Variable Flow Resistance System for Use with a Subterranean Well

Background

[0001] This section is intended to introduce the reader to various aspects of art that may be related to various aspects of the presently described embodiments. This discussion is believed to be helpful in providing the reader with background information to facilitate a better understanding of the various aspects of the present embodiments. Accordingly, it should be understood that these statements are to be read in this light, and not as admissions of prior art.

[0002] This disclosure relates generally to equipment utilized and operations performed in conjunction with a subterranean well and, in an example described below, more particularly provides a selectively variable flow restrictor.

[0003] In a hydrocarbon production well, it is many times beneficial to be able to regulate flow of fluids from an earth formation into a wellbore, from the wellbore into the formation, and within the wellbore. A variety of purposes may be served by such regulation, including prevention of water or gas coning, minimizing sand production, minimizing water and/or gas production, maximizing oil production, balancing production among zones, transmitting signals, etc.

[0004] Therefore, it will be appreciated that advancements in the art of variably restricting fluid flow in a well would be desirable in the circumstances mentioned above, and such advancements would also be beneficial in a wide variety of other circumstances.

Summary

[0004a] According to a first aspect of the present disclosure, there is provided a variable flow resistance system for use with a subterranean well, the system including: a first flow path configured to receive a fluid; a sensor configured to measure a property of the fluid received into the first flow path; and an actuator configured to control an inflow rate of the fluid received into the first flow path based upon the property of the fluid measured by the sensor.

[0004b] According to a second aspect of the present disclosure, there is provided a method of variably controlling flow resistance in a well, the method including: receiving a fluid into a first flow path; measuring a property of the fluid received into the first flow path; and adjusting an inflow rate of the fluid received into the first flow path based upon the measured property of the fluid.

[0004c] According to a third aspect of the present disclosure, there is provided a method of variably controlling flow resistance in a well, the method including: receiving a fluid into a first flow path; receiving a communication signal from a remote location; and adjusting an inflow rate of the fluid received into the first flow path based upon the received communication signal.

Brief Description of the Drawings

[0005] Illustrative embodiments of the present disclosure are described in detail below with reference to the attached drawing figures, which are incorporated by reference herein and wherein: