

## Top message

We contribute to the society through creating new values, and achieve the bright and prosperous future where each one of us can shine.



Technology Report

Introduction of various items aimed at environment-friendliness

Introduction of BD-V7EX series lineup

Sustainability at TOYO Group

～ To achieve SDGs ～

Under our management policy of “Contributing to the society through creating new values so that everybody can envision a bright future,” we, at Toyo Machinery & Metal Co., Ltd. and its group companies, contribute to our customers’ business development by further strengthening our total business capability in the global arena and by introducing more extensive lineup of products based on the SDGs concept.

At the start of the fiscal year 2022, I would like to express my sincere gratitude for your continued supports and patronage. Last April, we kicked off a new three-year medium-term business plan through FY2023 with the new management principle that was released then. To achieve each objective of the plan in this rapidly changing era, we will develop our business more globally with a keen sense of speed according to our new business strategy.

To see the world economy these days, it is obvious the business has returned to an upward track with each region at each pace. In addition, we have come to see a sign of hope thanks to the worldwide vaccination campaign and medicine development in progress against the novel coronavirus.

However, the future is still unpredictable what with ever-intensifying battle after Russian invasion of Ukraine, with lingering conflict between the U.S. and China, with other geopolitical dynamics, and also with the worldwide trend shifting toward the decarbonized society. In addition, we need to stay vigilant against the threat of the highly contagious omicron variant of the new coronavirus.

Regarding our business, we see solid demands from the IT electronics and medical sectors in China these days. In addition, automotive and livingware-related businesses are clearly in the recovery mood in South East Asia, Europe, America as well as Japan. Thus we are enjoying abundant orders far exceeding the level of the previous year that was heavily affected by the pandemic. However, the worldwide serious shortage of semiconductors forces our production schedule to delay for some machine models. We would like to deeply apologize to the customers affected by the delayed shipment. Now, we are trying our best to get the necessary components as early as possible so that the production delay can be minimized.

This year, we will participate in the following major exhibitions:



**Yoshiaki Tabata,**  
President and CEO

- K2022 world-largest trade fair for plastics and rubber that is triennially held in Dusseldorf, Germany.
- Japan Die Casting Congress & Exposition held at “Pacifico Yokohama,” in Yokohama, Japan, where you can see first hand our innovative Die Casting Machines designed in new concept.

We also have a plan to hold “TOYO Private Show 2022,” where we will be releasing our cutting-edge Plastics Injection Molding Machines. We look forward to seeing you at these shows.

In concluding my Greetings, I sincerely hope that the world conflicts calm down as soon as possible leading to a bright future, and I wish all of you great success and happiness.

## Hiroyuki Yamamoto,

Director and General Manager of Sales Division

**We will keep on exercising our best efforts to be the company that is chosen as your best partner.**

As a new initiative in the “with corona” era, we believe that communication with customers is more important than ever, and we will promote business transformation by digital transformation (DX) such as remote maintenance using WEB and the cloud computing of IoT.

In addition, to earn the trust of our customers, we believe it is vital to quickly grasp the changes in the business environment and provide solutions for specific needs from our customers, so that they can always beat the competition. This is our “Customers’ Value Up.”

As for global business expansion, we will start operation of the third factory in Changshu, China from November this year to further increase production capacity and shorten delivery time for China and other Asian markets. In addition, we will further cultivate China, Mexico, Vietnam and India markets, and strengthen our system to support overseas operation of Japanese companies.

Newly launched Die-casting machines include a high-performance model, the BD-V7EX, that achieves high acceleration of 100G in injection speed, which can reduce the defect rate. As to Plastics Injection Molding Machines, we will provide highly value-added and further sustainable technologies and services such as Toyo-developed Liquid Foam Molding Technology, “SAG screw + $\alpha$ ” system for carbon neutral measures, Meltcon<sup>®</sup> system for stable production of quality products.

We will keep on exercising our best efforts to be the company that is chosen as your best partner. Thank you for your continued supports.



## Yasuhiro Miwa,

Director, General Manager of Manufacturing and Procurement Division,  
and General Manager of Production Reform Office

**Racking our brains, we take on difficult challenges in manufacturing products without sticking to the status quo**

Our way of conducting business and lives have dramatically changed since the worldwide spread of the new corona virus infection began about two years ago. Under such circumstances, a terrible war broke out between Russia and Ukraine, and shockingly a lot of innocent people are being sacrificed. I would like to offer my sincerest prayer for the repose of the soul of those sacrificed.

