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ABSTRACT

The present invention is a thermal processing unit that includes: a tubular processing container; an object-to-be-processed holding unit that holds a plurality of objects to be processed in a tier-like manner and that can be inserted into and taken out from the processing container; a process-gas introducing unit that introduces a predetermined process gas into the processing container; a heating unit provided in the processing container, the heating unit heating the plurality of objects to be processed held by the object-to-be-processed holding unit when the object-to-be-processed holding unit is inserted into the processing container; and a container cooling unit that cools an outside wall surface of the processing container.