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(54) **THERMOSTAT HOUSING FOR A THERMOSTAT OF AN ENGINE COOLING ARRANGEMENT**

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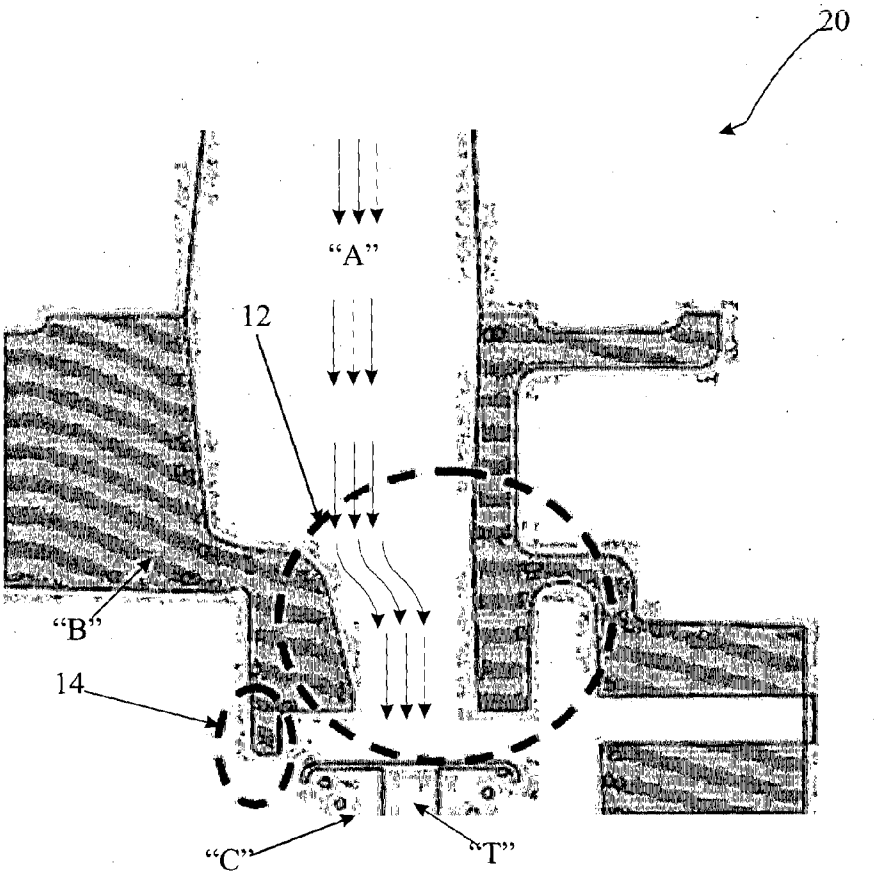
(57) **ABSTRACT**

A housing for a thermostat includes a body, a cavity, at least one director member and at least one retainer member. The body defines an enclosure that receives coolant fluid. The enclosure is in fluid communication with a pump that pumps the coolant fluid to a sink for dissipating heat extracted by the coolant fluid. The cavity configured on body receives and holds thermostat that determines temperature of coolant fluid. The director member is configured on at least one internal wall of the enclosure and defines flow path of the coolant fluid so as to direct coolant fluid to thermostat and facilitate sufficient contact between coolant fluid and thermostat and the retainer member configured on the body is disposed around thermostat to prevent the coolant fluid from bypassing of the thermostat, thereby retaining coolant fluid in contact with thermostat to ensure precise sensing of temperature by the thermostat.



