

ABSTRACT

A hydrogen fuel supply system according to one aspect of the present disclosure includes: a liquefied hydrogen tank that stores liquefied hydrogen; a supply line that connects the liquefied hydrogen tank and a hydrogen fueled engine and supplies hydrogen gas to the hydrogen fueled engine; a pressurizing pump that is located in the supply line and pressurizes the liquefied hydrogen to critical pressure or higher; a return line that connects the liquefied hydrogen tank and a portion of the supply line which is located downstream of the pressurizing pump; a pressure-reducing temperature-increasing valve that is located in the return line and increases a temperature of the high-pressure hydrogen, which has been pressurized by the pressurizing pump, by depressurizing the high-pressure hydrogen to pressure close to an inversion temperature curve; a catalyst reactor that is located in the return line and brings the hydrogen, which has been increased in temperature by the pressure-reducing temperature-increasing valve, into contact with a para-ortho conversion catalyst; and a pressure-reducing liquefaction valve that is located in the return line and converts the hydrogen, which has passed through the catalyst reactor, into the liquefied hydrogen by depressurizing the hydrogen.