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(54) Title: VEHICLE THERMAL MANAGEMENT SYSTEM AND ELECTRIC VEHICLE

(54) 发明名称: 车辆热管理系统及电动汽车

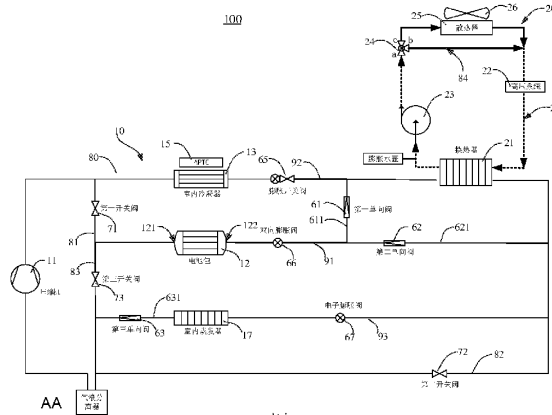


图 1

- 11 Compressor
12 Battery pack
13 Indoor condenser
17 Indoor evaporator
21 Heat exchanger
22 High-pressure system
25 Radiator
61 First one-way valve
62 Second one-way valve
63 Third one-way valve
65 Expansion switch valve
66 Two-way expansion valve
67 Electronic expansion valve
71 First switch valve
72 Second switch valve
73 Third switch valve
AA Gas-liquid separator

(57) Abstract: A vehicle thermal management system and an electric vehicle. The vehicle thermal management system comprises a first thermal management system (10), and a second thermal management system (20) which is used for a high-pressure system. The second thermal management system (20) comprises a radiator (25), a heat exchanger (21) and a waste heat utilization branch (27), wherein the waste heat utilization branch (27) is provided with a water pump (23) which is in communication with the waste heat utilization branch and a high-pressure system cooling branch (22) which flows through the high-pressure system; a cooling liquid outlet of the heat exchanger (21) is in communication with an inlet of the waste heat utilization branch (27); and an outlet of the waste heat utilization branch (27) is selectively and directly in communication with a cooling liquid inlet of the heat exchanger (21) or in communication with the cooling liquid inlet of the heat exchanger (21) by means of the radiator (25). The first thermal management system (10) comprises a compressor (11) and a battery pack (12) which is provided with a direct cooling device, with an outlet of the compressor (11) being in communication with a first port (121) of the direct cooling device of the battery pack (12), a second port (122) of the direct cooling

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GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW。

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device of the battery pack (12) being in communication with a refrigerant inlet of the heat exchanger (21) by means of a first throttling branch (91), and a refrigerant outlet of the heat exchanger (21) being in communication with an inlet of the compressor (11). The system simplifies the pipeline arrangement for cooling and heating the battery pack.

(57) 摘要: 一种车辆热管理系统及电动汽车, 车辆热管理系统包括第一热管理系统(10)以及用于高压系统的第二热管理系统(20), 第二热管理系统(20)包括散热器(25)、换热器(21)和余热利用支路(27), 余热利用支路(27)上设置有相互连通的水泵(23)和流经高压系统的高压系统冷却支路(22), 换热器(21)的冷却液出口与余热利用支路(27)的进口连通, 余热利用支路(27)的出口可选择地直接与换热器(21)的冷却液进口连通或经由散热器(25)与换热器(21)的冷却液进口连通; 第一热管理系统(10)包括压缩机(11)和设置有直冷装置的电池包(12), 压缩机(11)的出口与电池包(12)的直冷装置的第一口(121)连通, 电池包(12)的直冷装置的第二口(122)经由第一节流支路(91)与换热器(21)的制冷剂进口连通, 换热器(21)的制冷剂出口与压缩机(11)的进口连通。该系统简化了对电池包冷却和加热的管路布置。