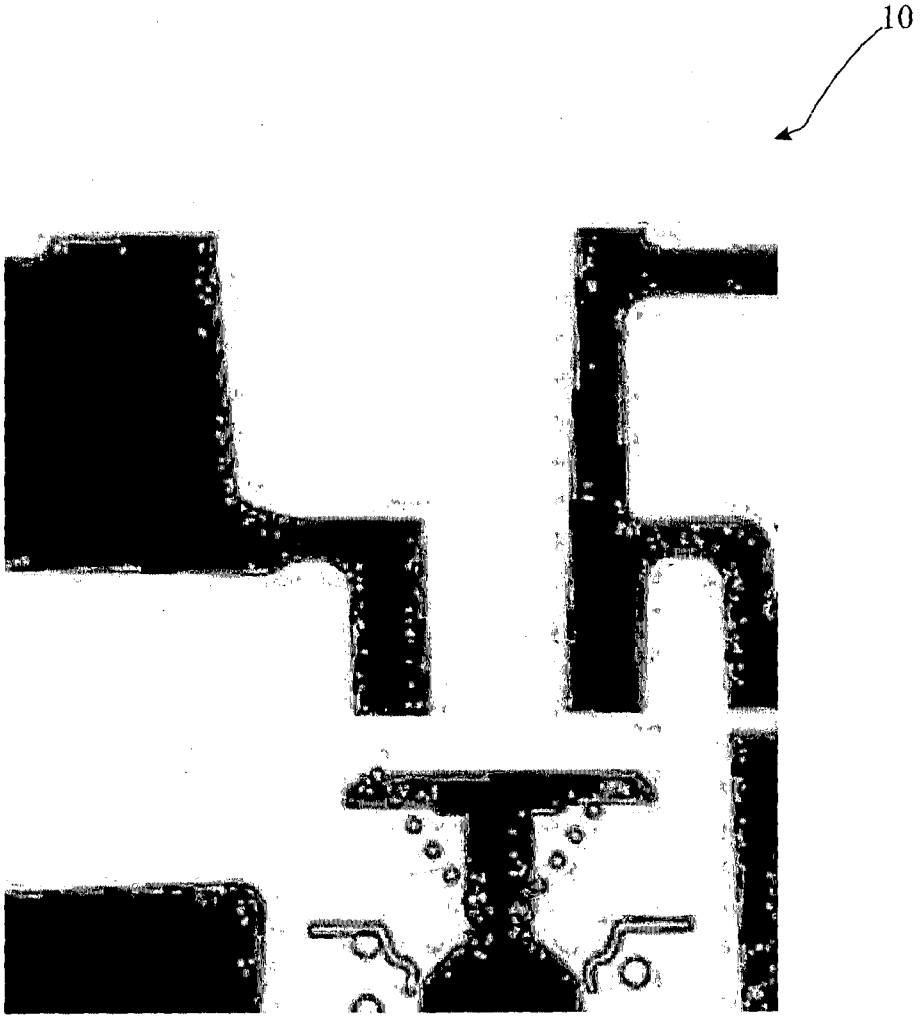


FIGURE 1
(PRIOR ART)

