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News

Innovation and Industry

Climate, environment and circular economy

Plastics recycling

Axens, IFPEN and JEPLAN announce qualification and commercialization by Axens of the Rewind® PET chemical recycling process

Rueil-Malmaison, October 22nd 2024

In line with the announcement made at the inauguration of a semi-industrial demonstration unit at Kitakyushu in Japan in October 2023, Axens, IFPEN and JEPLAN, partners in the project, are glad to announce the launch of the commercialization (licensing) by Axens of the Rewind® PET process. This is a major step forward for the three partners, concluding a successful one-year test period within the demonstration unit, which qualifies the performance of the technology, and will enable a further acceleration of the energy transition and the circular economy of plastics, which are at the heart of Axens' and IFPEN's strategy. Axens teams will now be able to market a complete Rewind® PET license package to their customers all over the

world.

A major milestone achieved on schedule

Axens, IFPEN and JEPLAN formed a strategic partnership in 2020 to develop this innovative chemical recycling process, which can be used to recycle all types of polyethylene terephthalate (PET) waste, especially the waste difficult to recycle mechanically. With the support of the French Environment and Energy Management Agency (ADEME), this collaboration resulted in the construction, commissioning and start-up of the semi-industrial Rewind® PET unit in September 2023.
The validation and commercial launch of Rewind® PET follows the positive outcome of a year-long program of tests carried out in the demonstration unit. This extensive large-scale test program demonstrated the effectiveness and reliability of the process while treating post-consumer PET waste. Results and launch are on schedule, in line with the ambitions announced by the three partners. Axens is now in a position to offer a complete Rewind® PET license package, including basic process design (which may be modularized), performance guarantees, supply of proprietary equipment and technical support for the start-up and operation of its customers' industrial units.

A unique chemical recycling process for PET, eagerly awaited by professionals

Rewind® PET involves the continuous depolymerization of PET by glycolysis, followed by in-depth purification of the resulting monomer, BHET (Bis(2-Hydroxyethyl) terephthalate). Its main advantage for manufacturers lies in its ability to separate all additives and colorants to restore a pure BHET monomer, which can be easily re-polymerized in existing (or new) polymerization plants. Recycled PET produced from the semi-industrial plant's pure BHET monomer has already received approval from several major companies in the food packaging and cosmetics sectors, underlining its potential for widespread market adoption.

> Quentin Debuisschert, Chairman and CEO of Axens, said : "The Rewind® PET process is part of Axens global strategy in plastics circular economy, with the development and commercialization of several chemical and physical recycling processes designed to complement mechanical recycling onto a wide range of polymers. With this innovative process, we can support our clients in achieving their ambitious targets for the incorporation of recycled materials in many industrial sectors, starting with packaging and textiles. It is a powerful response to the challenges of ecological transition for manufacturers and brand owners looking for reliable, sustainable solutions to adapt their industrial facilities."

> Pierre-Franck Chevet, Chairman and CEO of IFPEN, said “We are proud that the innovative technology for chemical recycling PET, Rewind® PET, is now available for commercialization. It is the result of ten years R&D efforts at IFPEN and a successful

> demonstration with our partners, Axens and Jeplan. This first success illustrates IFPEN's commitment to the circular economy and the development of a range of technologies for reducing plastic wastes".

> Masaki Takao, Representative Director, President, and CEO of JEPLAN, said " We are proud to be part of this ambitious development, with a major milestone achieved today, supporting the development of true circular economy of the polyester packaging and textile. JEPLAN has been a pioneer in this field, first with PRT plant in Kawasaki (packaging), then operating the first version of KHP unit (textile) . Together with Axens and IFPEN, we are paving the way for a more sustainable future, helping the PET industry meet its recycling targets and contributing to global environmental goals."

About Axens

The Axens Group offers a complete range of solutions for the conversion of oil and biomass into cleaner fuels, the production and purification of major petrochemical intermediates, the chemical recycling of plastics, natural gas treatment and conversion options, water treatment and carbon capture. Their offer includes technologies, equipment, furnaces, modular units, catalysts, adsorbents and related services. Axens is ideally positioned to cover the entire value chain, from feasibility studies to start-up and monitoring of units throughout their lifecycle. This unique position guarantees optimum performance and a reduced environmental footprint. Axens' international offering is based on highly qualified human resources, modern production facilities and an extensive global network for industrial, technical support and sales services. Axens is an IFP Group company.
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About IFPEN

IFP Energies nouvelles is a major research and training player in the fields of energy, transport and the environment. From scientific concepts within the framework of fundamental research, through to technological solutions in the context of applied research, innovation is central to its activities, hinged around four strategic directions: climate, environment and circular economy – renewable energies – sustainable mobility – responsible oil and gas.
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About JEPLAN

JEPLAN,INC was founded in 2007 and aims to realize a world where there is no waste and everything can be put back into circulation.
In 2017, JEPLAN initiated operations at its Kitakyushu Hibikinada Plant (KHP, 1 kTA) in Kitakyushu-city for clothes-to-clothes PET chemical recycling. In 2018, JEPLAN acquired its commercial plant, PET REFINE TECHNOLOGY Plant (PRT, 22 kTA), in Kawasaki-city (https://www.prt.jp/en/company/) which restarted operations in 2021 and uses chemical recycling technology to manufacture rPET resin for packaging. PRT has more than ten years of experience in operating this plant.

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