

When were turboexpanders invented?

Turboexpanders were introduced in the mid-1930s when the first machine was designed and installed for air separation. The first turboexpander for a natural gas application was designed and installed in the early 1960s. Today, more than 5,000 units are in operation globally. Cryogenic turboexpanders find use in many applications.

How does a turbo expander work?

Compressing and expanding cycles work by the turbo-expander to generate refrigeration from a fluid. Different designs contain single, dual, or multiple turbo-expander. For these large expanders, the mechanical power generated can be used to drive an electric generator or a compressor.

What is a turbo-expander process?

The turbo-expander process for treating gas streams for high liquid recovery was developed in the early 1960s. These plants replace the chiller or J-T valve with an expansion turbine and are capable of cooling the gas to $-160\text{ }^{\circ}\text{F}$ ($-107\text{ }^{\circ}\text{C}$). The main application of the turbo-expander is to improve the recovery of ethane from natural gas.

What is a turboexpander booster?

The Expansion-Turbine-Booster (ETB), is the heart of the Air Separation Unit: it is used as a refrigeration source to achieve the required low distillation temperatures for the separation of atmospheric air into its primary components. High-pressure gases are expanded through the turboexpander booster compressor for improved efficiency.

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Driving Expander Technology Atlas Copco Gas and Process is continuously working to improve and extend the capabilities and performance of radial in-flow turbines, or turboexpanders. As ...

This article contains excerpts from the paper, "Fifteen years of field experience in LNG expander technology", by Vinod Patel of KBR and Hans Kimmel of Ebara Corporation presented at ...

Explore how turbo expanders convert gas pressure into usable energy and deep refrigeration, a dual-output process essential in modern industry.

Turboexpander Basics | Design | Working Principle | Operation The turboexpander for this plant is a compound machine supported by accessory systems. It consists of a centrifugal ...

The first prototype of turbo expander on CO₂ trans-critical system was tested at Purdue University, USA in 1999. The model was simple, running at high speed and 50% efficiency was reported [32].

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A turboexpander, also referred to as a turbo-expander or an expansion turbine, is a centrifugal or axial-flow turbine, through which a high-pressure gas is expanded to produce work that ...

At Air Liquide Turbo, we deliver innovative turboexpander solutions tailored to meet customers' needs. Leveraging our extensive portfolio and deep industry expertise, we guide ...

Controlled by speed. A turbo-expander can achieve power balance at multiple speeds for a variety of process conditions. As such, there is no single speed value that can be easily chosen to ...

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