

(21) Application No: 1305601.5
(22) Date of Filing: 28.09.2011
Date Lodged: 27.03.2013
(30) Priority Data:
(31) 12893554 (32) 29.09.2010 (33) US
(86) International Application Data:
PCT/US2011/053614 En 28.09.2011
(87) International Publication Data:
WO2012/044658 En 05.04.2012

(51) INT CL:
C23C 16/52 (2006.01) C23C 16/448 (2006.01)
C23C 16/455 (2006.01) G05D 7/06 (2006.01)
(56) Documents Cited:
US 7615120 B2 US 20060207503 A1
US 20040244837 A1
(58) Field of Search:
INT CL C23C, G05D
Other: EPO-INTERNAL, INSPEC, WPI DATA

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(54) Title of the Invention: **System for and method of fast pulse gas delivery**
Abstract Title: **System for and method of fast pulse gas delivery**

(57) A system for and method of delivering pulses of a desired mass of gas to a tool is described. A system for delivering pulses of a desired mass of gas to a process chamber or tool, comprising: a gas delivery chamber; a first valve arranged so as to control the flow of gas into the gas delivery chamber; a second valve arranged so as control the flow of gas leaving the gas delivery chamber so that the gas can leave the gas delivery chamber in pulses, each of a selected mass as a function of the initial pressure of the gas in the gas delivery chamber and the duration of the respective pulse; and a pressure control arrangement configured and arranged so as to control the flow of gas into the gas delivery chamber so as to precharge the gas in the gas delivery chamber to an initial pressure set point prior to delivering the pulses of gas such that the variance of the starting pressure of the gas in the gas delivery chamber is controlled prior to delivering the pulses of gas, and the repeatability of the mass delivery is improved as a function of the duration of each of the pulses.

