



Fig. 6-1. *Fractional-distillation process.*

Thermal Cracking

Thermal cracking, on the other hand, is a process that will substantially increase the amount of gasoline extracted from the crude petroleum after it has completed the fractional distillation process. What remains are the heavier carbon liquids that are not only unsuitable for gasoline, but even for lubricating oil. This remaining crude oil is put in a pressurized vessel and heated. This process actually forces a chemical change called “cracking,” causing some of those heavier carbon liquids to turn into “cracked” gasoline. The combined fractional distillation and thermal cracking processes produce an increased amount of gasoline obtained from a given volume of crude petroleum, which drives down the overall cost of production per gallon.

Aviation Gasoline

Of all the types of fuel available, the one we call avgas meets the myriad needs of aircraft piston engines. It has a high energy content and vaporizes easily throughout the wide, ambient operating range of an aircraft engine while not being so volatile that it is likely to cause fuel vapor lock. It also has a sufficiently high octane rating to allow its use with high-compression engines without the problem of detonation. Finally, its chemical composition is such that it minimizes the chance of gumming up or corroding the engine when used.

Octane Rating

Gasoline is used in a wide range of applications, from lawn mowers to high-altitude reciprocating engine-powered aircraft. No one type of gasoline can meet such a vast array