

Title (en)

SYSTEM AND METHOD FOR POSITION CONTROL OF A MECHANICAL PISTON IN A PUMP

Title (de)

SYSTEM UND VERFAHREN ZUR POSITIONSTEUERUNG EINES MECHANISCHEN KOLBENS IN EINER PUMPE

Title (fr)

SYSTEME ET PROCEDE PERMETTANT DE COMMANDER LA POSITION D'UN PISTON MECANIQUE DANS UNE POMPE

Publication

EP 1954946 A4 20100526 (EN)

Application

EP 06838071 A 20061120

Priority

- US 2006044907 W 20061120
- US 2005042127 W 20051121
- US 74166005 P 20051202
- US 84172506 P 20060901

Abstract (en)

[origin: WO2007061957A2] Embodiments of the systems and methods disclosed herein utilize a brushless DC motor (BLDCM) to drive a single-stage or a multi-stage pump in a pumping system for real time, smooth motion, and extremely precise and repeatable position control over fluid movements and dispense amounts, useful in semiconductor manufacturing. The BLDCM may employ a position sensor for real time position feedback to a processor executing a custom field-oriented control scheme. Embodiments of the invention can reduce heat generation without undesirably compromising the precise position control of the dispense pump by increasing and decreasing, via a custom control scheme, the operating frequency of the BLDCM according to the criticality of the underlying function(s). The control scheme can run the BLDCM at very low speeds while maintaining a constant velocity, which enables the pumping system to operate in a wide range of speeds with minimal variation, substantially increasing dispense performance and operation capabilities.

IPC 8 full level

F04B 13/00 (2006.01); **F04B 17/03** (2006.01); **F04B 49/06** (2006.01)

CPC (source: EP KR US)

F04B 13/00 (2013.01 - EP); **F04B 17/03** (2013.01 - EP); **F04B 43/0081** (2013.01 - EP); **F04B 43/02** (2013.01 - EP US); **F04B 49/00** (2013.01 - KR); **F04B 49/06** (2013.01 - KR); **F04B 49/065** (2013.01 - EP US); **F04B 2201/0201** (2013.01 - EP); **F04B 2201/1208** (2013.01 - EP)

Citation (search report)

- No further relevant documents disclosed
- See references of WO 2007061957A2

Designated contracting state (EPC)

DE FR GB IT NL

DOCDB simple family (publication)

WO 2007061957 A2 20070531; **WO 2007061957 A3 20071004**; **WO 2007061957 A8 20070816**; **WO 2007061957 B1 20071206**;
CN 103016324 A 20130403; CN 103016324 B 20160810; EP 1954946 A2 20080813; EP 1954946 A4 20100526; EP 1954946 B1 20141105;
JP 2009529847 A 20090820; JP 2013150549 A 20130801; JP 5339915 B2 20131113; JP 5674853 B2 20150225; KR 101279747 B1 20130627;
KR 101283259 B1 20130711; KR 20080068918 A 20080724; KR 20130036380 A 20130411; TW 200726914 A 20070716;
TW 201350680 A 20131216; TW I405905 B 20130821; TW I493107 B 20150721

DOCDB simple family (application)

US 2006044907 W 20061120; CN 201210365592 A 20061120; EP 06838071 A 20061120; JP 2008541407 A 20061120;
JP 2013086392 A 20130417; KR 20087014266 A 20061120; KR 20137007190 A 20061120; TW 102126755 A 20061121;
TW 95142923 A 20061121