The fiscal year 2022 is the second year of our three-year medium-term plan " TOYO GO CHALLENGE 2023." I feel it is the year to start preparation toward TOYO' s 100th foundation anniversary in 2025 in addition to exercising utmost efforts to achieve the medium-term plan without fail. We will work hard to realize shorter delivery time and increase production capacity to contribute to our customers' success. As one of our efforts, we have decided to set up the Production Reform Office, where young members from various sections in our company work together without sticking to cliched ideas in order to realize the company motto of "with new ideas," "deliver quality products at low cost and shorter delivery time," and "be bright and in good health always."

Now the demand for medium and large-sized models both in Injection Molding Machines and Die-casting Machines are increasingly required from the electric vehicle (EV) industry.

To respond to the demand, we will accelerate the construction of the second assembly factory. The new factory is planned to realize the promotion of Digital Transformation (DX) and further environmental friendliness (less CO2 emission ).

Thank you for your continued guidance and encouragement as ever. We wish all of our stakeholders the health and great happiness.



# Technology report

These years, the plastic molding industry also has entered a period of major changes, with CSR and SDGs activities being carried out in various fields, among ever-growing awareness against global warming issues and marine debris.



While plastic products are light and handy, they heavily affect the environment. Therefore, plastic is indispensable in our daily life, but it always faces harsh criticism in terms of environmental issues. So environmental consideration is required throughout the entire process from designing and manufacturing to sales and even disposal of plastic products. In addition, the Plastic Resource Recycling Promotion Law (New Plas-

tic Law) came into effect on April 1, 2022, and it is expected that the demand for environmental consideration will get tougher even further.

Under above situation, we would like to introduce our technical solutions that will help your efforts to deal with environmental issues. Please contact our sales staff for details.

**Issues in molding environmentally friendly materials**

- ① Resin management (melt viscosity, drying)
- ② Heat deterioration (drying, burning, discoloring)
- ③ Plasticization stability (heat generation, uniform melting, injection volume)
- ④ Gas-caused defects and mold contamination

Virgin material      Recycled material

**For stable injection volume**

**SRC-III metering**

- This system stabilizes the melt density by skillfully controlling the closing movement of the check ring. This item is particularly effective in plasticizing recycled resins.

**Automatic melt viscosity control**

**meltcon®**

- To stabilize molding quality, Meltcon automatically keeps the melt viscosity constant. This item is particularly effective in molding recycled materials whose physical properties are easy to vary.

**Vacuumping and degassed plasticizing system**

**SAG+α II**

- Ideal system in processing plant-derived resins that cannot be pre-dried, and in the cases where water cannot be sufficiently removed by drying
- Reduced drying time contributes to energy saving.
- Less gas generation in plasticization leads to less mold contamination.

**Low shear screw**

**SAG screw**

- This screw minimizes physical property deterioration, discoloring and burn of material. This item is effective in molding heat-sensitive plant-derived resins.
- This screw improves plasticizing stability.

**High mixing screw**

**MXT screw**

- Molding quality is stabilized by uniform melting of various recycled materials.
- The MXT screw generates less heat during plasticization than the conventional one.

**Resin oxidation and deterioration prevention systems**

**N2Seal**

- This system suppresses burning and discoloration of plant-derived resins that are easy to deteriorate by oxidation.
- The PSA method N2 gas supplying device is built in the molding machine.
- The device is operated and monitored from the molding machine.

Fig.1 Overview of plasticizing-related items

**Liquid foam molding technology with less environmental impact**

**Liquid foam molding technology L-Foam**

- Using water or alcohol as a foaming agent makes the molded material easily recyclable.
- Both investment and running costs can be reduced compared to the conventional foam molding.
- Products are light and molded at low costs with less material consumption.
- Molding machines already at your factory can be modified.
- Adopted to small to large molding machines.

The liquid is vaporized at a heat barrel temperature and injected into the barrel during metering process.

**Liquid supply device**

**Foaming agent**  
⇒ Liquid having boiling points of around 100 °C such as water and alcohol

Fig. 2 Outline of Liquid form molding technology

# BD-V7EX series Line up

Ranging from 125-ton to 1250-ton in die clamping force, the BD-V7EX is a high-spec Die-casting machine series that achieves as high as 100G acceleration with the control system renewed. This versatile Die-casting machine can cope with a wide variety of products in present days.



