NovaCrack® - Feedstock Recycling of Mixed Plastics Waste

INTRODUCTION

The environmental challenge of dealing with mixed plastics waste, a major concern for the waste industry, local authorities and increasingly for households, has opened a commercial opportunity for the petrochemical sector. A team of scientists and engineers at the University of Manchester has developed a rapid new depolymerisation process, NovaCrack®, based on catalytic hydrocracking, which offers a sustainable source of naphtha and other valuable hydrocarbons, coupled with attractive process economics.

THE TECHNOLOGY

NovaCrack® has the ability to consume a mixed polymer feed, including PE, PP, PS, PET and PVC, which make up 74% of EU plastics demand and which are all found in the municipal waste stream, to yield a clean, low-sulfur, naphtha-rich hydrocarbon stream suitable for supplementing cracker feedstock.

The key innovation arises from the use of a novel, patent-protected catalyst system, enabling the design of a continuous process, because of the dramatically increased reaction rates and lower temperatures involved.

The process conditions are considerably less severe and significantly faster than existing technologies, and the process has been shown to be PVC tolerant.

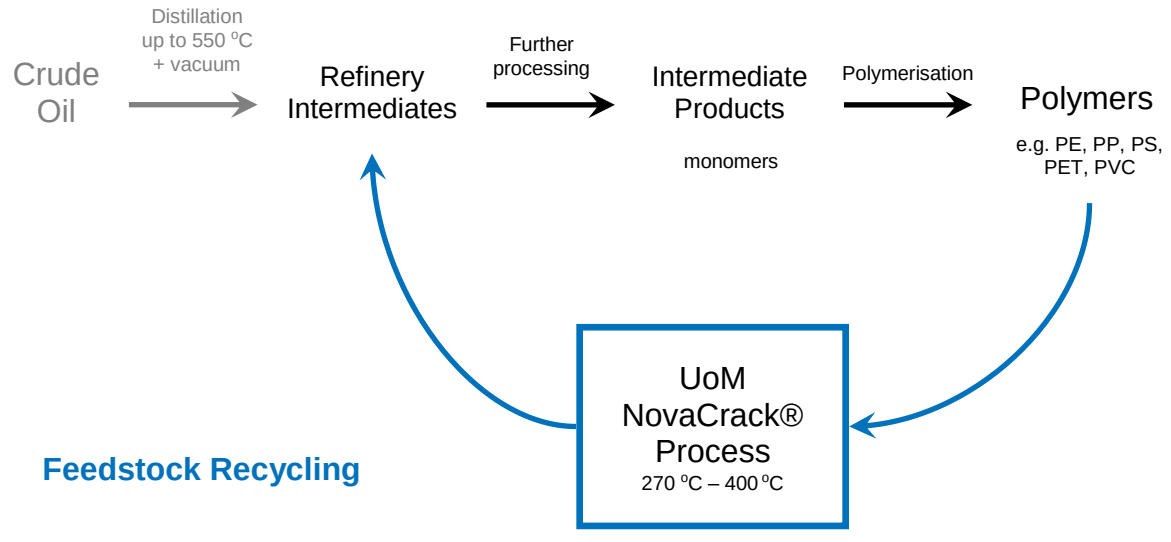

Figure 1: NovaCrack®, a sustainable source of naphtha and other valuable hydrocarbons as part of the Circular Economy.

KEY BENEFITS

NovaCrack® is differentiated from pyrolysis and waste-to-energy processes in that it retains a substantial proportion of the underlying value of commodity polymers and is not constrained by the presence of PVC.

- Cost effective source of naphtha substitute for the petrochemical industry.
- Rapid process able to handle mixed plastics waste, including films, PVC and PET.
- Carbon benefits from diversion of plastics from landfill / RDF and by reducing dependence on the use of crude oil in plastics manufacture.

INTELLECTUAL PROPERTY

This comprises an international patent portfolio with filings anticipated in associated technology areas.

THE OPPORTUNITY

The next stage is scale-up to continuous operation via a mini-plant operating in the range 1 – 10 kg/hr. UMIP is seeking interest from companies in relevant sectors willing to develop NovaCrack® with funding from sources including Innovate UK, leading to full commercialisation by the grant of appropriate licenses.

CONTACT

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