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(54) Title: ENGINE SYSTEM WITH REVERSIBLE FAN

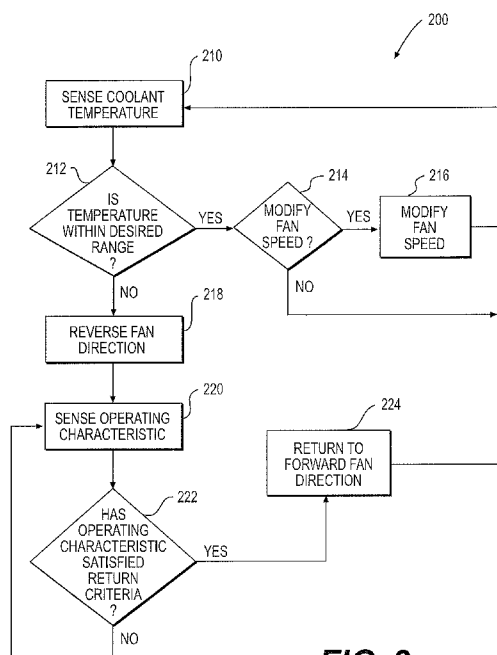


FIG. 3

(57) Abstract: An engine system (140) includes an engine (12), a primary pump (14) coupled to the engine (12), and a motor (18) fluidly connected to the primary pump (14). The engine system (140) further includes a heat exchanger (28) fluidly connected to the engine (12), the heat exchanger (28) configured to accept heated coolant from the engine (12) and deliver cooled coolant to the engine (20). The engine system (140) also includes a fan (20) driven by the motor (18) in either a forward or a reverse mode of operation, the fan (20) configured to pull air toward the heat exchanger (28) in a first direction during the forward mode of operation to assist in cooling the coolant, and to push air toward the heat exchanger (28) in a second direction opposite the first direction during the reverse mode of operation. The engine system (140) further includes a controller (68) configured to operate the fan (20) in the reverse mode of operation in response to a sensed temperature of the coolant and a speed of the fan (20) in the forward mode of operation.



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A. CLASSIFICATION OF SUBJECT MATTER***F01P 5/02(2006.01)i, F01P 7/04(2006.01)i, F01P 3/18(2006.01)i***

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F01P 5/02; E02F 9/00; A44C 9/00; B02C 21/02; F01P 7/04; B60K 11/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: engine, pump, motor, fan, reverse

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	KR 10-0338292 B1 (Yamagishi; Yoshinori) 28 August 2002 See page 2, line 57 - page 4 line 16; figure 1.	1-3, 9-10 4-8
A	JP 2004-197682 A (KOMATSU LTD.) 15 July 2004 See paragraphs 17-18 and figure 1.	1-10
A	US 2008-0108032 A1 (TUHY LANCE S. et al.) 08 May 2008 See paragraphs 15, 20, 21, 26, 35 and figures 2, 7.	1-10
A	JP 2002-192959 A (KOMATSU LTD.) 10 July 2002 See paragraphs 38-41, 45-48 and figure 5.	1-10



Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

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Information on patent family members

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