News Release

RESONAC

Resonac Holdings Corporation
Tokyo Shiodome Bldg., 1-9-1, Higashi-Shimbashi, Minato-ku, Tokyo 105-7325

March 28, 2024

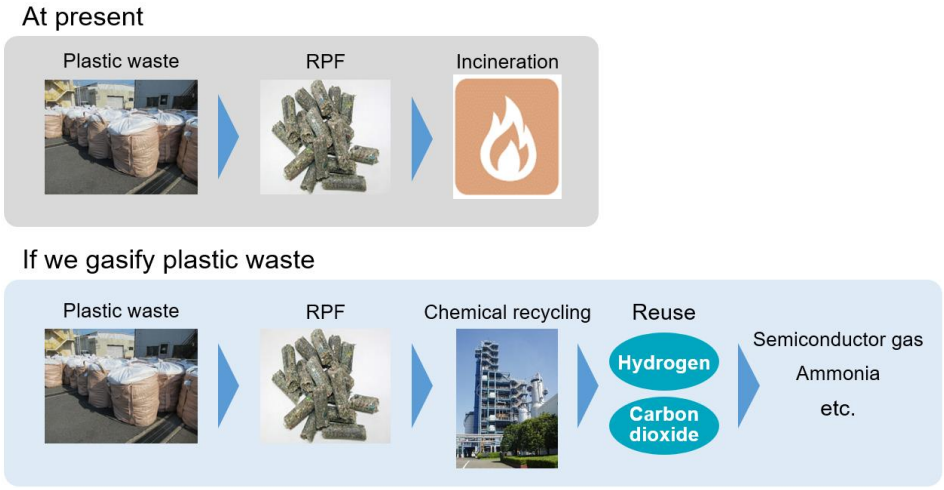
Resonac Starts to Consider Recycling Plastic Waste Emitted from Semiconductor Manufacturing Process and Reusing It as Gases for Semiconductor Manufacturing

~ Resonac reuses plastic waste by utilizing the company's plastic chemical recycling technology ~

Resonac Corporation (President: Hidehito Takahashi, hereinafter "Resonac") has started to consider recycling plastic waste emitted from semiconductor manufacturing process and reusing it as material for semiconductor manufacturing by applying the company's plastic chemical recycling technology*1 to that plastic waste and converting it into hydrogen and carbon dioxide. Resonac implemented the first verification test in late January of this year and confirmed that there is nothing wrong with the gasification process.

Plastic waste used in the verification test of this time was emitted form production process of photosensitive film operated in Yamazaki Plant and that of die bonding film operated in Goi Plant. In the verification test, we processed plastic waste and converted it into RPF*2, and decomposed the RPF into molecules of hydrogen and carbon dioxide at the plant for Kawasaki Plastic Chemical Recycling Business (KPR*3). In KPR, extracted hydrogen is utilized as material to produce ammonia, and that ammonia is utilized as material to produce high-purity gases for semiconductor manufacturing, synthetic fibers, adhesives and nitrogen fertilizers, and extracted carbon dioxide is not emitted into the atmosphere but rather utilized as material to produce dry ice and carbonated drinks.

Under the existing circumstances, plastic waste emitted from semiconductor manufacturing process is converted into RPF and incinerated. However, as we confirmed in the verification test, gasification of plastic waste can reduce CO_2 emission.



In recent years, progress in AI, mobile devices, and autonomous driving increases the demand for semiconductors. Accordingly, the burden on the environment brought by production process of semiconductors including the amount of CO_2 emission is increasing.

Therefore, social need for environment consciousness of semiconductor supply chain as a whole is increasing year by year. Under these circumstances, Resonac has been striving to reduce environmental burden and CO_2 emission by promoting development of environment conscious products taking their whole life cycle into consideration. Recycling of plastic waste emitted from semiconductor manufacturing process, which we are considering now, is a part of this endeavor, and we will promote this effort as a co-creation beyond barriers between industries. Resonac will increase the number of plants involved in the verification test, and make thorough investigation into effects and feasibility of recycling of plastic waste emitted from semiconductor manufacturing process.

*1: Plastic chemical recycling plant decomposes used plastics into molecules of hydrogen and carbon dioxide. These extracts will be used for production of ammonia and dry ice.

*2: RPF is an abbreviation of “Refuse derived paper and plastics densified Fuel.” RPF is made from used plastics and other industrial wastes which are difficult to be recycled as materials.

*3: KPR went into operation in 2003, and is the one and only plastic gasification and chemical recycling plant in the world that has been in stable operation for 20 years. KPR gasifies and chemically recycles 70,000 tons of used plastics per year, which accounts for about 22% of total chemically recycled plastics in Japan. At high temperature, KPR decomposes used plastics into molecules of hydrogen and CO_2 (Gasification and chemical recycling of used plastics). Hydrogen extracted from used plastics is to be used as material to produce other chemicals in neighboring plants, delivered to hydrogen stations and used as fuel for fuel-cell vehicles, or used as material to produce environment-friendly ammonia which is sold under the trade name of ECOANN™. In addition, CO_2 extracted from used plastics is not emitted into the air but recycled and reused as material to produce dry ice, carbonated drinks, and medical CO_2.

Kawasaki Plastic Recycling (KPR) Plant

[About the Resonac Group]
The Resonac Group is a new company established as a result of the integration of the Showa Denko Group and the Showa Denko Materials Group (former Hitachi Chemical Group) in January 2023. The Group’s annual sales of semiconductor and electronic materials amount to about 340 billion yen. The Group especially has an extensive lineup of semiconductor materials for back-end process which have global top market share. The integration of the two companies has enabled the Resonac Group to design functions of materials as well as to develop them in-house, going all the way back to raw materials. The new trade name “RESONAC” was created as a combination of two English words, namely, the word of “RESONATE” and “C” as the first letter of CHEMISTRY. The Resonac Group will make the most of its co-creative platform, and accelerate technological innovation with semiconductor manufacturers, material manufacturers, and equipment manufacturers inside and outside

Japan.

For detail, please refer to our Website.
Resonac Holdings Corporation: https://www.resonac.com/

For further information, contact:
Public Relations Group, Brand Communication Department (Phone: 81-3-6263-8002)
Resonac Holdings Corporation