

Title (en)
Compound pulse tube cooler

Title (de)
Compound-Pulse-Tube-Kühler

Title (fr)
Refroidisseur de tube à impulsions composite

Publication
EP 2312239 A3 20140219 (DE)

Application
EP 10183734 A 20100930

Priority
DE 102009048324 A 20091005

Abstract (en)
[origin: EP2312239A2] The cooler has first and second compound pulse tube cooling units (1.1, 1.2) whose first and second warm ends (4.1-4.4) are connected with expansion chambers (9.1-9.4) of third and fourth pulse tube cooling units (1.3, 1.4) by line expanders (14.1-14.4). The compound pulse tube cooling units are connected with each other. The warm ends of the first and second cooling units move pistons (16.1-16.4) of compressors (15.1-15.4) together with a phase shift of 360 degrees. Linear drives (6.1-6.4) are driven by 4-phase current.

IPC 8 full level
F25B 9/14 (2006.01)

CPC (source: EP)
F25B 9/145 (2013.01); **F25B 2309/001** (2013.01); **F25B 2309/1426** (2013.01); **F25B 2400/06** (2013.01)

Citation (search report)

- [XYI] DE 4220840 A1 19930107 - AISIN SEIKI [JP], et al
- [Y] JP 2001241795 A 20010907 - ECTI KK
- [A] JP H05322338 A 19931207 - AISIN SEIKI, et al

Cited by
FR3036175A1; CN103411359A; EP2728181A4

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

Designated extension state (EPC)
BA ME RS

DOCDB simple family (publication)
EP 2312239 A2 20110420; EP 2312239 A3 20140219; DE 102009048324 A1 20110421

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