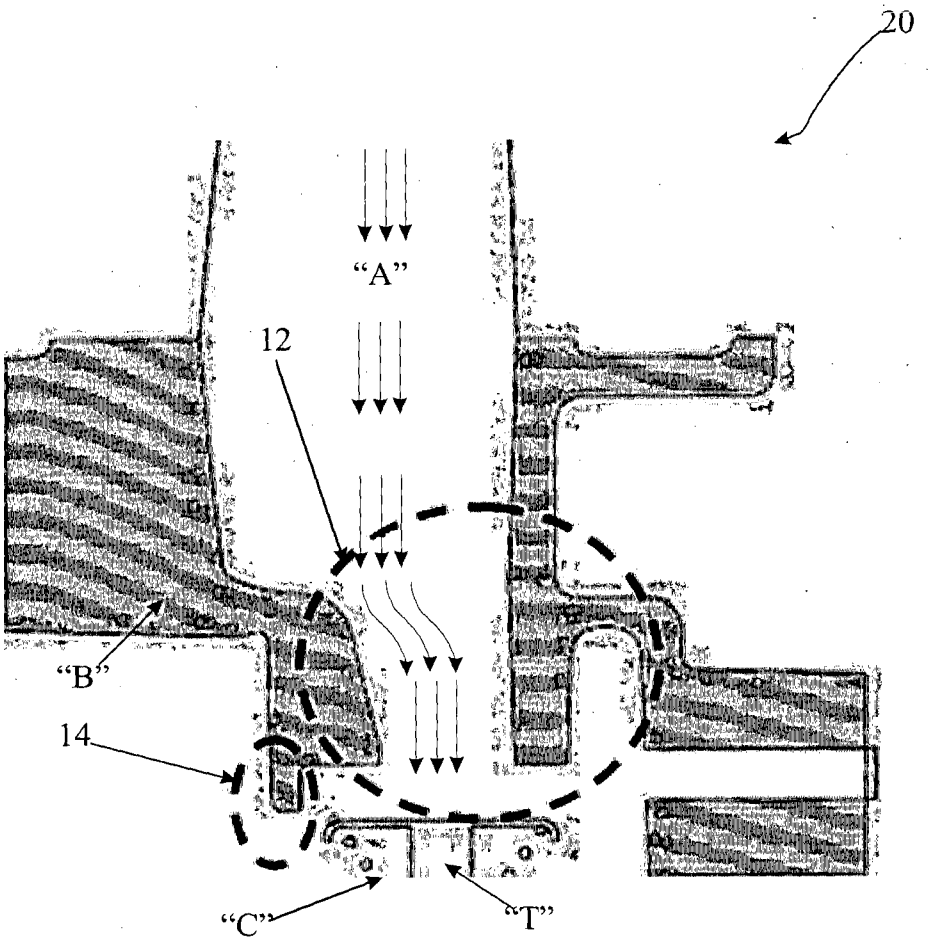


FIGURE 2

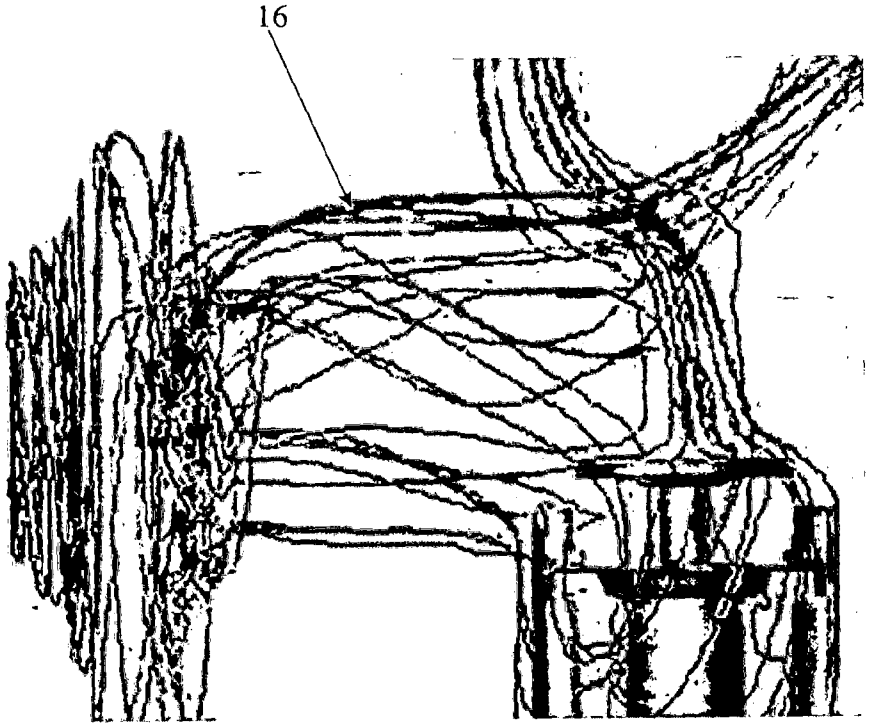


FIGURE 3

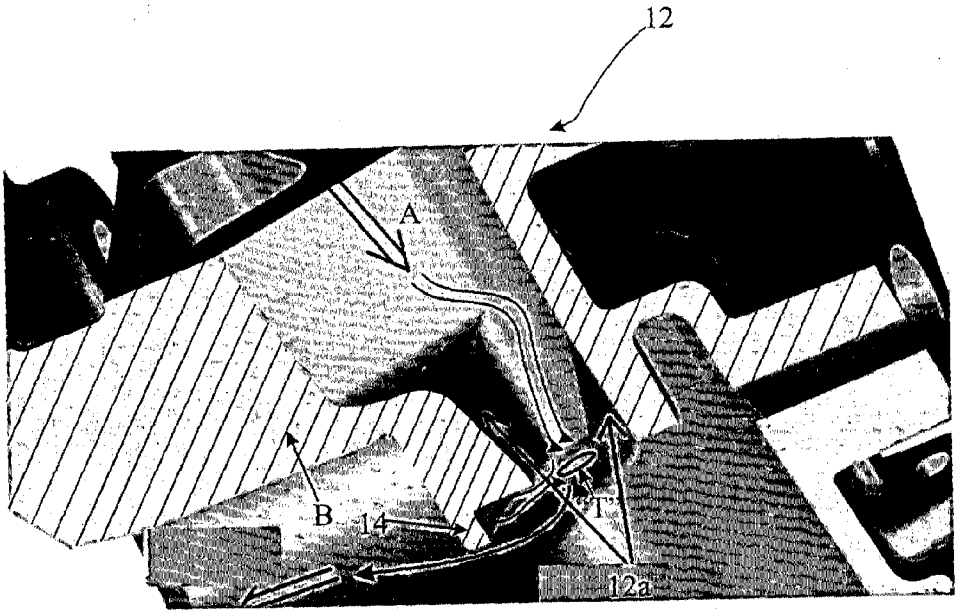


FIGURE 4

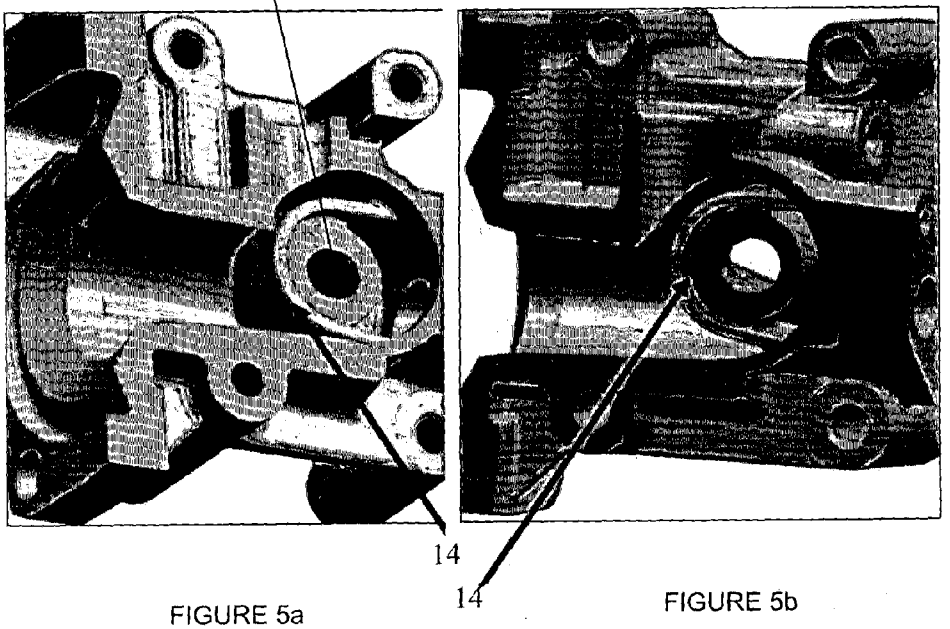


FIGURE 5a

FIGURE 5b

THERMOSTAT HOUSING FOR A THERMOSTAT OF AN ENGINE COOLING ARRANGEMENT

FIELD OF DISCLOSURE

[0001] The present disclosure relates to a cooling arrangement. More particularly, the present disclosure relates to thermostat housing for a thermostat used for detecting temperature of engine coolant used in an engine cooling arrangement.

BACKGROUND

[0002] An engine cooling system includes a coolant flow passage formed around a cylinder block of an engine for extracting heat generated in the engine during operation of the engine. The heated coolant is then circulated to a radiator with the help of a pump for dissipating the extracted heat, wherein the heated coolant is cooled down by air-flow and the cooled coolant is circulated back to the coolant flow passage to repeat the cycle of heat extraction from the engine. The flow of engine coolant to the radiator is governed based on temperature of the engine coolant detected by a thermostat. The thermostat should accurately detect the temperature of the engine coolant and allow or by-pass coolant flow to the radiator. Conventionally, inlet controlled thermostats are used, wherein based on the temperature of the engine coolant detected by the thermostat, the coolant from cylinder block is by-passed from a pump directing coolant to the radiator during engine warm up condition. Once the engine coolant is heated to a pre-determined temperature, based on temperature detected by the thermostat a control valve is activated and the coolant is directed via the pump that directs the coolant to the radiator. Accordingly, for efficient operation of the engine cooling system it is necessary that the thermostat accurately detects the temperature of the engine coolant as the flow of coolant between the radiator and the engine is controlled based on the coolant temperature detected by the thermostat. The accuracy of the thermostat depends upon configuration of the thermostat housing that should facilitate sufficient contact between the coolant and the thermostat, particularly, the thermostat housing should enhance coolant flow over the thermostat. A variety of thermostat housing having different configuration are known in the prior art

[0003] For example, the US Published Patent Application, US2012312884 discloses a thermostat device. The thermostat device is provided with a casing (**2**) which comprises a first coolant flow path (**2**B), a second coolant path (**2**D), and a thermostat accommodating part communicating with the first and second coolant flow paths, a cover (**3**) which comprises a third coolant flow path (**2**C) communicating with the thermostat accommodating part and covers the thermostat accommodating part, and a thermostat (**10**) which comprises a thermo-element (**10***h*) that moves forward and backward according to the change of the temperature of a coolant flowing