

[0005] In an embodiment, an actuation system for a downhole component comprises a powered transmitter comprising a transmitting antenna, and a downhole component comprising a central flowbore and a receiving antenna coupled to an actuation system. The powered transmitter is configured to be received within the central flowbore, and the transmitting antenna is configured to transmit a signal. The receiving antenna is configured to generate an electric current in response to receiving the signal from the transmitting antenna, and the actuation system is configured to actuate using the electric current from the receiving antenna.

[0006] In an embodiment, a method of actuating a downhole component comprises passing a powered transmitter through a central flowbore of a downhole component; transmitting a signal from a transmitting antenna disposed in the powered transmitter; generating an electric current in a receiver antenna disposed in the downhole component in response to receiving the signal from the transmitting antenna; and actuating an actuation system using the electric current. The downhole component may comprise a housing comprising the actuation system; and a sliding member slidably positioned within the housing. The sliding member may be configured to transition from a first position to a second position. When the sliding member is in the first position, the sliding member may prevent a route of fluid communication via one or more ports of the housing, and when the sliding member is in the second position, the sliding member may allow fluid communication via the one or more ports of the housing.

[0007] In an embodiment, a well screen assembly for use downhole comprises a first fluid pathway configured to provide fluid communication between an exterior of a wellbore tubular and an interior of the wellbore tubular; a flow restrictor disposed in the fluid pathway; a first actuation system comprising a first receiving antenna, and a first sliding member disposed in series with the flow restrictor in the fluid pathway. The first receiving antenna is configured to generate an electric current in response to receiving a first electromagnetic signal having a first frequency, and the sliding member is transitional from a first position to a second position in response to the electric current. The sliding member prevents fluid communication along the fluid pathway when the sliding member is in the first position, and the sliding member allows fluid communication along the fluid pathway when the sliding member is in the second position.

[0008] In an embodiment, a well screen assembly for use in a wellbore comprises a plurality of fluid pathways. Each fluid pathway of the plurality of fluid pathways is configured to provide fluid communication between an exterior of a wellbore tubular and an interior of the wellbore tubular, and two or more fluid pathways of the plurality of fluid pathways comprise an actuation system comprising a receiving antenna, a flow restrictor disposed in at least one of the two or more fluid pathways, and a sliding member disposed in the corresponding fluid pathway. The receiving antenna is configured to generate an electric current in response to

receiving a specific electromagnetic signal, and the sliding member is transitional from a first position to a second position in response to the electric current. The sliding member prevents fluid communication along the corresponding fluid pathway when the sliding member is in the first position, and the sliding member allows fluid communication along the corresponding fluid pathway when the sliding member is in the second position. The actuation systems in each of the two or more fluid pathways may be configured to generate the electric current in response to specific electromagnetic signals having different frequencies.

[0009] In an embodiment, a method comprises preventing, by a first sliding member, fluid flow through a first fluid pathway in a well screen assembly, wherein the first fluid pathway is configured to provide fluid communication between an exterior of a wellbore tubular and an interior of the wellbore tubular; inductively coupling, by a first receiving antenna, with a first transmitting antenna that is transmitting a first signal, generating a first electric current in the first receiving antenna in response to receiving the first signal, translating the first sliding member using the first electric current, and allowing fluid flow through a flow restrictor is disposed in the first fluid pathway in response to the translating of the sliding member. The fluid pathway is configured to provide fluid communication between an exterior of a wellbore tubular and an interior of the wellbore tubular. A flow restrictor may be disposed in the fluid pathway.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] For a more complete understanding of the present disclosure and the advantages thereof, reference is now made to the following brief description, taken in connection with the accompanying drawings and detailed description:

[0011] Figure 1 is a partial cut-away of an embodiment of an environment in which an wireless activatable valve assembly and method of use of using such wireless activatable valve assembly may be employed;

[0012] Figure 2 is a partial cut-away view of an embodiment of a wellbore penetrating a subterranean formation, the wellbore having an wireless activatable valve assembly positioned therein;

[0013] Figure 3A is a cross-sectional view of an embodiment of a wireless activatable valve assembly in a first configuration;

[0014] Figure 3B is a cross-sectional view of an embodiment of a wireless activatable valve assembly in a second configuration;

[0015] Figure 4 is a partial cross-sectional view of an embodiment of a wireless activatable valve assembly along line A-A' of Figure 3A ;

[0016] Figure 5 is a partial cut-away view of an embodiment of a wireless activatable valve assembly ;

CLAIMS

What is claimed is:

