INTERMOLD 2019 TOKYO
April 17 (Wed) – April 20 (Sat)

High-speed Building Metal 3D Printer
LPM325 Exhibited!

Main Award at the 61th Best 10 New Product Awards
Linear Motor Drive
High-speed & Ultra Precision Die-sinker EDM AP30L

Injection molding machine showroom opened at the Yokohama Head Office

OPEN HOUSE
Sodick Singapore Techno Centre Pte., Ltd.

Kyoritsu Gokin Co., Ltd.

A description of the latest food machines
CIP Auto Boiling Machine with Reversing Basket/Food inspection belt conveyor (with LED light)
This function manages the condition under which a tool is used, and uses a new tool when the tool is changed, thus realizing high accuracy and high quality.

A simple unit configuration and continuous stable operation permit automatic operation over a long period.

This is a high-performance automatic wire threading unit. It greatly facilitates automation of wire EDM and unmanned operation.

Supports high reliability machining by accurately predicting machining time that takes into account acceleration and deceleration, predicting the machining surface quality, and adjusting the optimum machining parameters.

High-speed building \times Reference surface machining

It is possible to fabricate dies for insertion into 3-dimension cooling pipes. This is an entry model of a metal 3D printer; it completely changes the concept of making dies for plastic products.

Multi-location simultaneous building function

For secondary machining

Parallel mode

Reference surface machining function

It is possible to carry out high-speed building by using a 500 W fiber laser which is the same as a high-end machine.

It is possible to accurately carry out positioning for secondary machining.

High-speed Building Metal 3D Printer

LPM325

New core processing unit

An optional unit that automatically cuts off the core and then recovers it has been newly developed. At the venue, various automated systems that make increased availability factor and automatic operation over a long period will be described.

High-speed automatic wire threading unit

This is a high-performance automatic wire threading unit. It greatly facilitates automation of wire EDM and unmanned operation.

Linear Motor Drive

High-speed & High Performance Wire-cut EDM

ALN600G

Proposal for a practical automation of wire-cut EDM

The use of our independently developed UN4X NC unit in combination with various simple and optimum software packages that come with user customization functions enables anybody at all to realize highly accurate and efficient machining.

Newly developed

Tool management function

This function manages the condition under which a tool is used, and uses a new tool when the tool is changed, thus realizing high accuracy and high quality.

Sophisticated Applications based on AI

Supports high-reliability machining by accurately predicting machining time that takes into account acceleration and deceleration, predicting the machining surface quality, and adjusting the optimum machining parameters.
The AP30L is the flagship model of our linear motor drive die-sinker EDM. It employs a new design and new technology, resulting in improved performance in the ultra-fine machining region, and realizes high-speed and highly efficient machining. It possesses various features such as a main spindle mounted on our in-house manufactured CFRP—a world first, our new in-house NC unit LP4, and the Arc-less 4 stable discharge machining system, and realizes stable machining over a long period due to overall temperature control and automation support.

**Machining depth : 1.7 mm**
**Electrode size : 0.3 x 3 mm, 2 cavities**
**Electrode material : CuW**

**Workpiece material : SKD61**

The synergistic effect of the latest technology simultaneously realizes precision machining and high-speed machining. The machining time was reduced by 32% compared to the conventional model, even for fine and precision shapes that have a corner radius of 3 µm or less.

**Pitch accuracy : −1.1 to −0.5  µm**

**Surface roughness : Rz 1.370 µm**

**Dimension reduction : 0.2 mm**

**Machining time : 9 min 31 sec**

With unparalleled technology and ultra lightweight, it shows extremely high performance in high speed jump.

**High speed turning, high precision indexing C3 axis (option) (Absolute encoder adopted) :**

- The built-in synchronous motor has a small size and lightweighted.
- Linear motor drive
- CFRP enhanced slider
- Symmetrical structure
- Light weight design for moving parts
- Integrated with ceramic

**High speed turning, high precision indexing C3 axis (option) :**

- The use of a newly developed CFRP main spindle results in uniform machining at full stroke. The reproducibility of ultra-fine machining that is required by the core pin of the narrow pitch connector has been greatly improved.