through the thermostat accommodating part. The thermostat device is provided with a temperature sensor (**20**) which is provided to face the inside of the thermostat accommodating part and detects the temperature of the coolant. A sensor mounting part (**21**) which is provided with the temperature sensor therein is provided integrally at the inner end of the cover, and a lead connecting part (**25**) which is drawn to the outside from the temperature sensor is provided integrally at the outer end of the cover.

[0004] The U.S. Pat. No. 5,410,991 discloses coolant fill housing with integral thermostat. The apparatus includes a fill housing having an inlet section, an outlet section and a fill section configured to receive a cap thereon. The inlet section is formed to include a valve seat and a flange for coupling the fill housing to an engine. The apparatus also includes a thermostat and means for coupling the thermostat to the flange to hold the thermostat within the inlet section beneath an outer surface of the flange. The fill housing is formed to include a venturi portion located between the inlet section and the outlet section to provide a pressure drop in the fill housing as fluid flows through the fill housing. The venturi portion is located adjacent the fill section to subject the fill section to the pressure drop as fluid flows through the fill housing.

[0005] The WIPO Published Patent Application WO2012072654 discloses a thermostat valve (**1**) for a cooling system of an internal combustion engine with a coolant stoppage function. The thermostat valve (**1**) for the cooling system includes a first bypass valve element (**31**) and a second bypass valve element (**6**), a main valve element (**30**) to be arranged in a counterpart (**2**) to a connection (**22**) to a coolant radiator, and a cross-member (**4**) to be arranged between an engine outlet (**21**) and an engine inlet (**20**), which cross-member (**4**) forms a valve seat for the first bypass valve element (**31**) and the second bypass valve element (**6**), wherein, on its outer side, the cross-member (**4**) has a collar (**41**) which forms an axial supporting region for the counterpart (**2**) and which is loaded in the axial direction (I) by a compression spring (**7**), with the result that the collar (**41**) is forced in the direction of the counterpart (**2**).

[0006] The U.S. Pat. No. 4,653,688 discloses a choke type thermostat. The choke-type thermostat is provided with a bypass valve. The inventive thermostat has a pliable valve member which prevents flow to an engine coolant bypass when the thermostat is in the completely open position in regards to an engine radiator outlet. Valving of the engine coolant bypass provides maximum flow to the radiator outlet when the thermostat is in the open position. Since the engine bypass is valved off by the thermostat when the thermostat is in the open position the diameter of the engine coolant bypass may be increased therefore allowing increased flow therethrough when the thermostat is in a closed position.

