

Abstract

Provided is a methanation device for removing a saturated hydrocarbon from a raw material gas containing methane and a saturated hydrocarbon through methanation, in which a saturated hydrocarbon having at least two carbon atoms reacts with hydrogen and the saturated hydrocarbon is converted into methane. The methanation device comprises: at least two catalyst layers composed of a catalyst for methanation, the catalyst layers being provided at intervals in the flow direction of a mixed gas containing a raw material gas and a hydrogen-containing gas; a hydrogen supply line for supplying a hydrogen-containing gas to an upstream side of the catalyst layer on the most upstream side in the flow direction of the mixed gas; a raw material gas supply line for supplying the raw material gas to each space between two catalyst layers adjacent to each other in the flow direction of the mixed gas and the upstream side of the catalyst layer on the most upstream side in the flow direction of the mixed gas; and a cooler provided between two catalyst layers adjacent to each other in the flow direction of the mixed gas and cooling the mixed gas discharged from the catalyst layer on the upstream side among the two catalyst layers adjacent to each other.