

Green refinery at the edge of refining evolution model

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Highlights

- Changes in refinery industry model.
- Evolution of environmental regulation.
- Green diesel vs. FAME.

1. Introduction

The oil production-consumption map is undergoing deep changes due to the discovery of new resources, the development of technologies for the production and processing of non-conventional sources, the evolving regulation, and the economic trend of emerging Countries. These fundamental changes are having an important impact on the refining industry model with relevant effects on the European refining system. Technology will be a crucial issue to help managing these relevant changes, and chemical reaction engineering is particularly important for the improvement of refining technologies according to the transformations in the scenario.

A crucial area where technology innovation has to play a relevant role is that of biofuels. Environmental concern and evolving regulatory systems are pushing toward an extensive use of renewable resources in the energy sector. Europe is the area that is historically more ready to update the environmental rules and usually adopts more stringent rules.

At present, European regulations are those that more definitely push the use of biocomponents into the transportation fuels pool. Target share of renewable energy in road fuel is set at 10% for 2020. According to this framework, share of biofuels is strongly increasing and demand will reach 20 Mton/y in Europe by 2020. This substitution of fossil fuels will put even more pressure on the refining industry. The increasing demand together with the higher quality requirements for biofuels can be satisfied only with high-level technologies. With this situation and within this framework, a large number of university departments and company R&D centers started to develop new processes to produce high quality biocomponents to be used as biofuels.

These presentation summarizes the biofuel scenario, i.e. refinery situation, evolving regulations, market trends, and recaps the main technologies which can help managing these issues, with a particular focus on the actions that Eni has taken in order to adapt its refining sector, following the drivers discussed above. The transformation of conventional refineries into “green refineries”, aimed at the production of a high quality biofuel (“green diesel”) with much better characteristics compared to conventional FAME, is at the edge of the refining model evolution.