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(54) **SMART RACK LIQUID COOLING MANIFOLD SYSTEM HAVING INTEGRATED CONTROLLER(S) PROVIDING SERVER-LEVEL LIQUID TELEMETRY MONITORING, RACK LIQUID FLOW CONTROL, AND DATACENTER COMMUNICATON**

(71) Applicant: **STRATEGIC THERMAL LABS, LLC**

(72) Inventor: **AUSTIN SHELNUTT**, GEORGETOWN, TX (US)

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(57) **ABSTRACT**

A rack liquid cooling manifold (RLCM) system includes a supply manifold to receive a cooling liquid for cooling heat-generating electronic components via a cold plate and a return manifold to exhaust the cooling liquid from the cold plate. The RLCM system includes a manifold control unit (MCU) integrated into the supply manifold or the return manifold that is communicatively coupled to a supply control valve and a datacenter control system. The MCU includes a memory with rack temperature and liquid control (RTLC) code and a processor that processes the RTLC code to cause the MCU to: receive node-level liquid telemetry data originating from one or more liquid telemetry sensors integrated at a respective node; trigger actuation of the supply control valve to control a rate of cooling liquid flow into the supply manifold, partly based on the liquid telemetry data; and communicate rack level information with the datacenter control system.