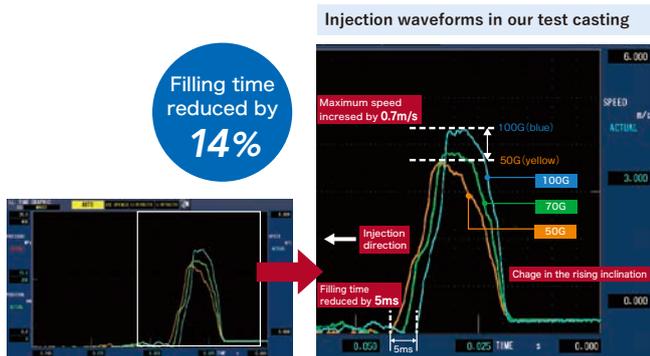
Based on our proven technology of the BD-V, the BD-V7EX series is equipped as standard with a high-spec injection device that can achieve high injection acceleration performance of 100G. Such high acceleration of 100G, realized by the newly developed THRV System, is effective to reduce cast-

ing defects such as flow lines and internal porosities. In addition, the machine is equipped with highly functional latest control system "SYSTEM700EX" that has been developed reflecting our users' opinions.

## Features and advantages of THRV System "THR V System" or "TOYO High Response Valve System" has been solely developed by TOYO.

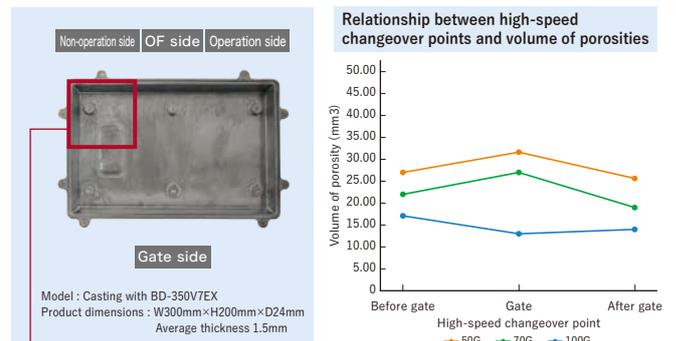
### Velocity waveform comparison

Improved acceleration increases the inertia of the melt and the injection piston, and increase the injection speed to overcome cavity resistance, resulting in shorter injection time. The newly adopted high performance injection sensor helps improve injection data stability.



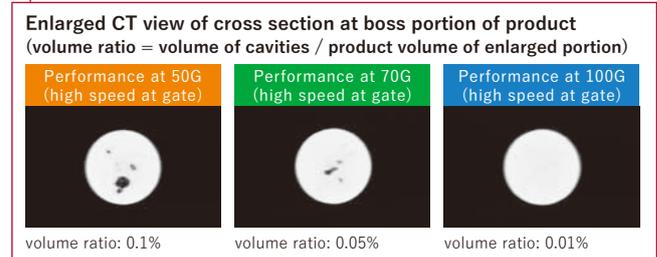
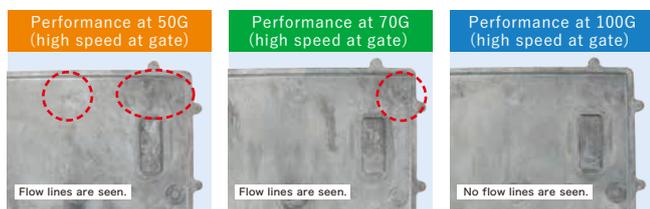
### Comparison of internal porosity

A shorter injection time decreases the volume of porosities regardless of high speed changeover point: before, at, and after the gate. Shorter injection time improves fluidity rejection. Applying pressure before molten metal solidifies minimizes porosity.



### Comparison in product appearance

Shorter melt filling time makes filling completed before melt surface is solidified.



\* BD-1250V7EX is not supported. \* The data shown above are the measured values at our test casting.

## Sustainability at TOYO Group ~ To achieve SDGs ~



As a corporate group in the global society, we, at the Toyo Machinery & Metal Group, will strengthen our efforts to achieve SDGs to contribute to making the society sustainable and preserving the natural environment.

### 1 Overview of SDGs

The Sustainable Development Goals (SDGs) are set out in "The 2030 Agenda for Sustainable Development" adopted at the United Nations Summit in September 2015. SDGs are international goals to be achieved by 2030 to aim for a sustainable and better world. SDGs are an abbreviation for "Sustainable Development Goals" and are composed of 17 goals and 169 targets (achievement goals and the methods to achieve). The individual icons are shown below.



