

## عنوان مقاله:

Sensitivity Analysis of Simple Expander– Nitrogen and Two Expander –Nitrogen Liquefaction Processes of Natural Gas

## محل انتشار:

مجله پردازش گاز، دوره 8، شماره 1 (سال: 1399)

تعداد صفحات اصل مقاله: 20

## نویسندگان:

Alireza Fazlali Serkani - *Department of Mechanical Engineering, West Tehran Branch, Islamic Azad University, Tehran, Iran*

Mostafa Mafi - *Department of Mechanical Engineering, Imam Khomeini International University, Qazvin, Iran*

## خلاصه مقاله:

The sharp seasonal fluctuations in gas consumption in the domestic sector and prioritizing this segment have led to serious gas supply problems in other subdivisions, such as power plants during cool seasons. One of the approaches presented in this field is storing liquefied natural gas in warm seasons and using it during the colder seasons to supply the power required for power plants. In this regard, processes were selected based on the capacity required for storing liquefaction units over a ۲۰۰-day period for a commonly combined cycle power plant with a power generating capacity of ۳۳۲ MW. In this study, the simple expanders – nitrogen and two expander – nitrogen liquefaction processes have been evaluated. Changes in environmental and operating conditions (such as changes in discharge, pressure, temperature, and composition percentage of natural feed gas components) are problems that peak shaving units will face permanently. As a result, low sensitivity to changing conditions is one of the important criteria in choosing the right process. In this study, the dimensionless sensitivity analysis method was used to study the behavior of liquefaction cycles. The results show that the simple expander – nitrogen process has a higher power consumption. The sensitivity to changing environmental and operating conditions for the two-expander process is ۷۰% lower than that of the simple expander – nitrogen process. Also, the uncertainty in power consumption overall values is ۲.۵۸% for the simple expander – nitrogen process and ۱.۱۴% for two expander – nitrogen process.

## کلمات کلیدی:

Simple Expander – Nitrogen Process, Two Expander – Nitrogen Process, Sensitive Analysis, Environmental and Operating Conditions

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1254533>

