

[Document Name] ABSTRACT

[Title of invention] **AIR SEPARATION SYSTEM**

[Summary]

To provide an air separation system with which the extraction rate of high-purity product argon that can be withdrawn from an argon distillation column can be improved, even if production quantities such as the quantity of withdrawn product oxygen or the quantity of withdrawn product nitrogen change.

The air separation system is provided with a main heat exchanger 1, a high pressure column 2, a first condensing unit 3, a low pressure column 4, and a crude argon column 5. The air separation system is provided with: a process control unit 201 for controlling components constituting the air separation system; an oxygen concentration estimating unit 202 for estimating, by calculation, the oxygen concentration (EC_{O_2}) of oxygen-enriched liquid that accumulates in a column bottom portion 21 of the high pressure column 2; a flow rate estimating unit 203 for estimating, by calculation, the flow rate (EF_{O_2}) of oxygen-enriched liquid that has been discharged from the column bottom portion 21 of the high pressure column 2 and that is to be introduced into a distillation portion of the low pressure column 4; and a target temperature calculating unit 204 for calculating a target temperature (T_t) of an argon extraction portion 421 on the basis of the flow rate (F_{FA}) of feed air that has passed through at least a portion of the main heat exchanger 1 and that is to be sent to an expansion turbine 10, the oxygen concentration (EC_{O_2}) of the oxygen-enriched liquid, and the flow rate (EF_{O_2}) of the oxygen-enriched liquid.

[Selected figure] Figure 1