Fig. 1 17 goals of the SDGs

- ① End poverty.
- ② End hunger.
- ③ Ensure healthy lives and promote well-being for all.
- ④ Ensure inclusive and equitable quality education for all.
- ⑤ Achieve gender equality.
- ⑥ Ensure water and sanitation for all.
- ⑦ Ensure reliable, sustainable and modern energy for all.
- ⑧ Promote sustainable economic growth and decent work for all.
- ⑨ Build resilient infrastructure, promote sustainable industrialization and foster innovation.
- ⑩ Reduce inequality within and among countries.
- ⑪ Make cities and human settlements sustainable.
- ⑫ Ensure sustainable consumption and production patterns.
- ⑬ Take urgent action to combat climate change.
- ⑭ Conserve and sustainably use the oceans, seas and marine resources.
- ⑮ Protect and promote sustainable use of terrestrial ecosystems.
- ⑯ Promote peaceful societies and provide access to justice for all.
- ⑰ Strengthen the global partnership for sustainable development.

### 2 Features of SDGs – 5 Ps

SDGs 17 goals • 169 targets = 5P

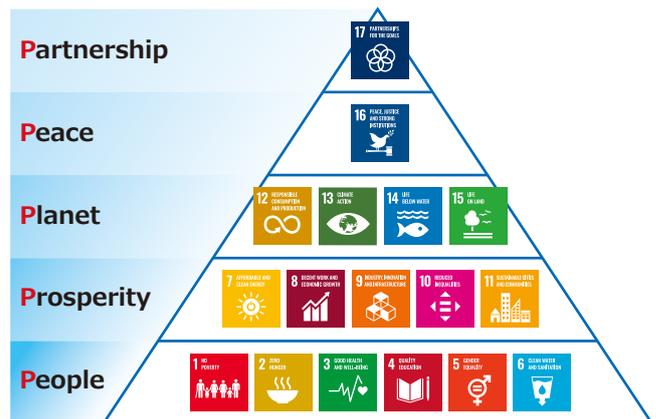


Fig. 2 Relationship between 17 goals and 5-P categories

#### ① People category (Goals ① - ⑥)

We aim to realize the world where everyone can demonstrate their abilities under dignity and equality and in a healthy environment where you can eat well and drink clean water.

#### ② Prosperity category (Goals ⑦ - ⑪)

We aim to realize the world where economic development and technological progress continue without compromising the abundant natural environment, while living with a sense of affluence, safety and security, without any disparity anywhere in the world.

#### ③ Planet (Earth) category (Goals ⑫ - ⑮)

In response to the climate change, we aim to realize the world where we protect the Earth to pass on the rich natural environment such as the sea and forests to the next generation, and the world where we can continue to receive blessings such as natural resources and food by getting out of mass production and mass consumption.

#### ④ Peace category (Goal ⑯)

We aim to realize the peaceful and fair world by eliminating conflicts that cause poverty, hunger, human rights violations and environmental destruction, and that obstruct our achievement of our goals.

#### ⑤ Partnership category (Goal ⑰)

We aim to solve various problems surrounding the world with the participation and cooperation of all people.

### 3 SDGs wedding cake model

With "society" and "economy" placed above "environment" in this wedding cake model, the model shows that our society and economy are supported by the blessings of the nature.

Living things including us humans live on other creatures. And all the creatures need water to survive. In other words, all the creatures, underwater-dwelling and land-dwelling, support each other's lives, which is called "environment" and is the basis for our society and the economic development.

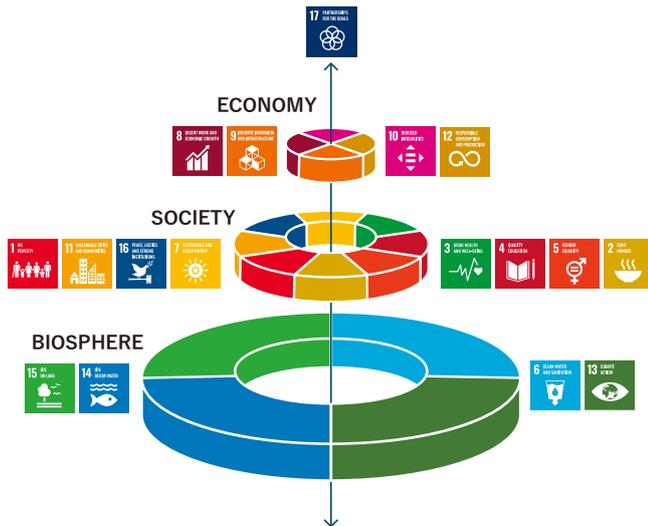


Fig. 3 SDGs wedding cake model

### 4 Sustainable development and ISO management system

We, at the Toyo Group, acquired ISO14001 certification in 2000, and we have been making continuous "green" efforts since them. Currently, we are working to determine which item in our Environmental Policy is related to which goal in SDGs.

