CLAIMS

~~What is claimed is:~~

1. A flow substrate mounting structure comprising:

a fastener aperture; and

an alignment feature~~, wherein the alignment feature comprises at least one of~~ comprising an alignment pin removably coupled with the flow substrate mounting structure, wherein the alignment pin is configured to be removed from the flow substrate mounting structure when the flow substrate mounting structure is coupled to a flow substrate~~an alignment slot, and an alignment step~~.

2. The flow substrate mounting structure of claim 1, wherein the alignment pin is configured to removably couple with a substrate body aperture

3. The flow substrate mounting structure of claim 1, wherein the alignment slot is configured to couple with an alignment element of a flow substrate, wherein the alignment element comprises a plate.

4. The flow substrate mounting structure of claim 1, wherein the alignment step is configured to couple with a portion of a flow substrate edge portion.

5. The flow substrate mounting structure of claim 1, wherein the flow substrate mounting structure comprises one or more of an aluminum alloy and a polymer.

6. The flow substrate mounting structure of claim 1, wherein the flow substrate mounting structure is configured to couple with a flow substrate of any thickness.

7. A flow substrate comprising:

a substrate body comprising a component attachment surface, wherein the component attachment surface comprises a plurality of conduit ports; and

a flow substrate mounting structure comprising a first aperture and a second aperture, wherein the first aperture and the second aperture are each configured to receive a fastener for coupling the flow substrate mounting structure with the substrate body, and an alignment

pin configured to be removed after the flow substrate mounting structure is coupled with the substrate body.

8. The flow substrate of claim 7, further comprising a cap, wherein the cap is configured to couple with the substrate body.

9. The flow substrate of claim 7, wherein the substrate body further comprises a substrate body aperture, wherein the substrate body aperture is configured to receive an alignment pin or a dowel pin.

10. The flow substrate of claim 8~~7~~, wherein the cap further comprises a cap aperture and the flow substrate mounting structure comprises a mounting structure aperture.

11. The flow substrate of claim 10, ~~further comprising an~~ wherein the alignment pin ~~or a dowel pin~~ is configured to be removably coupled with one or more of a flow substrate aperture, a flow substrate mounting structure aperture, and the cap aperture.

12. The flow substrate of claim 10, further comprising an alignment pin removably coupled with the cap aperture.

13. The flow substrate of claim 7, further comprising an alignment frame coupled with the flow substrate mounting structure, wherein the alignment frame is configured to align the flow substrate mounting structure with the flow substrate and wherein the alignment frame is a separate element from the flow substrate and the flow substrate mounting structure.

14. The flow substrate of claim 7, the flow substrate mounting structure further comprising a first alignment step integrated with the flow substrate mounting structure and the flow substrate further comprising a flow substrate edge, wherein the first alignment step is configured to couple with a portion of the flow substrate edge.

15. The flow substrate of claim 7, the flow substrate mounting structure further comprising an alignment slot and the flow substrate further comprising an alignment element, wherein the alignment element is configured to removably couple with the alignment slot.

16. The flow substrate of claim 15, wherein the alignment element comprises a plate.

17. The flow substrate of claim 7, the flow substrate mounting structure further comprising a channel, wherein the channel comprises a fluid delivery line.

18. The flow substrate of claim 17, wherein the fluid delivery line fluidly connects at least two of the plurality of fluid conduit ports.

19. A flow substrate mounting structure comprising:

a clamp portion configured to couple with a portion of a first surface of a first flow substrate and with a second surface of a second flow substrate;

a first fastener aperture, wherein the first fastener aperture extends through the clamp portion and ~~the~~ a standoff portion and is configured to receive a fastener; and

a first locking pin aperture configured to couple with a first locking pin,

wherein the first fastener aperture is configured to be laterally adjacent the first flow substrate when the flow substrate mounting structure is coupled to the first flow substrate.

20. The flow substrate mounting structure of claim 19, ~~further comprising~~wherein the ~~a~~ standoff portion is proximate the clamp portion, wherein the standoff portion comprises a second fastener aperture that corresponds to the first fastener aperture and the standoff portion is configured to couple the first flow substrate with a mounting surface and a second locking pin aperture configured to couple with a second locking pin, wherein the flow substrate mounting structure is configured to couple with the first flow substrate of a fixed thickness.

21. The flow substrate mounting structure of claim 19, wherein the first fastener aperture is further configured to receive a fastener retainer.

22. The flow substrate mounting structure of claim 21, wherein the fastener retainer is a helical spring.

23. The flow substrate mounting structure of claim 19, wherein the clamp portion comprises one or more of an aluminum alloy, a stainless steel, and a nickel steel and wherein the standoff portion comprises one or more of an aluminum alloy, a stainless steel, and a nickel steel.

24. The flow substrate mounting structure of claim 19, further comprising:

a first flow substrate; and

a second flow substrate,

wherein the flow substrate mounting structure couples the first flow substrate to the second flow substrate with a leak-free seal, wherein a clamping force is provided by the clamp portion and the standoff portion of the flow substrate mounting structure.

25. A flow substrate mounting structure comprising:

a fastener aperture, wherein the aperture extends through the flow substrate mounting structure;

a first locking pin aperture configured to couple with a first locking pin; and

a second locking pin aperture configured to couple with the first locking pin,

wherein the flow substrate mounting structure is configured to couple with a flow substrate with a fixed thickness,

wherein the flow substrate mounting structure is configured to couple with the flow substrate at a flow substrate recess.

26. A structure for coupling a plurality of flow substrates comprising:

a flow substrate mounting structure comprising:

a first fastener aperture, and

a second fastener aperture, wherein the first fastener aperture is configured to couple with a first fastener and the second fastener aperture is configured to couple with a second fastener, wherein an alignment fixture is used to align the flow substrate mounting structure with the plurality of flow substrates.

~~27. The structure for coupling a plurality of flow substrates of claim 26, wherein the flow substrate mounting structure is configured to couple with a flow substrate of any thickness, any length, and any width.~~

~~28. The structure for coupling the plurality of flow substrates of claim 26, wherein the flow substrate mounting structure is configured to couple with the plurality of flow substrates at any location of the plurality of flow substrates.~~

~~29. The structure for coupling the plurality of flow substrates of claim 26, wherein the flow substrate mounting structure is configured to couple with a flow substrate at any angle.~~

~~30. The structure for coupling the plurality of flow substrates of claim 26, further comprising an alignment frame coupled with the flow substrate mounting structure, wherein the alignment frame is configured to align the flow substrate mounting structure with the flow substrate and wherein the alignment frame is a separate element from the flow substrate and the flow substrate mounting structure.~~

~~31. The structure for coupling the plurality of flow substrate of claim 26, wherein the alignment fixture is configured to align the flow substrate mounting structure at a 90° angle with the flow substrate.~~

~~32. The structure for coupling the plurality of flow substrate of claim 26, wherein the alignment fixture is configured to align the flow substrate mounting structure at an angle other than 90° with the flow substrate.~~