1. A well screen assembly for use downhole comprising:
 - a first fluid pathway configured to provide fluid communication between an exterior of a wellbore tubular and an interior of the wellbore tubular;
 - a flow restrictor disposed in the fluid pathway;
 - a first actuation system comprising a first receiving antenna, wherein the first receiving antenna is configured to generate an electric current in response to receiving a first electromagnetic signal having a first frequency; and
 - a first sliding member disposed in series with the flow restrictor in the fluid pathway, wherein the sliding member is transitional from a first position to a second position in response to the electric current; wherein the sliding member prevents fluid communication along the fluid pathway when the sliding member is in the first position, and wherein the sliding member allows fluid communication along the fluid pathway when the sliding member is in the second position.
2. The well screen assembly of claim 1, further comprising:
 - a second actuation system comprising a second receiving antenna, wherein the second receiving antenna is configured to generate an electric current in response to receiving a second electromagnetic signal having a second frequency; and
 - a second sliding member disposed in parallel with the flow restrictor, wherein the second sliding member is disposed in a second fluid pathway between the exterior of the wellbore tubular and the interior of the wellbore tubular, wherein the second fluid pathway bypasses the flow restrictor, and wherein the second sliding member prevents fluid communication along the second fluid pathway when the second sliding member is in an initial position, wherein the second sliding member allows fluid communication along the second fluid pathway when the second sliding member is in an actuated position.
3. The well screen assembly of claim 2, wherein the first frequency and the second frequency are the same.
4. The well screen assembly of claim 2, wherein the first frequency and the second frequency are different.
5. The well screen assembly of claim 2, further comprising a transmitter, wherein the transmitter is configured to transmit the first electromagnetic signal to the first receiving antenna.

6. The well screen assembly of claim 5, wherein the transmitter is further configured to transmit the second electromagnetic signal to the second receiving antenna.
7. The well screen assembly of claim 5, further comprising a second transmitter, wherein the second transmitter is configured to transmit the second electromagnetic signal to the second receiving antenna.
8. The well screen assembly of claim 1, further comprising:
 - a second fluid pathway configured to provide fluid communication between an exterior of a second wellbore tubular and an interior of the second wellbore tubular, wherein the wellbore tubular and the second wellbore tubular form parts of a wellbore tubular string;
 - a second flow restrictor disposed in the second fluid pathway;
 - a second actuation system comprising a second receiving antenna, wherein the second receiving antenna is configured to generate a second electric current in response to receiving a second electromagnetic signal having a second frequency; and
 - a second sliding member disposed in series with the second flow restrictor in the second fluid pathway, wherein the second sliding member is transitional from a third position to a fourth position in response to the second electric current; wherein the second sliding member prevents fluid communication along the second fluid pathway when the second sliding member is in the third position, and wherein the second sliding member allows fluid communication along the second fluid pathway when the second sliding member is in the fourth position.
9. The well screen assembly of claim 8, wherein the first frequency and the second frequency are different.
10. A well screen assembly for use in a wellbore comprising:
 - a plurality of fluid pathways, wherein each fluid pathway of the plurality of fluid pathways is configured to provide fluid communication between an exterior of a wellbore tubular and an interior of the wellbore tubular, wherein two or more fluid pathways of the plurality of fluid pathways comprise:
 - an actuation system comprising a receiving antenna, wherein the receiving antenna is configured to generate an electric current in response to receiving a specific electromagnetic signal;
 - a flow restrictor disposed in at least one of the two or more fluid pathways; and
 - a sliding member disposed in the corresponding fluid pathway, wherein the sliding member is transitional from a first position to a second position in response to the electric

current; wherein the sliding member prevents fluid communication along the corresponding fluid pathway when the sliding member is in the first position, and wherein the sliding member allows fluid communication along the corresponding fluid pathway when the sliding member is in the second position.

11. The well screen assembly of claim 10, wherein the actuation systems in each of the two or more fluid pathways are configured to generate the electric current in response to specific electromagnetic signals having different frequencies.
12. The well screen assembly of claim 10, wherein the receiving antenna is physically tuned to the specific electromagnetic signal.
13. The well screen assembly of claim 10, further comprising a transmitter, wherein the transmitter is configured to transmit the specific electromagnetic signal to at least one corresponding receiving antenna.
14. The well screen assembly of claim 10, wherein at least one receiving antenna is configured to not generate an electric current in response to the transmitter transmitting the specific electromagnetic signal to the at least one corresponding receiving antenna.
15. A method comprising:
 - preventing, by a first sliding member, fluid flow through a first fluid pathway in a well screen assembly, wherein the first fluid pathway is configured to provide fluid communication between an exterior of a wellbore tubular and an interior of the wellbore tubular;
 - inductively coupling, by a first receiving antenna, with a first transmitting antenna that is transmitting a first signal;
 - generating a first electric current in the first receiving antenna in response to receiving the first signal;
 - translating the first sliding member using the first electric current; and
 - allowing fluid flow through a flow restrictor is disposed in the first fluid pathway in response to the translating of the first sliding member.
16. The method of claim 15, further comprising:
 - preventing, by a second sliding member, fluid flow through a second fluid pathway in the well screen assembly, wherein the second fluid pathway is configured to provide fluid communication between the exterior of a wellbore tubular and an interior of the wellbore tubular and wherein the second fluid pathway is disposed in parallel with the fluid pathway;

inductively coupling, by a second receiving antenna, with a second transmitting antenna that is transmitting a second signal;
generating a second electric current in the second receiving antenna in response to receiving the second signal;
translating the second sliding member using the second electric current; and
allowing fluid flow through the second fluid pathway in response to the translating of the second sliding member.

17. The method of claim 16, wherein the first transmitting antenna and the second transmitting antenna are disposed in one transmitter.

18. The method of claim 16, wherein the first signal and the second signal have different frequencies.