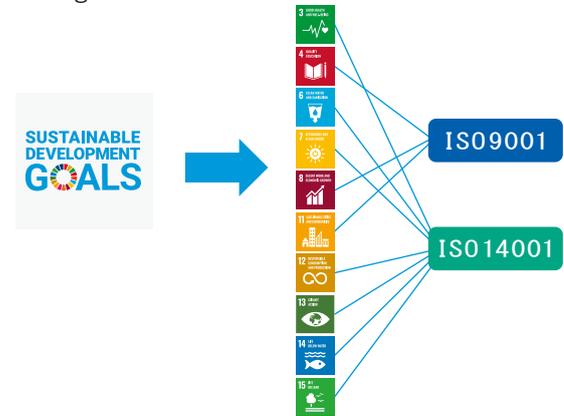


Fig. 4 Incorporating SDGs into our organization

ISO14001 was revised in 2015, where the importance of contributing to sustainable development in environmental management is more clearly stated. The preface to ISO14001 describes the link between sustainable development and ISO14001. For sustainable development, the "triple bottom lines" are important, that is, "the environment," "the society," and "the economy" should be developed in the well-balanced manner.

In today's society, where various environmental problems are becoming more serious, companies are increasingly expected to contribute to sustainable development and to be clearly accountable. As a result, companies are beginning to adopt an environmental management system as a means of systematic approach to particularly contributing to "the environment" line among the "triple bottom lines."

### 5 TOYO Group Initiatives (Overview)

Please refer to our website:

<https://www.toyo-mm.co.jp/cor/sustainability.html>

TOYO Group Initiatives		People					Prosperity					Planet			Peace	Partner ship			
SUSTAINABLE DEVELOPMENT GOALS	No.	Toyo's contribution	1 No poverty	2 Zero hunger	3 Good health and well-being	4 Quality education	5 Gender equality	6 Clean water and sanitation	7 Affordable and clean energy	8 Decent work and economic growth	9 Industry, innovation and infrastructure	10 Reduced inequalities	11 Sustainable cities and communities	12 Responsible consumption and production	13 Climate action	14 Life below water	15 Life on land	16 Peace, justice and strong institutions	17 Partnerships for sustainable development
Products	1	Providing totally energy-saving products																	
	2	Providing resource- & space-saving products																	
	3	Developing greener technology in injection molding																	
	4	Developing greener technology in diecasting																	
	5	Connecting factory by Internet of Things																	
	6	Developing automation system																	
	7	Visualizing product power consumption																	
	8	Going paperless with instruction manuals																	
	9	Reducing toxic chemicals (solder, wire, grease)																	
	10	Ensuring customer safety																	
Sales, Service	11	Holding technical schools																	
	12	Cooperating with national technical skill tests																	
Production Activities	13	Promoting ISO 9001 activity																	
	14	Promoting ISO 14001 activity																	
	15	Reducing power consumption																	
	16	Promoting in-house production and shortening lead time																	
	17	Promoting automation																	
	18	Promoting air conditioning by Gas Heat Pump																	
	19	Utilizing LED lighting in factories																	
	20	Utilizing Digital Transformation for production																	
	21	Reducing paint & thinner consumption																	
	22	Promoting green procurement																	
Compliance	23	Promoting waste recycling																	
	24	Promoting greening & Biodiversity																	
	25	Saving water																	
	26	Protecting coastal water																	
Personnel	27	Complying with TOYO group's Code of Conduct																	
	28	Promoting health management																	
Diversity	29	Developing human resources																	
	30	Promoting gender equality																	
Stakeholder	31	Promoting participation of people with disabilities																	
	32	Harmonizing our operation with neighborhood																	

# The 3rd Medium-Term Management Plan TOYO GO CHALLENGE 2023



## Business Philosophy

We contribute to the society through creating new values, and achieve the bright and prosperous future where each of us can shine.

### Business strategy

#### Customers' Value Up

New initiatives for sustainable growth

Renewal and strengthening of business base

### Company Creed

#### Company policy

- Faith and sincerity
- Harmony and cooperation
- Tenacity
- Determination to accomplishment

#### Company motto

1. With a new idea
2. Quality products, low cost, short delivery
3. Always bright and healthy

### • Editor's Note •

The new fiscal year has started. Regardless of humans' suffering, spring has come in Japan when flowers bloom and birds chat with air filled with vitality. We are very happy to deliver the Spring Issue of TOYO PRESS with the Cherry blossoms in full bloom on the cover page. (Kamon)

● Cover page: Cherry blossoms at Akashi Castle

Top: Big Bridge spanning Akashi Straight Right: Cherry blossoms beside Inari-shrine at Toyo H.Q.



# TOYO

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Company information is from here

