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Process for Upgrading of Natural Gas Liquids from Shale Gas without Front-End Demethanizer

A re-sequenced flow upgrades shale-gas NGLs before methane removal to boost ethane/propane recovery and cut separation costs.

A more efficient usage of petroleum and gas reserves is necessary for the deployment of future energy generation. One way to do this is through upgrading natural gas liquids from shale gas. Current processes send the shale gas to an expensive demethanizer unit to separate out the methane from natural gas liquids (NGLs) prior to further downstream processing of NGLs.

Researchers at Purdue University, however, have developed a more efficient process for upgrading natural gas liquids from shale gas through performing key processing steps prior to separating methane. This technology recovers ethane, propane, and other higher alkanes from shale gas efficiently through dehydrogenating the shale gas stream to olefin derivatives prior to the separation of methane-rich stream. Furthermore, results through multiple simulations with the dehydrogenation reactor placed prior to the methane separator show that this process increases NGLs conversion and reduces separation costs.

Advantages:

-Efficient

-Cost savings

-Increases conversion

Potential Applications:

-Upgrading Natural Gas Liquids

TRL: 3

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Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

Further information
Will Buchanan
wdbuchanan@prf.org

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NATL-Patent, N/A, United States

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