

Badger BenzOUT™ technology

Our benzene reduction technology can help you meet benzene regulations, increase octane and improve your refinery economics.

Badger BenzOUT™ technology for benzene reduction in gasoline

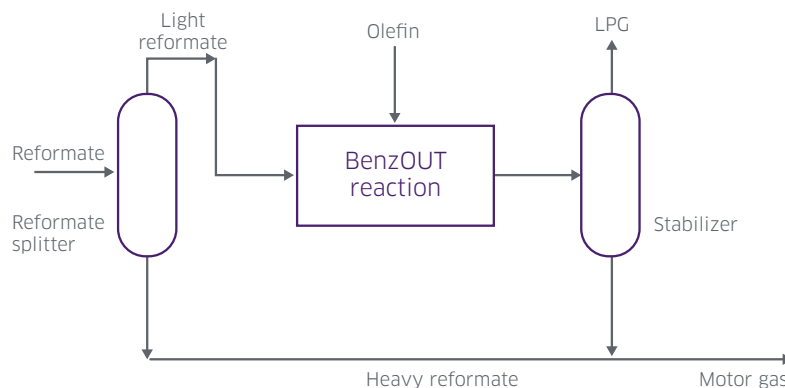
Unlike other benzene reduction solutions, Badger BenzOUT technology won't affect your hydrogen balance and will actually increase octane, not lose octane. With Badger BenzOUT technology you can convert 95%+ of the benzene in a reformat stream while producing a low RVP product.

Badger BenzOUT technology converts benzene typically in a light reformat stream to higher alkylaromatic components. The technology can use either Fluid Catalytic Cracker (FCC) propylene or ethylene streams, or a mixture of propylene and butenes as the co-feedstock. Badger BenzOUT technology can be installed as a grassroots unit or it can be retrofitted into an existing facility, such as a polygas or saturation unit.



Badger BenzOUT technology at Husky Energy's refinery in Superior, Wisconsin.

Badger BenzOUT™ process configuration



Badger BenzOUT™ technology benefits

- ▶ Octane increase
- ▶ No hydrogen consumption
- ▶ Gasoline volume swell
- ▶ Conversion of 95%+ of the benzene in a reformat stream
- ▶ Low temperature liquid phase process



Badger BenzOUT technology at Wyoming Refining Company's (a Par Pacific company) refinery in Newcastle, Wyoming

Badger BenzOUT™ technology economic benefits

Increase in octane

Using this technology results in 2-5 points of octane gain in a full reformat.

Maintain hydrogen balance

Badger BenzOUT technology requires no hydrogen allowing the reformer to operate at a desired rate and severity.

Increase gasoline volume

Upgrading of light olefins and benzene into high octane blendstock also results in a volume swell of the gasoline pool.

Meet benzene regulations

Badger BenzOUT technology zeolite catalyst is highly selective, enabling the process to run at very high benzene conversion.

Reliability and expertise

Badger BenzOUT technology was originally developed by ExxonMobil Research & Engineering Company and is now exclusively licensed through TechnipFMC Badger Process Technology. This technology leverages our long experience in ethylbenzene and cumene technologies widely applied in the petrochemical industry.

Our Catalyst Provider: ExxonMobil

ExxonMobil Catalysts and Licensing LLC's zeolite catalyst research and development capabilities are unsurpassed within the industry. They are the leader in the development of new zeolite catalytic materials supported by extensive R&D facilities. ExxonMobil's commercial catalyst production plant maintains high quality control standards.



TechnipFMC Badger Process Technology

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