# (11) **EP 2 333 268 A3**

(12)

### **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3: **04.01.2012 Bulletin 2012/01** 

(51) Int Cl.: **F01P** 7/16 (2006.01)

(43) Date of publication A2: 15.06.2011 Bulletin 2011/24

(21) Application number: 10191902.5

(22) Date of filing: 19.11.2010

(84) Designated Contracting States:

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 RS SE SI SK SM TR

Designated Extension States:

**BA ME** 

(30) Priority: 24.11.2009 JP 2009266408

(71) Applicant: AISIN SEIKI KABUSHIKI KAISHA Kariya-shi, Aichi 448-8650 (JP)

(72) Inventors:

 Onozawa, Satoru Kariya-shi Aichi 448-8650 (JP)

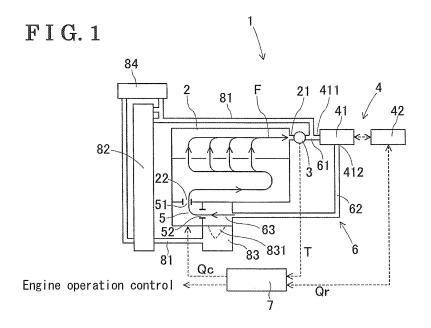
 Suzuki, Takashi Toyota-shi Aichi 471-8571 (JP)

(74) Representative: Kramer - Barske - Schmidtchen Landsberger Strasse 300 80687 München (DE)

#### (54) Cooling system for engine

(57) A cooling system (1) includes a cooling portion (2) for flowing a coolant therethrough, a coolant sensitive sensor portion (3) detecting a temperature of the coolant, a heat exchanging device (4) using a heat of the coolant, a circulation flow varying device (5) for varying a circulation flow, a circulation path (6) for flowing the coolant therethrough, and a controller (7) for regulating the circulation flow by controlling the circulation flow varying device while referring to the temperature of the coolant

upon a receipt of a request for a requested flow from the heat exchanging device. The controller (7) determines a condition for warming-up when the warming-up of the engine is performed in accordance with the temperature of the coolant, controls the circulation flow varying device for warming-up the engine without circulating the coolant, and increases the circulation flow to the requested flow for a predetermined period of time when the requested flow is requested during the warming-up.





## **EUROPEAN SEARCH REPORT**

Application Number EP 10 19 1902

Category	Citation of document with in of relevant pass	ndication, where appropriate, ages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)		
X Y A	AG [DE]) 7 May 2003	YERISCHE MOTOREN WERKE (2003-05-07) - [0022]; figure *	1,2,8-10 5 6,7	INV. F01P7/16		
X	DE 103 32 947 A1 ([DE]) 3 February 20 * paragraphs [0020] * paragraphs [0030]		1,8-10			
Y		ELLA KG HUECK & CO [DE])	5			
A	5 October 1989 (198 * column 5, line 16 figure 2 * * column 2, lines 2 * column 3, lines 4	7-42 *	1,4,6,7			
A	DE 41 09 498 A1 (BC 24 September 1992 (* column 3, lines 5	OSCH GMBH ROBERT [DE]) 1992-09-24) 5-19; figure 2 *	4-7	TECHNICAL FIELDS SEARCHED (IPC)		
	The present search report has	Date of completion of the search		Examiner		
Munich			25 November 2011 Luta, Dragos			
X : part Y : part docu A : tech	ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with anot ment of the same category nological background written disclosure mediate document	L : document cited for	ument, but publis the application rother reasons	hed on, or		

#### ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 10 19 1902

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

25-11-2011

EP 1308610 A2 07-05-26 ES 2280469 T3 16-09-26 US 2003113213 A1 19-06-26  DE 10332947 A1 03-02-2005 DE 10332947 A1 03-02-26  JP 2006528297 A 14-12-26 US 2006157002 A1 20-07-26 WO 2005012704 A1 10-02-26  DE 3810174 A1 05-10-1989 NONE  DE 4109498 A1 24-09-1992 DE 4109498 A1 24-09-19 JP 3345435 B2 18-11-26 JP 4339127 A 26-11-19	Patent document cited in search report		Publication date		Patent family member(s)		Publication date
DE 3810174 A1 05-10-1989 NONE  DE 4109498 A1 24-09-1992 DE 4109498 A1 24-09-19  JP 3345435 B2 18-11-26  JP 4339127 A 26-11-19	EP 1308610	A2	07-05-2003	EP ES	1308610 2280469	A2 T3	15-05-200 07-05-200 16-09-200 19-06-200
DE 4109498 A1 24-09-1992 DE 4109498 A1 24-09-19  JP 3345435 B2 18-11-26  JP 4339127 A 26-11-19	DE 10332947	A1	03-02-2005	JP US	2006528297 2006157002	A A1	03-02-200 14-12-200 20-07-200 10-02-200
JP 3345435 B2 18-11-20 JP 4339127 A 26-11-19	DE 3810174	A1	05-10-1989	NONE			
	DE 4109498	A1	24-09-1992	JP JP SE	3345435 4339127 510271	B2 A C2	24-09-199 18-11-200 26-11-199 03-05-199 23-09-199

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82