CLAIMS

[Claim 1] An ammonia decomposition system, comprising:

a reactor filled with a catalyst for a decomposition reaction where ammonia which is a raw material is decomposed into hydrogen and nitrogen; and

a diluent gas supply line for supplying a diluent gas having a lower ammonia concentration than the raw material, such that the diluent gas is mixed with the raw material before the raw material flows into the catalyst,

wherein the reactor includes a catalyst containing part for containing the catalyst,

wherein the reactor is internally divided into a first chamber, a second chamber located downstream of the first chamber in a flow direction of the raw material, and a third chamber between the first chamber and the second chamber,

wherein the catalyst containing part is disposed so as to communicate with each of the first chamber and the second chamber and to extend in the third chamber, and

wherein the third chamber is configured to allow a heating medium to flow therethrough.

[Claim 2] The ammonia decomposition system according to claim 1,

wherein the diluent gas is part of an outflow gas having flowed out from the reactor.

[Claim 3] The ammonia decomposition system according to claim 1 or 2, comprising:

a raw material supply line for supplying the raw material to the reactor,

wherein the raw material supply line is connected to a downstream end of the diluent gas supply line.

[Claim 4] The ammonia decomposition system according to according to claim 1 or 2, wherein the diluent gas supply line has a downstream end connected to the reactor.

[Claim 5] The ammonia decomposition system according to claim 4, comprising:

a raw material supply line for supplying the raw material to the reactor,

wherein the reactor has an inner surface at least partially covered with a refractory material such that a connection portion of the reactor with the raw material supply line is surrounded.

[Claim 6] The ammonia decomposition system according to claim 1 or 2 , comprising:

a gas mixer communicating with the reactor,

wherein the gas mixer is connected to each of the raw material supply line and the diluent gas supply line, and is configured to mix the raw material having flowed into the gas mixer via the raw material supply line and the diluent gas having flowed into the gas mixer via the diluent gas supply line.