CLAIMS

What is claimed is:

1. A fluid supply system comprising:

a liner-based fluid storage and dispensing package including a liner adapted to contain a ~~fluid~~ liquid medium in a zero or near-zero headspace condition;

a gas source arranged to exteriorly exert on the liner a gas pressure for pressure-mediated dispensing of ~~fluid~~ the liquid medium from the liner; ~~and~~

~~one of the following items (a) and (b): (a)~~

a pressure transducer ~~and a processor, wherein the pressure transducer is~~ adapted to sense pressure of ~~fluid~~ the liquid medium dispensed from the liner in a zero or near-zero headspace condition and produce a transducer output indicative of the said pressure, and

a ~~the~~ processor adapted to receive said transducer output and determine rate of change of pressure of said ~~fluid~~ liquid medium, ~~and (b) a monitor adapted to monitor rate of change of pressure of fluid dispensed from the liner;~~

wherein the ~~fluid supply system~~ processor is adapted to determine, based on the transducer output and before the liner is exhausted of liquid medium, that a pressure droop condition of a pressure-time function of ~~fluid~~ the liquid medium dispensed from the liner exists,

~~as indicative of~~ further wherein the processor is adapted to output a signal indicative of the pressure droop condition and onset of exhaustion of ~~fluid~~ the liquid medium from the liner.

~~2. The fluid supply system of claim 1, comprising a pressure transducer and a processor, wherein the pressure transducer is adapted to sense pressure of fluid dispensed from the liner and produce a transducer output indicative of the said pressure, and the processor adapted to receive said transducer output and determine rate of change of pressure of said fluid.~~

~~3. The fluid supply system of claim 1, comprising a monitor adapted to monitor rate of change of pressure of fluid dispensed from the liner.~~

2. ~~4.~~ The fluid supply system of claim 1~~2~~, wherein the processor is arranged to control fluid dispensing and utilization of ~~fluid~~ liquid medium dispensed from the liner.

3. ~~5.~~ The fluid supply system of claim 1~~2~~, wherein the processor is arranged to control at least one of: (i) flow rate of gas supplied by the gas source, (ii) fluid processing at a fluid utilizing apparatus arranged to receive ~~fluid~~ liquid medium dispensed from the liner, (iii) one or more valves in flow circuitry coupled between the liner and a fluid utilizing apparatus arranged to receive ~~fluid~~ liquid medium dispensed from the liner, and (iv) one or more pumps in flow circuitry coupled between the liner and a fluid utilizing apparatus arranged to receive ~~fluid~~ liquid medium dispensed from the liner.

~~6. The fluid supply system of claim 1, adapted to output a signal indicative of the pressure droop condition.~~

4. The fluid supply system of any of claims 1-3, wherein the liner contains a liquid medium comprising a photoresist liquid.

5. The fluid supply system of any of claims 1-4, wherein the liner contains a liquid medium comprising a chemical mechanical polishing slurry.

6. The fluid supply system of any of claims 1-5, wherein the liner is formed of a polymeric material.

7. The fluid supply system of any one of claims 1 to 6, adapted to perform at least one of the following actions responsive to determination of the pressure droop condition: (a) outputting an alarm; (b) modifying dispensing operation in a manner coordinated with remaining inventory of ~~fluid~~ liquid medium in the liner; and (c) initiating a change-out operation for continuation of dispensing from another liner.

8. The fluid supply system of any one of claims 1 to 7, further comprising a filter arranged for filtering of ~~fluid~~ liquid medium dispensed from the liner.

9. The fluid supply system of any one of claims 1 to 8, coupled with flow circuitry for delivery of ~~fluid~~ liquid medium from a liner in said package to a process tool for semiconductor or microelectronic device manufacturing.

10. The fluid supply system of claim 9, further comprising a dispensing pump in the flow circuitry.

11. A method of supplying ~~fluid~~ liquid medium to a location of use from a collapsible liner subjected to application of external pressure to effect dispensing of ~~fluid~~ liquid medium from the liner in a zero or near-zero headspace condition, the method comprising:

monitoring pressure of the dispensed ~~fluid~~ liquid medium as a function of time, and

determining, before the liner is exhausted of liquid medium, slope droop of the pressure-time function as indicative of onset of exhaustion of ~~fluid~~ liquid medium from the liner.

12. The method of claim 11, wherein said determining slope droop of the pressure-time function is indicative of a predetermined approach to exhaustion of ~~fluid~~ liquid medium from the liner.

13. The method of claim 12, further comprising outputting an alarm when said predetermined approach to exhaustion is reached.

14. The method of claim 12, further comprising initiating a change-out operation for continuation of dispensing from another liner when said predetermined approach to exhaustion is reached.

15. The method of claim 12, further comprising modifying dispensing operation in a manner coordinated with remaining inventory of ~~fluid~~ liquid medium in the liner when said predetermined approach to exhaustion is reached.

16. The method of claim 11, further comprising readying another ~~liner-based fluid storage and dispensing package~~ collapsible liner for dispensing operation in response to determination of said slope droop.

17. The method of claim 16, further comprising switching-in said another ~~liner-based fluid storage and dispensing package~~ collapsible liner to effect continuity of dispensing to the location of use.

18. The method of any one of claims 11 to 17, wherein ~~fluid~~ liquid medium dispensed from the liner is subjected to pumping in a dispensed fluid flow circuit arranged to receive ~~fluid~~ liquid medium from the liner, and is delivered from the flow circuitry to the location of use.

19. The method of claim 18, wherein the pumping is conducted by a metered dose pump.

20. The method of any one of claims 11 to 19, wherein the location of use comprises a process tool for semiconductor or microelectronic device manufacturing.

21. A fluid storage and dispensing system adapted for coupling via flow circuitry with a fluid-utilizing apparatus, said system including a liner-based fluid storage and dispensing package adapted for pressure-mediated dispensing of ~~fluid~~ liquid medium in a zero or near-zero headspace condition from a liner in the package, and a pressure transducer arranged to monitor pressure of dispensed ~~fluid~~ liquid medium in said flow circuitry at a fluid inlet to said fluid-utilizing tool, and arranged to actuate a controller adapted to adjust or terminate dispensing operation responsive to determination of a slope droop condition of a pressure-time function of ~~fluid~~ liquid medium dispensed from the liner as indicative of onset of exhaustion of ~~fluid~~ liquid medium from the liner before the liner is exhausted of liquid medium.

22. The fluid storage and dispensing system according to claim 21, wherein said flow circuitry comprises a filter and a pump.

23. The fluid storage and dispensing system according to claim 22, wherein said pump comprises a dispense shot pump.

24. The fluid storage and dispensing system according to claim 21, wherein said fluid-utilizing tool has associated therewith a dispenser located downstream of the fluid storage and dispensing package.

25. The fluid storage and dispensing system according to any one of claims 21 to 24, wherein the fluid storage and dispensing package is operatively coupled with a source of pressurizing gas for delivery of gas to exert pressure on the liner for said pressure-mediated dispensing of ~~fluid~~ liquid medium from the liner.

26. The fluid storage and dispensing system according to any one of claims 21 to 25, wherein the fluid utilizing apparatus comprises a process tool for semiconductor or microelectronic device manufacturing.