

{Abstract}

It is intended to reduce generation of water mist in cooling of compressed air. A multi-stage supercharging system (1) includes a first supercharger (2) of a low-pressure side, an intercooler (3) that cools air discharged from the first supercharger (2), a second supercharger (4) of a high-pressure side that compresses the discharged air after cooling, and a control device (5). The control device (5) includes an information acquisition section that acquires, as input information, the sucked air temperature, the sucked air humidity, the sucked air pressure, and the discharge pressure of the first supercharger (2), a water vapor partial pressure calculation section that calculates the water vapor partial pressure of the discharged air of the first supercharger (2) by using the sucked air temperature, the sucked air humidity, the sucked air pressure, and the discharge pressure of the first supercharger (2) as parameters, a target temperature setting section that sets, as a target temperature, a temperature at which the water vapor partial pressure calculated by the water vapor partial pressure calculation section reaches a saturated water vapor pressure, and a valve opening degree control section that controls the intercooler (3) such that the sucked air temperature of the second supercharger (4) reaches equal to or higher than the target temperature.