

Evonik opens new plants with innovative technology in Marl, Germany

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- **Investment:** Total investment of a three-digit million € amount for expansion of production in Marl, Germany, and Antwerp, Belgium
- **Innovation:** A new technology expands and flexibilizes the raw-material base for C4 chemicals
- **Partnership:** Long-term supply relationship with BP in Gelsenkirchen

Essen/Marl, Germany. Evonik Industries has started up new production plants for C4-based products in the Marl Chemical Park, Germany. These were formally opened today in the presence of Hannelore Kraft, Minister-President of North Rhine-Westphalia, and Klaus Engel, Chairman of the Executive Board of Evonik Industries. This expansion of production in Marl is part of a capacity expansion throughout Europe for C4-based products, in which Evonik has invested a three-digit million € amount in total. At the heart of the new plants at Evonik's largest site is the widely visible 90-meter column, the highest within the specialty chemicals company. This is a symbol of a new technology that, for the first time anywhere in the world, utilizes special material streams from refineries for production of C4 chemicals. These streams are supplied by the neighboring BP refinery in Gelsenkirchen.

In addition to the expansion in Marl, Evonik has also invested in the C4 activities in Antwerp, Belgium, where the plants in question went on stream in the second quarter of 2015. The new production facilities have resulted in capacity expansion for the plasticizer alcohol isononanol in Marl, butadiene in Antwerp, and the fuel additive MTBE in both Marl and Antwerp.

Technological milestone in Marl

The Marl plant also marks a technological milestone for Evonik. Thanks to an entirely new process worldwide, FCC-C4 material streams can be used for production of a wider range of chemicals. The steam or naphtha cracker has so far been the major source for

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extraction of basic petrochemicals. However, there are significantly more FCC crackers than steam crackers worldwide.

FCC stands for fluid catalytic cracking. With the help of this process, refineries transform heavy crude oil components in fuel components. Fluid catalytic cracking produces a C4 material stream that, besides the components that can be used for chemical processing (olefins), contains further accompanying substances. The industry has therefore so far not used this FCC-C4 material stream.

Evonik's solutions expertise

By developing its own new technologies and combining these with others procured externally, Evonik has now succeeded in utilizing this material stream from the refinery. The main challenge here lay in separating any unwanted accompanying substances from the FCC-C4 stream. The new technology incorporates various chemical reactions and absorption techniques that allow an efficient yet flexible process. The 90-meter column removes the saturated compounds (butanes), which are of less interest to Evonik, from the FCC-C4 material stream, so that the more valuable unsaturated C4 compounds (butenes) can be further processed to specialty chemicals.

Double benefit: Innovation and collaboration in the Ruhr district

Evonik draws the FCC-C4 material stream by pipeline from the refinery in Gelsenkirchen, about 15 km from the Marl site. Because the residual butanes are a valuable raw material for the Scholven refinery, Evonik returns these by pipeline to Gelsenkirchen where it is used as a raw material for the olefin plant.

Evonik has long been a leading global supplier of C4-based products such as butadiene, MTBE, isobutene, 1-butene, and INA (isononanol) as well as 2-PH (2-propylheptanol) and DINP (diisononyl phthalate). For this purpose Evonik operates integrated large-scale plants for processing of C4 raw materials. The company offers its customers the benefit of many years of logistics expertise and an excellent global service network.

Company information

Evonik, the creative industrial group from Germany, is one of the world leaders in specialty chemicals. Profitable growth and a sustained increase in the value of the company form the heart of Evonik's corporate strategy. Its activities focus on the key megatrends health, nutrition, resource efficiency and globalization. Evonik benefits specifically from its innovative prowess and integrated technology platforms.

Evonik is active in over 100 countries around the world. In fiscal 2014 more than 33,000 employees generated sales of around €12.9 billion and an operating profit (adjusted EBITDA) of about €1.9 billion.

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