



## [NISSEI's Developments on Eco-Friendly Materials]

NISSEI has actively been researching mold processing technologies for new materials in addition to ever-progressing high-performance plastics and plastics. The pioneer of biodegradable injection molding systems, NISSEI continues to make advancements in research and development.

### 1993 Biodegradable injection molding system

In order to lower the material costs for biodegradable resins (which was the bottleneck for its widespread uses and high product cost) and accelerate the decomposition rate, NISSEI proposed a walnut filler direct-blending molding technology.



### 1993 Sandwich molding technology using waste plastic

In order to promote plastics recycling and reduce material costs, a sandwich molding technology, which wraps recycled material with virgin material, was developed.



### 1993 PET bottle recycling molding technology

Crushed PET material molding technology was established since PET bottles were being recovered and recycled in the communities. A special machine, equipped with an original crushed material stabilizing feeder and venting type injection unit that materializes dry-less molding, was developed.



### 1998 Pulp injection molding (PIM) technology

Injection molding method of fiber paper made of natural materials, pulp and starch, was established and practicalized by a collaboration between the Institute of Industrial Science of the University of Tokyo, Daiho Industrial, and NISSEI.



### 2009 Heat-resistant PLA molding technology

In order to overcome its poor heat resistance, polylactic acid (PLA) with heat resistance up to 120 degrees Celsius was materialized by the alliance of material, mold, injection molding machine makers and molders. An injection molding machine "N-PLAjet," which materializes the practical use of heat-resistant PLA, was released.



### 2018 The 7<sup>th</sup> Monodzukuri Nippon Grand Award

Komatsu & Associates received "The 7<sup>th</sup> Monodzukuri Nippon Grand Award" by the Prime Minister of Japan for "the development of a group of Japan-oriented injection molding technologies that may trigger plant-derived biodegradable resins to be popularized throughout the world," which utilized N-PLAjet System.