WHAT IS CLAIMED IS:

1. A motor system, comprising:

a motor (2) including: a motor housing (22), a stator core (23), a stator winding (24), and a rotor core (26), the stator core (23) being mounted in the motor housing (22), the stator winding (24) being wound around the stator core (23), the rotor core (26) being rotatably arranged relative to the stator core (23), and a rotor flow path being formed at least in the rotor core (26) and configured to transport a coolant to the stator winding (24); and

a valve (6) configured to control a flow of the rotor flow path,

wherein the motor (2) further comprises a magnetic shield (25) and a rotary shaft (27), the magnetic shield (25) being mounted on the rotary shaft (27), a rotary shaft flow channel (2701) inside the rotary shaft (27) being in fluid communication with fluid outside the motor (2), a rotary shaft liquid hole (2702) in communication with the rotary shaft flow channel (2701) being further provided on the rotary shaft (27), the magnetic shield (25) having a magnetic shield flow channel configured to guide the coolant at the rotary shaft liquid hole (2702) to the stator winding (24).

2. The motor system according to claim 1, wherein the valve (6) is provided on the motor (2) and the valve (6) is provided on the rotor flow path.

3. The motor system according to claim 1 or 2, further comprising a transmission (5) provided at one end of the motor (2), wherein the transmission (5) has a first branch flow channel (5203) disposed therein, the valve (6) being provided on the first branch flow channel (5203), a valve liquid inlet hole (601) of the valve (6) being in communication with the first branch flow channel (5203), a valve liquid outlet hole (602) of the valve (6) being in communication with the rotor flow

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path, and the valve liquid outlet hole (602) being selectively in communication with the valve liquid inlet hole (601).

4. The motor system according to claim 3, wherein the transmission (5) comprises: a transmission case, a transmission main shaft (53), and a transmission bearing (54), an inner ring of the transmission bearing (54) being mounted on the transmission main shaft (53), an outer ring of the transmission bearing (54) being mounted in the transmission case, and a second branch flow channel (5202) in communication with the transmission bearing (54) being provided in the transmission.

5. The motor system according to claim 4, wherein the second branch flow channel (5202) is located at upstream of the first branch flow channel (5203).

6. The motor system according to claim 1, wherein the magnetic shield flow channel comprises a magnetic shield first flow channel (2501) and a magnetic shield second flow channel (2502), the magnetic shield first flow channel (2501) being adapted to be in communication with the rotary shaft flow channel (2701), the rotor core (26) having a rotor flow channel (2601) disposed therein , the rotor flow channel (2601) being in communication with the magnetic shield first flow channel (2501), an opening at one end of the magnetic shield second flow channel (2502) being in communication with the rotor flow channel (2601) and an opening at the other end of the magnetic shield second flow channel (2502) facing the stator winding (24), the rotor flow path at least comprising: the rotary shaft flow channel (2701), the magnetic shield first flow channel (2501), the rotor flow channel (2601), and the magnetic shield second flow channel (2502).

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7. The motor system according to any one of claims 1 to 6, wherein:
when the motor (2) operates in a low load or a low rotational speed, the valve (6) is closed; and when the motor (2) operates at a high load or a high rotational speed, the valve (6) is intermittently opened.

8. The motor system according to any one of claims 1 to 7, wherein a stator flow path is provided in the motor (2) and is configured to transport the coolant to the stator winding (24).

9. The motor system according to claim 8, wherein an inner surface of the motor housing (22) is recessed and forms a housing flow channel (2208) together with the stator core (23).

10. The motor system according to claim 9, wherein the inner surface of the motor housing (22) is provided with a liquid spraying hole (2209) in communication with the housing flow channel (2208), the coolant in the housing flow channel (2208) being transported to the stator winding (24) via the liquid spraying hole (2209), and the stator flow path at least comprising the housing flow channel (2208) and the liquid spraying hole (2209).

11. The motor system according to claim 10, wherein the motor (2) further comprises a motor end cap (21) provided at one end of the motor housing (22),
wherein the motor system further comprises a transmission (5) provided at the end of the motor (2) facing away from the motor end cap (21), and
wherein a first end flow channel (2214) is formed between the motor housing (22) and the motor

end cap (21), and a second end flow channel (2215) is formed between the motor housing (22) and the transmission (5), the first end flow channel (2214) and the second end flow channel (2215) being both in communication with the housing flow channel (2208) and also both in communication with the liquid spraying hole (2209), and the stator flow path further comprising the first end flow channel (2214) and the second end flow channel (2215).

12. The motor system according to any one of claims 8 to 10, wherein the motor (2) further comprises a motor end cap (21) provided at one end of the motor housing (22), the motor end cap (21) being provided with a patch panel (29), the patch panel being provided with a terminal (29), the patch panel (29) having a patch panel liquid inlet hole (2901), a patch panel liquid outlet hole (2902), and a patch panel flow channel communicating the patch panel liquid inlet hole (2901) with the patch panel liquid outlet hole (2902), and the patch panel liquid inlet hole (2901) being in communication with the stator flow path, to cool the terminal.

13. The motor system according to any one of claims 8 to 12, further comprising a heat exchange device (3) in communication with the stator flow path and the rotor flow path for heat exchange with the coolant in the stator flow path and the rotor flow path.

14. The motor system according to claim 13, wherein the motor housing (22) is provided with a motor liquid inlet hole (2204), a heat exchange liquid inlet hole (2205), and a heat exchange liquid outlet hole (2206), the heat exchange liquid inlet hole (2205) and the heat exchange liquid outlet hole (2206) being both in communication with the heat exchange device (3),

wherein the motor system further comprises a liquid pump (4) configured to pump the coolant

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from the motor liquid inlet hole (2204) to the heat exchange liquid inlet hole (2205), the coolant undergoing heat exchange in the heat exchange device (3) before arriving at the heat exchange liquid outlet hole (2206);

wherein the motor housing (22) has a first liquid outlet hole (2213) in communication with the heat exchange liquid outlet hole (2206) and a second liquid outlet hole (2207) in communication with the heat exchange liquid outlet hole (2206), the first liquid outlet hole (2213) being in communication with the stator flow path, and the second liquid outlet hole (2207) being in communication with the rotor flow path.

15. The motor system according to claim 13 or 14, wherein the motor housing (22) is provided with a motor water inlet (2201), a motor water outlet (2211), a heat exchange water inlet (2202), and a heat exchange water outlet (2203), the motor water inlet (2201) being adapted to be in communication with the heat exchange water inlet (2202), the motor water outlet (2211) being adapted to be in communication with the heat exchange water outlet (2203), the heat exchange device (3) having a heat exchange water channel disposed therein and being in communication with the heat exchange water inlet (2202) and the heat exchange water outlet (2203), the motor water inlet (2201) and the motor water outlet (2211) being further in communication with an external cooling circuit.

16. A vehicle, comprising the motor system according to any one of claims 1 to 15.

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