

[Document title] ABSTRACT

**HYDROGEN GENERATION SYSTEM, POWER GENERATION SYSTEM,
HYDROGEN GENERATION METHOD, AND POWER GENERATION METHOD**

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To provide a new magnesium-recycling hydrogen generation system that may require less energy to produce a raw material for producing a hydrogen generation material while suppressing the reduction of hydrogen production, a
10 magnesium-recycling hydrogen generation system of the present invention includes: a by-product acquisition unit that separates a by-product from a post-reaction solution, which is a solution after reacting with a hydrogen generation material containing a hydrogen-containing magnesium compound
15 that generates hydrogen via a reaction with the solution, to acquire the by-product including more than one type of oxygen-containing magnesium compound that contains oxygen produced by the reaction, a raw material production unit that reacts the by-product with a halogen-containing
20 substance containing halogen and other atoms than the halogen to produce a raw material containing magnesium halide, a hydrogen generation material production unit that reduces the raw material with plasma containing hydrogen to produce the hydrogen generation material, and a hydrogen generator
25 that reacts the hydrogen generation material with the solution to generate hydrogen.

[Figure 1]