It is claimed:

1. A method for controlling flow of fluid in a wellbore extending through a subterranean formation, the fluid having a characteristic which changes over time, the fluid flowing through an inlet passageway, a flow biasing mechanism, and a variable flow resistance assembly, the method comprising the following steps:

flowing fluid through the inlet passageway;

establishing a first fluid flow distribution across an outlet of the flow biasing mechanism; then

altering the first fluid flow distribution to a second flow distribution across the outlet of the flow biasing mechanism in response to a change in the fluid characteristic; and

changing the fluid flow resistance of the variable flow resistance assembly in response to the altering of the distribution of flow from the outlet of the flow biasing mechanism.

2. A method as in claim 1, further comprising the step of flowing the fluid to the surface or into the formation.

3. A method as in claim 1, further comprising the steps of establishing a first flow pattern in the variable flow resistance assembly, and then changing the flow in the variable flow resistance assembly to a second flow pattern in response to the altering of the fluid flow through the outlet of the flow biasing mechanism.

4. A method as in claim 1, wherein the characteristic of the fluid is one of fluid velocity, density, flow rate, and velocity.

5. A method as in claim 1, wherein the biasing mechanism is a widening passageway narrower at the upstream end and wider at the downstream end.

6. A method as in claim 5, wherein the downstream end of the biasing mechanism defines two sides which connect to corresponding first and second sides of a fluidic switch assembly, corresponding first and second departure angles defined at the connections, and; wherein the first departure angle is shallower than the second departure angle.

7. A method as in claim 1, wherein the first fluid flow distribution is substantially symmetric.

8. A method as in claim 1, wherein the biasing mechanism includes at least one contour element along at least one side of the biasing mechanism.

9. A method as in claim 8, wherein each contour element comprises a laterally extending hollow.

10. A method as in claim 9, wherein each contour element includes a substantially cylindrical section.

11. A method as in claim 1, wherein the biasing mechanism includes a first section having a first cross-sectional size and an adjoining second section having a second cross-sectional size, different from the first cross-sectional size.

12. A method as in claim 1, wherein the biasing mechanism includes one or more diodes formed along the biasing mechanism wall.

13. A method as in claim 1, wherein the biasing mechanism includes a chicane defined in the biasing mechanism.

14. A method as in claim 13, wherein the chicane includes a plurality of flow obstructions on a first and second side of the biasing mechanism.

15. A method as in claim 1, further comprising the step of flowing fluid through a curved section of a biasing mechanism passageway.

16. A method as in claim 1, wherein the variable flow resistance assembly includes an autonomous valve assembly.

17. A method as in claim 1, further comprising the step of flowing fluid through a fluidic switch between the biasing mechanism and the variable flow resistance assembly.

18. A method as in claim 17, the fluidic switch defining at least one flow passageway having an inlet coincident with the outlet of the inlet passageway.

19. A method as in claim 2, further comprising the step of increasing the fluid flow resistance of an undesirable fluid.

20. A method as in claim 16, wherein the autonomous valve assembly further includes a vortex assembly.

CLAIMS

It is claimed:

1. A method for autonomously controlling flow of a fluid in a wellbore extending through a subterranean formation, the fluid having a characteristic which autonomously changes over time, the fluid flowing through an inlet passageway, a flow biasing mechanism defining a widening passageway narrower at the upstream end and wider at the downstream end, wherein the downstream end of the biasing mechanism defines two sides which connect to corresponding first and second sides of a fluidic switch assembly, corresponding first and second departure angles defined at the connections, and, wherein the first departure angle is shallower than the second departure angle, and a variable flow resistance assembly, the method comprising the following steps:

communicating the fluid between the wellbore and the subterranean formation by flowing the fluid out of the subterranean formation and into the wellbore, or out of the wellbore and into the subterranean formation;

flowing the fluid through the inlet passageway;

resisting flow of the fluid with at least first and second walls of the flow biasing mechanism having dissimilar predefined shapes such that resistance to the dissimilar predefined shapes of the first and second walls establishes a first fluid flow distribution across an outlet of the flow biasing mechanism; then

autonomously altering the first fluid flow distribution to a second flow distribution across the outlet of the flow biasing mechanism in response to an autonomous change in the fluid characteristic and in response to an associated change in the resistance to the dissimilar predefined shapes of the first and second walls of the flow biasing mechanism; and

changing the fluid flow resistance of the variable flow resistance assembly in response to the altering of the distribution of flow from the outlet of the flow biasing mechanism.

2. A method as in claim 1, wherein the step of communicating the fluid between the wellbore and the subterranean formation comprises producing a production fluid from the subterranean formation into a first production interval defined in the wellbore, and wherein the method further comprises the step of flowing the production fluid to the

surface.

3. A method as in claim 2, further comprising the step of increasing the fluid flow resistance of an undesirable component of the production fluid in the first production interval.

4. A method as in claim 3, further comprising flowing the production fluid from the subterranean formation into a second production interval defined in the wellbore that is fluidly isolated from the first production interval, wherein the production fluid flowing into the second production interval has a lower proportion of the undesirable component than the proportion of the undesirable component of the production fluid flowing into the first production interval.

5. A method as in claim 1, further comprising the steps of establishing a first flow pattern in the variable flow resistance assembly, and then changing the flow in the variable flow resistance assembly to a second flow pattern in response to the altering of the fluid flow through the outlet of the flow biasing mechanism.

6. A method as in claim 1, wherein the characteristic of the fluid is one of fluid velocity, density, flow rate, and velocity.

7. A method as in claim 1, wherein the first fluid flow distribution is substantially symmetric.

8. A method as in claim 1, wherein the variable flow resistance assembly includes an autonomous valve assembly.

9. A method as in claim 8, wherein the autonomous valve assembly further includes a vortex assembly.

10. A method as in claim 1, further comprising the step of flowing fluid through the fluidic switch between the biasing mechanism and the variable flow resistance assembly.

11. A method as in claim 10, the fluidic switch defining at least one flow passageway having an inlet coincident with an outlet of the inlet passageway.

12. A method as in claim 1, wherein the first and second fluid flow distributions include at least one of a velocity distribution, a flow rate distribution and a mass flow rate distribution.

13. A method as in claim 12, wherein one of the first fluid flow distribution and the second fluid flow distribution is relatively less symmetric between the first and second walls of the flow biasing mechanism than the other of the first fluid flow distribution and the second fluid flow distribution.

14. A method as in claim 1, wherein the upstream end of the flow biasing mechanism is coupled to an inlet passageway, and wherein the first wall of the flow biasing mechanism extends from the inlet passageway at a dissimilar angle from an angle at which the second wall of the flow biasing mechanism extends from the inlet passageway to the downstream end of the flow biasing mechanism.

15. A method as in claim 14 wherein the first sidewall of the flow biasing mechanism is substantially coextensive with a first sidewall of the inlet passageway, and wherein the second sidewall of the biasing mechanism diverges from a second sidewall of the inlet passageway thereby defining the widening passageway of the flow biasing mechanism.