

Media Release

Clariant's HYDEX[®] E catalyst helps Duslo turn plastic waste into high-quality winter diesel

- **Next-generation dewaxing catalyst is used in pioneering plastic-to-diesel technology of Duslo's research institute VUCHT**
- **Proven economical conversion of plastic waste into fuel distillate encourages VUCHT to construct 40 MTA demonstration plant**
- **HYDEX E catalyst achieves excellent cold flow properties of distillate product, compliant with Euro 6 emission limits**

Munich, July 2, 2020 – Clariant and Duslo's research institute VUCHT are transforming waste into wealth. Using a proprietary technique and Clariant's HYDEX E next-generation hydro-dewaxing catalyst, VUCHT has successfully converted plastic waste into premium winter fuel distillate. The efficacy of this groundbreaking process has now been proven in a pilot plant in Slovakia. As plastics and fuels are both mainly composed of natural gas or crude oil, turning one into the other has major implications for sustainable and lucrative fuel production.

Stefan Heuser, Senior Vice President & General Manager at Clariant Catalysts: "Upgrading gas oil fractions to more valuable products has become essential for improving refinery economics. Clariant is committed to supporting this customer need through innovations such as HYDEX E. We are honored to partner with VUCHT in their pioneering plastic waste-to-winter diesel technology, and very pleased about the outstanding performance of our next-generation catalyst in the process."

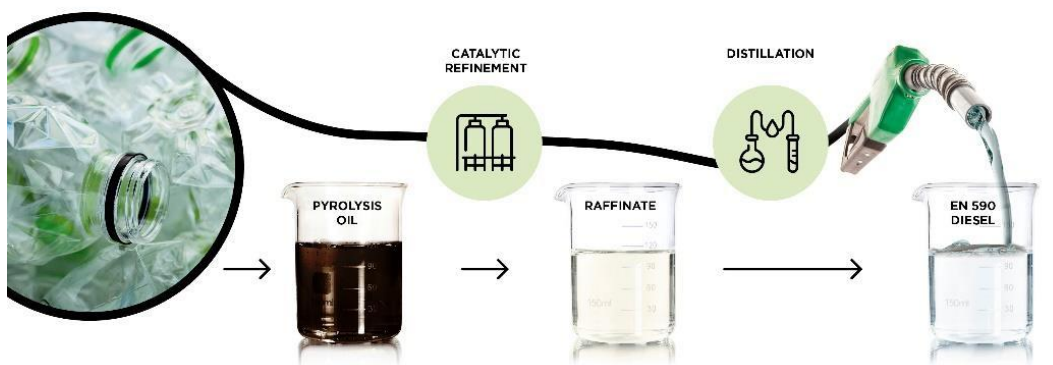
VUCHT is part of Duslo, a major Slovak producer of fertilizers, specialty nitrogen compounds, and rubber chemicals. The institute uses a pyrolysis process to convert a variety of plastic waste collected in the country (such as polyethylene, polystyrene, polypropylene and PET) into diesel fuel. The process thermally degrades the plastic at temperatures above 300°C (530°F), converting it into liquid oil comprised of various hydrocarbon compounds. Recently, the institute developed a proprietary technique to further convert the liquid oil into a high-quality fuel distillate known as winter diesel.

The winter diesel produced is compliant with Euro 6 fuel emission standards, including cold flow properties specified for temperatures as low as -30°F (-34°C), typically required in arctic areas. To achieve this extreme improvement in cold flow, Clariant's HYDEX E hydro-dewaxing catalyst was applied. After intensive pilot testing proved the technical viability and economic appeal of the process, VUCHT is planning to expand the method's success in a custom-built demonstration plant with a fuel distillate capacity of 40 metric tons per annum (MTA).

HYDEX E is an economical selective isomerization hydro-dewaxing catalyst specially developed for highly paraffinic feedstocks. The key advantages of this zeolite-based catalyst are that it has the ability to significantly raise fuel quality and yield, while minimizing costs and by-product formation. HYDEX catalysts have been successfully used for catalytic dewaxing at numerous refineries around the world for over 25 years, and are recognized to be highly favorable for middle distillate feedstocks, such as diesel.

Duslo's VUCHT institute is a research and engineering organization with more than 100 years of experience in the active development of organic and inorganic chemistry processes and products. Branislav Brežný, the institute's Managing Director, explained the significance of the results, stating, "Scaling up to near-plant capacity was the ultimate test of the practicality and profitability of our proprietary diesel production process, and we are extremely satisfied with the results of our team's innovations. This could not have been achieved without a partner such as Clariant, whose new dewaxing catalyst has delivered beyond expectations."

PLASTIC WASTE TO FUEL



Pioneering plastic-waste-to-fuel technology of Duslo's research institute VUCHT. (Photo: VUCHT and Clariant)

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Clariant is a focused, sustainable and innovative specialty chemical company based in Muttenz, near Basel/Switzerland. On 31 December 2019, the company employed a total workforce of 17 223. In the financial year 2019, Clariant recorded sales of CHF 4.399 billion for its continuing businesses. The company reports in three business areas: Care Chemicals, Catalysis and Natural Resources. Clariant's corporate strategy is based on five pillars: focus on innovation and R&D, add value with sustainability, reposition portfolio, intensify growth, and increase profitability.

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Clariant's Catalysts business unit is a leading global developer and producer of catalysts for industrial processes. It has been part of the Catalysis business area of the Clariant Group since the acquisition of Süd-Chemie in 2011. Clariant Catalysts is headquartered in Munich, Germany, and has a total of 16 production sites (incl Joint Ventures), 7 sales offices, and 11 R&D and technical centers around the world. Approximately 2 061 employees serve customers across all regional markets. Aimed at delivering sustainable value to customers, Clariant's catalysts and adsorbents are designed to increase production throughput, lower energy consumption, and reduce hazardous emissions from industrial processes. The broad portfolio also includes products that enable the use of alternative feedstock for chemical and fuel production.

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