[0007] The U.S. Pat. No. 6,364,213 discloses an integrated fluid recovery reservoir and thermostat assembly. The integrated fluid recovery reservoir and thermostat assembly includes a coolant reservoir housing **26** which is mounted directly to the engine **14** and which includes inlet ports **28**, **30** for receiving coolant **38** from engine **14** and an outlet flow portion or module **46** which is fluidly coupled to the radiator **18**. The assembly **10** further includes a flow control module and thermostat assembly **42** which is attached to the reservoir housing **26** and which selectively and fluidly communicates with the reservoir housing **26**, with the coolant pump **20** and with the radiator **18**. A thermostat valve **72** is attached to and/or within assembly **42** and cooperates with assembly **42** to selectively control the flow of the coolant **38** through the engine cooling system **10**. The thermostat **72** is integrated within a fill cap **54**, which allows the system **10** to be easily filled with coolant and allows the thermostat **72** to be easily serviced or replaced.

[0008] However, none of the above mentioned prior art documents disclose any provision for profiling the flow-paths of the thermostat housing for modifying flow-path line of the coolant for facilitating sufficient contact between the coolant

and the thermostat. Further, none of the above mentioned prior art documents disclose any provision for achieving coolant flow restriction for facilitating sufficient contact between the coolant and the thermostat.

[0009] Accordingly, there is a need for thermostat housing for use in a cooling arrangement that facilitate sufficient contact between the coolant and the thermostat by enhancing coolant flow over the thermostat, thereby improving accuracy of the thermostat in sensing coolant temperature and resulting in efficient operation of the engine cooling system. Still further, there is a need for thermostat housing for an engine cooling arrangement that improves coolant flow path around the thermostat, thereby enhancing accuracy of the thermostat and resulting in accurate functioning of the engine cooling arrangement. Still further, there is a need for thermostat housing that provides better controllability of the engine coolant flow between the radiator and the engine and engine coolant temperature, thereby permitting engine operation even at higher coolant temperatures and resulting in less CO_2 emissions.

OBJECTS

[0010] Some of the objects of the present disclosure are described herein below:

[0011] It is an object of the present disclosure to ameliorate one or more problems of the prior art or to at least provide a useful alternative.

[0012] An object of the present disclosure is to provide thermostat housing for use in a cooling arrangement that facilitate sufficient contact between the coolant and the thermostat by enhancing coolant flow over the thermostat, thereby improving accuracy of the thermostat in detecting coolant temperature.

[0013] Another object of the present disclosure is to provide thermostat housing for use in a cooling arrangement that facilitates sufficient contact between the coolant and the thermostat, thereby resulting in efficient operation of the engine cooling system.

[0014] Still another object of the present disclosure is to provide thermostat housing that improves coolant flow path around the thermostat, thereby enhancing the accuracy of the thermostat which shall help to avoid the overheating of engine components, thereby leading to improved reliability.

[0015] Yet another object of the present disclosure is to provide thermostat housing that provides better controllability of the engine coolant flow and engine coolant temperature, thereby permitting engine operation even at higher coolant temperatures and resulting in less CO_2 emissions.

SUMMARY

[0016] A sensor housing is disclosed in accordance with an embodiment of the present disclosure. The sensor housing includes a body, at least one receiver, at least one fluid flow director member, at least one fluid retainer member. The body defines an enclosure that receives fluid. The at least one receiver is configured on the body and receives and holds at least one sensor that determines at least one pre-determined property associated with fluid directed thereto as the fluid comes in contact with the at least one sensor. The at least one fluid flow director member is configured on at least one internal wall of the enclosure and defines flow path of the fluid through the enclosure so as to direct the fluid to the at least one sensor and facilitate sufficient contact between fluid and the at least one sensor to ensure precise sensing of the at least one pre-determined property associated with the fluid by the at least one sensor.

[0017] In accordance with another embodiment of the present disclosure a housing for a thermostat of a cooling arrangement for an engine of a vehicle is disclosed. The housing includes a body, a receiver cavity, at least one fluid flow director member and at least one fluid retainer member. The body defines an enclosure that receives coolant fluid of the cooling arrangement after the coolant fluid has extracted heat from the engine. The enclosure is in fluid communication with a pump that pumps the coolant fluid to a sink of the cooling arrangement for dissipating heat extracted by the coolant fluid from the engine. The receiver cavity is configured on the body and receives and holds the thermostat that determines temperature of coolant fluid directed thereto as the coolant fluid comes in contact with the thermostat. The at least one fluid flow director member is configured on at least one internal wall of the enclosure and defines flow path of the coolant fluid through the enclosure so as to direct coolant fluid to the thermostat and facilitate sufficient contact between coolant fluid and the thermostat to ensure precise sensing of temperature of coolant fluid by the thermostat. The at least one fluid retainer member is configured on the body and is disposed around the thermostat and prevents the coolant fluid from directly reaching suction of the pump by bypassing of the thermostat, thereby retaining the coolant fluid in contact with the thermostat for a pre-determined time to ensure precise sensing of temperature of coolant fluid by the thermostat. Typically, the at least one sensor is selected from a group consisting of pH sensor, concentration sensor and temperature sensor.

