

Energy storage in air separation unit





Overview

Is liquid air energy storage and air separation unit the foundation of heavy industry?

As the foundation of heavy industry, the energy-intensive air separation industry is characterized by high operating costs. In response to these challenges, this paper proposes a coupled system of liquid air energy storage and air separation unit (LAES-ASU).

How a liquid air separation unit improves the exergy efficiency?

Using distillation potential of air separation unit to absorb the unliquefied air. Distillation potential of low-pressure column of air separation unit is improved. Liquid air is recycled into air separation unit, the irreversible loss is minimum. Roundtrip efficiency and liquid air storage's overall exergy efficiency are 67%.

How a large-scale liquid air is stored during energy storage?

During energy storage, large-scale liquid air was stored by using an ASU. For the energy release process, the liquid air was recycled into the ASU in gaseous form instead of cold storage devices, so as to reduce the irreversible loss and economic investment arising from the cold/heat storage equipment.

Can a cryogenic air separation unit store cold energy?

Wang et al. introduced a cryogenic distillation method air separation unit with liquid air energy storage, storing waste nitrogen to store cold energy with a payback period of only 3.25–6.72 years.



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1. Energy storage air separation is a technology that facilitates the separation of air components for storage purposes, primarily targeting carbon dioxide capture and oxygen ...

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