-part rigid jackets comprising a first half and a second half joined together via a hinge, the first half and the second half defining respective inner surfaces configured to mate with each other to define a passageway through the respective two-part rigid jackets and containing a portion of the segment of unreinforced polymer conduit, and wherein one or more of the plurality of two-part rigid jackets are connected at one end thereof to the two-part valve body; and

wherein the substantially all of the segment of unreinforced polymer is surrounded by the two-part valve body and the plurality of two-part jackets.

15. The fluid management system of claim 14, wherein the two-part valve body is connected to one or more of the plurality of two-part rigid jackets via a clamp.

16. The fluid management system of claim 14, wherein the one or more of the plurality of two-part rigid jackets connected to the two-part valve body is secured in a recess located in the first half and the second half of the two-part valve body.

17. The fluid management system of claim 14, wherein each of the two-part rigid jackets comprises first and second halves connected via a friction fit.

18. The fluid management system of claim 14, further comprising a fastener disposed on each of the plurality of two-part rigid jackets.

19. The fluid management system of claim 14, wherein the two-part valve body comprises a metal.

20. The fluid management system of claim 14, wherein the plurality of two-part rigid jackets comprises a polymer.

21. The fluid management system of claim 14, wherein the segment of unreinforced polymer conduit comprises a thermoplastic elastomer (TPE), thermoplastic rubber (TPR), or silicone.

22. The fluid management system of claim 14, wherein the segment of unreinforced polymer conduit comprises two segments and each segment is joined at an interface formed between the two-part valve body and the one or more of the plurality of two-part rigid jackets that are connected thereto.

23. The fluid management system of claim 14, wherein at least one of the plurality of two-part rigid jackets further comprises a pressure sensor disposed therein configured to measure the pressure inside the lumen of the unreinforced polymer conduit.

24. The fluid management system of claim 14, wherein the system comprises a plurality of two-part rigid jackets of different geometrical shapes.

25. The fluid management system of claim 14, wherein the segment of unreinforced polymer conduit connects to a process subunit selected from a filtration unit, chromatography unit, dilution unit, buffer preparation unit, fermentation unit, sampling unit, reagent feeding unit, mixing unit, and fluid transfer unit.

26. A fluid management system for handling pressurized fluid within a fluidized process comprising:

a length of unreinforced polymer conduit having a lumen therein dimensioned to carry the pressurized fluid;

a two-part valve body comprising a first half defining a semi-circular inner surface and a second half defining a semi-circular inner surface, the first half and the second half connected via a hinge and configured to mate with each other in a closed configuration to define a circular passageway extending through the two-part valve body, the two-part valve body having a fastener disposed thereon for securing the first half and the second half of the two-part valve body to one another and encapsulating a portion of the length of unreinforced polymer conduit;

a plurality of two-part rigid jackets, each two-part jacket comprising a first half defining a semi-circular inner surface and a second half defining a semi-circular inner surface, the first half and the second half connected via a hinge and configured to mate with each other in a closed configuration to define a circular passageway extending through the respective two-part rigid jacket, wherein at least one end of one of the plurality of two-part rigid jackets terminates in a male end

dimensioned to fit within inner recesses or grooves formed in the first half and second half of the two-part valve body; and

wherein substantially all of the length of unreinforced polymer conduit is surrounded by the two-part valve body and the plurality of two-part jackets.

27. The fluid management system of claim 26, further comprising an actuator disposed in the valve body and configured to selectively pinch the unreinforced polymer conduit disposed therein.

28. The fluid management system of claim 26, wherein the unreinforced polymer conduit comprises a thermoplastic elastomer (TPE), thermoplastic rubber (TPR), or silicone.

29. The fluid management system of claim 26, further comprising a tie disposed around the perimeter of the plurality of two-part rigid jackets.

30. The fluid management system of claim 26, wherein the entire two-part rigid jacket with the male end is rotatable relative to the two-part valve body.