[0018] Specifically, the at least one fluid flow director member is a profiled by-pass gallery configured on the at least one internal wall of the enclosure.

[0019] Alternatively, the at least one fluid flow director member is a flap configured on the at least one internal wall of the enclosure.

[0020] Typically, the at least one fluid retainer member is a flow balancer rib that is configured on a valve rest face of thermostat and is disposed around the thermostat.

[0021] Generally, the flow balancer rib balances coolant flow to the pump and the thermostat.

BRIEF DESCRIPTION

[0022] The objects and features of the present disclosure will be more clearly understood from the following description of the disclosure taken in conjunction with the accompanying drawings, in which,

[0023] FIG. **1** illustrates a schematic representation of conventional thermostat housing without any provision for ensuring sufficient contact between the coolant and the thermostat, particularly, conventional thermostat housing without any profiling and flow balancer ribs in accordance with the prior art;

[0024] FIG. **2** illustrates a schematic representation of thermostat housing with provision for ensuring sufficient contact between the coolant and the thermostat, particularly, thermostat housing with profiled coolant by-pass gallery and flow balancer ribs in accordance with an embodiment of the present disclosure;

[0025] FIG. **3** illustrates a schematic representation of simulation of flow path lines depicting coolant flow through the thermostat housing of FIG. **2**;

[0026] FIG. **4** illustrates a 3-D representation of the profiled coolant by-pass gallery configured on the thermostat housing for enhancing contact between the coolant and the thermostat;

[0027] FIG. **5***a* illustrates a 3-D representation of a flow balancer rib configured on the thermostat housing for enhancing contact between the coolant and the thermostat; and

[0028] FIG. **5***b* illustrates another view of the flow balancer rib of FIG. **5***a*.

DETAILED DESCRIPTION

[0029] The disclosure will now be described with reference to the accompanying drawings which do not limit the scope and ambit of the disclosure. The description provided is purely by way of example and illustration.

[0030] The embodiments herein and the various features and advantageous details thereof are explained with reference to the non-limiting embodiments in the following description. Descriptions of well-known components and processing techniques are omitted so as to not unnecessarily obscure the embodiments herein. The examples used herein are intended merely to facilitate an understanding of ways in which the embodiments herein may be practiced and to further enable those of skill in the art to practice the embodiments herein. Accordingly, the examples should not be construed as limiting the scope of the embodiments herein.

[0031] The foregoing description of the specific embodiments will so fully reveal the general nature of the embodiments herein that others can, by applying current knowledge, readily modify and/or adapt for various applications such specific embodiments without departing from the generic concept, and, therefore, such adaptations and modifications should and are intended to be comprehended within the meaning and range of equivalents of the disclosed embodiments. It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation. Therefore, while the embodiments herein have been described in terms of preferred embodiments, those skilled in the art will recognize that the embodiments herein can be practiced with modification within the spirit and scope of the embodiments as described herein.

[0032] The present disclosure envisages thermostat housing for a thermostat used for detecting temperature of engine coolant used in an engine cooling arrangement. More specifically, the thermostat housing enhances contact between the coolant and the thermostat by enhancing bypass coolant flow over the thermostat, thereby improving accuracy of the thermostat in detecting coolant temperature for efficient operation of the engine cooling system. The thermostat housing also provides better controllability of the engine coolant flow and engine coolant temperature, thereby permitting engine operation even at higher coolant temperatures and resulting in less CO_2 emissions.

[0033] FIG. **1** illustrates a schematic representation of conventional thermostat housing **10** without any provision for enhancing contact between the coolant and the thermostat, particularly, conventional thermostat housing **10** without any profiling and flow balancer ribs for improving coolant flow over the thermostat. In absence of proper provisions for enhancing contact between the coolant and the thermostat, the thermostat fails to accurately detect the temperature of the engine coolant and as such the flow of coolant between the radiator and the engine is not controlled accurately. Accordingly the engine cooling system fails to achieve efficient cooling of the engine and the engine requires frequent maintenance. Further inefficient cooling of the engine may ultimately cause failure of the engine and the service life of the engine is drastically reduced. Accordingly for efficient operation of the engine cooling system it is necessary that the thermostat accurately detects the temperature of the engine coolant and the flow of coolant between the radiator and the engine is controlled. For achieving accurate detection of the temperature of the engine coolant by the thermostat it is necessary that there is sufficient contact between the coolant and the thermostat that can be attained by providing provisions for efficient flow of coolant over the thermostat in the thermostat housing. Further, with such configuration of conventional thermostat housing **10**, the thermostats are disposed near the radiator and isolated from the engine. Still further, with such configuration of conventional thermostat housing **10**, there is delay in thermostat opening and complete blockage of coolant flow from the radiator, thereby resulting in engine seizure due to overheating.

