

عنوان مقاله:

A review of hydrogen liquefaction, current situation and its future

محل انتشار:

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تعداد صفحات اصل مقاله: 15

نویسندگان:

Hamed Rezaie - *PhD Student at K. N. Toosi University of Technology*

Masoud Ziabasharhagh - *Associate Professor at K. N. Toosi University of Technology*

Mostafa Mafi - *Assistant Professor at Imam Khomeini International University*

خلاصه مقاله:

Hydrogen is rich source of energy and could be used in different industries but its applications in gas state because of low energy density are limited to distinguish cases. Moreover hydrogen is a clean energy that its combustion results in only water. There are many sources for hydrogen production in the world so hydrogen shows a promising aspect for having a clean future and could be in charge for responsibility of modern fuel source besides its wide application in industries. As a solution for problem of using hydrogen gas, liquefaction is introduced but hydrogen liquefaction impose high cost such that one third of its energy is used in this process. Existing liquefaction plants such as Luena and Inglostat have low exergy efficiency in the range of ۲۰%-۲۵% which is still the same as ۵۰ years ago with little improvement. Beside the high cost of liquefaction there are many challenges in liquefaction which should be conquered to have an efficient plant. Many methods for optimization and conceptual designs had been suggested for liquefaction of hydrogen which could increase the efficiency. Studies showed that hydrogen liquefaction could enhance ease of use and reduce cost of hydrogen if challenges of liquefaction could be conquered and efficiency is increased

کلمات کلیدی:

Hydrogen, Liquefaction, Claude Cycle, Ortho-Para Conversion

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