

A Positive Move Towards Low Lead Petrol

NEW PLATFORMER PLANT FOR SHELL U.K. LIMITED

Traditionally lead compounds have been added to petrol to improve the octane rating but forthcoming legislation in the United Kingdom, aimed at improving the environment by reducing the emission of lead from the exhausts of motor vehicles, will necessitate other means of raising the octane number. In anticipation of this, Shell have just opened a new plant, known as Platformer III, at Stanlow on Merseyside. Platforming is the conversion of low octane feedstock, or naphtha, into a higher octane component which can then be blended with other gasoline fractions to improve their rating, so reducing the need to use lead as an octane improver.

The feedstock for Platformer III is drawn from the refinery's distillation units and after the removal of both sulphur and nitrogen it passes into the stacked reactors that form the heart of the process. Here the gaseous naphtha is subjected to four stages of heating and reaction over a novel platinum on alumina catalyst, produced by Universal Matthey Products Limited under licence from Universal Oil Products Company, before passing through heat exchangers and coolers to yield separate streams of hydrogen and reactor product. The latter, now in liquid form, passes to the platformate stabiliser where liquid petroleum gas and other gases are removed, leaving a liquid high octane gasoline component suitable for blending into the refinery petrol pool.

Catalyst Regeneration

As the gaseous naphtha passes through the four stacked reactors a very small proportion of the platinum catalyst is withdrawn, regenerated and returned to the system. This continuous recycling of the catalyst will enable the Platformer III plant to stay on stream for three years before a major shut-down is required.

Prior to the commissioning of Platformer III, two similar plants but without

continuous regeneration already existed at Stanlow, Shell's largest manufacturing location for oil and chemical products in the United Kingdom. The adoption of the very latest technology enables this new Platformer to produce approximately one million tonnes a year of high octane blending components.

Additional information on the process of platforming has been given in two previous articles in this journal (E. L. Pollitzer, *Platinum Metals Rev.*, 1972, **16**, (2), 42-47; 1976, **20**, (1), 2-6).