[0034] A sensor housing is disclosed in accordance with an embodiment of the present disclosure. The sensor housing includes a body, at least one receiver, at least one fluid flow director member, at least one fluid retainer member. The body defines an enclosure that receives fluid. The at least one receiver is configured on the body and receives and holds at least one sensor that determines at least one pre-determined property associated with fluid directed thereto as the fluid comes in contact with the at least one sensor. The at least one fluid flow director member is configured on at least one internal wall of the enclosure and defines flow path of the fluid through the enclosure so as to direct the fluid to the at least one sensor and facilitate sufficient contact between fluid and the at least one sensor to ensure precise sensing of the at least one pre-determined property associated with the fluid by the at least one sensor.

[0035] FIG. **2** illustrates a schematic representation of a thermostat housing **20** with provision for enhancing contact between the coolant and the thermostat, particularly, the thermostat housing **20** is provided with at least one fluid flow director member, particularly, at least one profiled coolant by-pass gallery **12** and at least one fluid retainer member, particularly at least one flow balancer ribs **14** configured in the thermostat housing **20** for enhancing coolant flow over the thermostat, improving accuracy of the thermostat in detecting coolant temperature for achieving efficient operation of the engine cooling system. In accordance with an embodiment of the present disclosure the thermostat housing **20** for a thermostat of a cooling arrangement for an engine of a vehicle is disclosed. The thermostat housing **20** includes a body "B", a receiver cavity "C", the at least one fluid flow director member, particularly, the at least one profiled coolant by-pass gallery **12** and at least one fluid retainer member, particularly, at least one flow balancer ribs **14**. The body "B" defines an enclosure that receives coolant fluid of the cooling arrangement after the coolant fluid has extracted heat from the engine (not illustrated). The enclosure is in fluid communication with a pump (not illustrated) that pumps the coolant fluid to a sink, particularly, a radiator (not illustrated) of the cooling arrangement for dissipating heat extracted by the coolant fluid from the engine. The receiver cavity "C" is configured on the body and receives and holds the thermostat "T" that determines temperature of coolant fluid directed thereto as the coolant fluid comes in contact with the thermostat "T". The at least one fluid flow director member, particularly, the at

least one profiled coolant by-pass gallery **12** is configured on at least one internal wall of the enclosure and defines flow path of the coolant fluid through the enclosure so as to direct coolant fluid to the thermostat "T" and facilitates sufficient contact between coolant fluid and the thermostat "T" to ensure precise sensing of temperature of coolant fluid by the thermostat "T". The at least one fluid retainer member, particularly, at least one flow balancer ribs **14** is configured on the body "B" and is disposed around the thermostat "T" and prevents the coolant fluid from directly reaching suction of the pump by bypassing of the thermostat "T", thereby retaining the coolant fluid in contact with the thermostat "T" for a pre-determined time to ensure precise sensing of temperature of coolant fluid by the thermostat "T".

[0036] Particularly, the coolant by-pass gallery **12** modifies the flow path of the coolant flowing through the thermostat housing **20** for better contact of the coolant with the thermostat and better cooling of the thermostat. FIG. **3** illustrates a schematic representation of simulation of flow path lines **16** depicting coolant flow through the thermostat housing **20**. FIG. **4** illustrates a 3-D representation of the profiled coolant by-pass gallery **12** configured on the thermostat housing **20** for enhancing contact between the coolant and the thermostat, wherein the profiling **12***a* configured on the housing improves the flow of the coolant over the thermostat. Further, referring to FIG. **4**, the coolant by-pass flow from the engine block is along direction "A" illustrated in FIG. **2** and FIG. **4**. Referring to FIG. **4**, due to the configuration of the rib **14**, the rib **14** acts as an obstruction and the coolant flow path is directed back to the thermostat "T" and the coolant is maintained in contact with the thermostat "T" for a longer period of time, thereby ensuring precise sensing of temperature of coolant fluid by the thermostat "T". With such a configuration of the coolant by-pass gallery **12** configured on the thermostat housing **20**, the mass flow fraction of the coolant passing over the thermostat is increased, thereby improving accuracy of the thermostat.

[0037] Further, the thermostat housing **20** also includes at least one flow balancer ribs **14** configured in the thermostat housing **20** for enhancing coolant flow over the thermostat, thereby further improving the accuracy of the thermostat in detecting coolant temperature for achieving efficient operation of the engine cooling system. FIG. **5***a* illustrates a 3-D representation of a flow balancer rib **14** configured on the thermostat housing **20** for ensuring sufficient contact between the coolant and the thermostat. FIG. **5***b* illustrates another view of the flow balancer rib **14**. As illustrated in Figures, the flow balancer rib **14** is configured on the valve rest face of the thermostat and restricts the coolant flow passing directly to the suction of the coolant pump, accordingly, fraction of coolant flow passing to the coolant pump and the thermostat is balanced, thereby ensuring higher coolant flow over the thermostat and better controllability of the engine coolant flow and the engine coolant temperature.

