



Heartland Science



Ohio's Legacy of Discovery & Innovation



Energy

From Amps to Air Conditioning

More Gasoline Per Barrel

William M. Burton was a chemist who developed the first commercially successful catalytic cracking technology for refining crude oil into gasoline. Burton was born in Cleveland and graduated from Western Reserve University with a B.A. in chemistry in 1886. His process doubled the potential yield of gasoline from crude oil and in the first 15 years of its application more than one billion barrels of oil were saved. The Burton Process was credited with averting a gasoline shortage during World War I. Burton started his research at Standard Oil Company in Cleveland as a chemist and eventually became president of Standard Oil of Indiana.



What is Cracking?

Petroleum refineries are huge factories that break crude oil down into its components. Some components are low density, like gasoline. Others are relatively heavy, such as the components of heating oil and diesel oil.

Catalytic cracking is the main method that refineries use to change heavier components of crude oil into lighter ones. Cracking uses a catalyst, a substance that speeds up chemical reactions, plus heat and pressure to break apart heavy hydrocarbon molecules.

The lighter components, including gasoline, are usually in greater demand than heavier ones. They also are the most profitable for oil refiners. In the early 1900s, refineries could get only about 11 gallons of gasoline from a 42-gallon barrel of crude oil. Many now produce about 22 gallons of gasoline from a barrel, thanks to catalytic cracking and other advances.

