PURDUE INNOVATES | Office of Technology Commercialization

DIRECTLY ELECTRICALLY HEATED DEHYDROGNEATION PROCESS

Electrically heats the reactant stream directly to raise efficiency and shrink equipment for small or remote plants.

Steam cracking requires use of a furnace to generate high heats needed for dehydrogenation reactions. The primary limiting factor in furnace steam cracking is the efficiency of heat transfer between the fuel combustion process into the coils used to heat the reactor. Researchers at Purdue University have devised a dehydrogenation reactor to increase energy and cost efficiency in steam cracking. To increase efficiency, Purdue researchers have demonstrated use of a heat source that directly transfers heat to the gaseous reactant stream. This high heat transfer results in a simpler dehydrogenation process which is highly beneficial for small scale and remote locations

Advantages:

-Increased Efficiency of Heat Transfer

-Lowers Costs

-Beneficial for Small Scale or Remote Locations

Potential Applications:

-Steam Cracking

-Shale Gas Processing

-Alkene Production

Technology Validation: Aspen Plus simulations

TRL: 1

Intellectual Property:

Technology ID
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Category
Chemicals & Advanced Materials/Specialty & Performance Chemicals
Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

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Utility-Gov. Funding, 2021-06-21, United States

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