TECHNICAL ADVANCEMENTS

[0038] The thermostat housing in accordance with the present disclosure has several technical advantages including but not limited to the realization of

[0039] thermostat housing for use in a cooling arrangement that facilitate sufficient contact between the coolant and the thermostat by enhancing coolant flow over the thermostat, thereby improving accuracy of the thermostat in detecting coolant temperature;

[0040] thermostat housing for use in a cooling arrangement that facilitates sufficient contact between the coolant and the thermostat, thereby resulting in efficient operation of the engine cooling system;

[0041] thermostat housing that improves coolant flow path around the thermostat, thereby enhancing the accuracy of the thermostat that results into improved reliability of engine components; and

[0042] thermostat housing that provides better controllability of the engine coolant flow and the engine coolant temperature, thereby permitting engine operation even at higher coolant temperatures and resulting in less CO_2 emissions.

[0043] Throughout this specification the word "comprise", or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated element, integer or step, or group of elements, integers or steps, but not the exclusion of any other element, integer or step, or group of elements, integers or steps.

[0044] The use of the expression "at least" or "at least one" suggests the use of one or more elements or ingredients or quantities, as the use may be in the embodiment of the disclosure to achieve one or more of the desired objects or results.

[0045] Any discussion of documents, acts, materials, devices, articles or the like that has been included in this specification is solely for the purpose of providing a context for the disclosure. It is not to be taken as an admission that any or all of these matters form a part of the prior art base or were common general knowledge in the field relevant to the disclosure as it existed anywhere before the priority date of this application.

[0046] The numerical values mentioned for the various physical parameters, dimensions or quantities are only approximations and it is envisaged that the values higher/lower than the numerical values assigned to the parameters, dimensions or quantities fall within the scope of the disclosure, unless there is a statement in the specification specific to the contrary.

[0047] While considerable emphasis has been placed herein on the components and component parts of the preferred embodiments, it will be appreciated that many embodiments can be made and that many changes can be made in the preferred embodiments without departing from the principles of the disclosure. These and other changes in the preferred embodiment as well as other embodiments of the disclosure will be apparent to those skilled in the art from the disclosure herein, whereby it is to be distinctly understood that the foregoing descriptive matter is to be interpreted merely as illustrative of the disclosure and not as a limitation.

1. A sensor housing comprising:

a body defining an enclosure adapted to receive fluid;

at least one receiver configured on said body and adapted to receive and hold at least one sensor that is adapted to determine at least one pre-determined property associated with fluid directed thereto as said fluid comes in contact with said at least one sensor;

at least one fluid flow director member configured on at least one internal wall of said enclosure and adapted to define flow path of said fluid through said enclosure so as to direct said fluid to said at least one sensor and facilitate sufficient contact between fluid and said at least one sensor to ensure precise sensing of said at

least one pre-determined property associated with said fluid by said at least one sensor; and

at least one fluid retainer member configured on said body and disposed around said at least one sensor and adapted to prevent bypassing of said at least one sensor by the fluid and retain said fluid in contact with said at least one sensor for a pre-determined time to ensure precise sensing of said at least one pre-determined property associated with the fluid by said at least one sensor.

2. (canceled)

3. The sensor housing as claimed in claim **1**, wherein said at least one sensor is selected from a group consisting of pH sensor, concentration sensor and temperature sensor.

4. The sensor housing as claimed in claim **1**, wherein said at least one fluid flow director member is a profiled by-pass gallery configured on said at least one internal wall of said enclosure.

5. The sensor housing as claimed in claim **1**, wherein said at least one fluid flow director member is a flap disposed on said at least one internal wall of said enclosure.

6. (canceled)

7. (canceled)

8. A housing for a thermostat of a cooling arrangement for an engine of a vehicle, said housing comprising:

a body defining an enclosure adapted to receive coolant fluid of the cooling arrangement after said coolant fluid has extracted heat from the engine, said enclosure is in fluid communication with a pump that pumps said coolant fluid to a sink of the cooling arrangement for dissipating heat extracted by said coolant fluid from the engine;

a receiver cavity configured on said body and adapted to receive and hold the thermostat that is adapted to determine temperature of coolant fluid directed thereto as said coolant fluid comes in contact with the thermostat;

at least one fluid flow director member configured on at least one internal wall of said enclosure and adapted to define flow path of said coolant fluid through said enclosure so as to direct coolant fluid to said thermostat and facilitate sufficient contact between said coolant fluid and said thermostat to ensure precise sensing of temperature of coolant fluid by the thermostat; and

at least one fluid retainer member configured on said body and disposed around said thermostat and adapted to prevent said coolant fluid from directly reaching suction of said pump by bypassing of said thermostat, thereby retaining said coolant fluid in contact with said thermostat for a pre-determined time to ensure precise sensing of temperature of coolant fluid by said thermostat.

9. The sensor housing as claimed in claim **8**, wherein said at least one fluid retainer member is a flow balancer rib that is configured on a valve rest face of thermostat and disposed around said thermostat.

10. The sensor housing as claimed in claim **9**, wherein said flow balancer rib is adapted to balance coolant flow to said pump and said thermostat.

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