**Small high-precision CFRP spindle**

**Overall temperature control**

- Developed to allow circulation of machining fluid and cooling liquid, and overall temperature control.

- AP30L collectively manages all the ambient temperature changes and internal heat generation through the overall temperature control.

- **Optimum high-precision mechanical structure by CAE analysis**
- Heating source complete separation structure
- Machining fluid temperature control system
- Integrated with ceramic

**Precision accurate core pin shape**

**High speed machining of pitch width 70 µm**

**Ultra-fine machining of pitch width 70 µm**

**Machining speed of rough machining by short-pulse and high peak current.**

**Improves the performance of EDM with small size and lightweighted structure.**

**Improves machining speed in all of rough machining, semi-finishing, finishing.**

**Improves machining speed of rough machining by short pulse and high peak current.**

**TPC4 control (semi-finishing)**

- Arc-less 4 (discharge stabilized machining system)

- Thermal Displacement Compensation System - “TH COM”

- Artificial Intelligence Maintenance Function - “AIM”

- The machine diagnoses the influence of machining real-time by recording the machine temperature change. This maintenance function leads to the reduction of defective rate and improvement of traceability.

**Numerical control power supply**

- LP4/LP40

**Evolved fine pulse control realizes faster finish machining and greater uniformity of the finished surface, while maintaining surface roughness.**
Molding of automobile parts – From light, thin, short and small, to precision, composite, accuracy, and high reliability

The main applications of plastic parts for cars range from the conventional exterior parts to parts for mechanisms and function parts. The needs imposed by injection molding have changed from "light, thin, short and small" to "precision, composite, accuracy, and high reliability." Sodick’s V-LINE® injection molding machine is contributing to the creation of automobiles that necessitate safety and comfort in addition to these 4 key words.
Sodick Singapore Techno Centre Pte., Ltd.
Opening Ceremony Report

On February 26, 2019 a ceremony was held to commemorate the opening of the “Sodick Singapore Techno Centre Pte. Ltd.” under a tie-up between the Singaporean government and our local sales company Sodick Singapore Pte., Ltd.

At the Sodick Singapore Techno Centre Pte., Ltd., we will accept orders for fabricating dies using the latest technology based on the use of a metal 3D printer, and also carry out consulting, sales support, and maintenance work, in order to promulgate the latest craftsmanship throughout Singapore using a metal 3D printer.

The opening ceremony was attended by many persons including the Japanese ambassador to Singapore.

Sodick Singapore Techno Centre Pte., Ltd.

2 JTC Launchpad @ Jurong Innovation District
NO.01-03 Cleantech Loop 537144 Singapore
Tel: +65–6331–0168
E-mail: sstc@sodick.com.sg

Sodick Singapore Pte., Ltd.’s aim at the latest craftsmanship from ASEAN

At the newly opened Sodick Singapore Techno Centre Pte., Ltd., we are aiming to promulgate the latest craftsmanship by using a metal 3D printer.

Centered on Singapore, we intend to provide sales support for Sodick’s products in Malaysia, Indonesia, The Philippines, and Australia.

We will accumulate know-how for the most up-to-date machining technology, and provide the customer with solutions to various issues and also proposals, aiming at offering technology concerning the most up-to-date craftsmanship.

Machines Exhibited in Showroom

Main facilities

- Linear Motor Drive Precision Metal 3D Printer
  OPM250L
- High-Speed Building Metal 3D Printer
  LPM325

Machines exhibited

- Linear Motor Drive High-speed & High Performance Wire-cut EDM
  AL400G
- Linear Motor Drive High-speed Die-sinker EDM
  AG40L
- Linear Motor Drive Ultra High-speed Milling Center
  UH430L
- V-LINE Injection Molding Machine
  MS100
- eV-LINE Injection Molding Machine
  GL30-1P
The area that remain in Japan have high added value

Nishinomiya-shi, Hyogo
Kyoritsu Gokin Co., Ltd

"We will invest management resources in areas that remain in Japan." This statement was made by Shinya Ikeda, manager of the Cemented Carbide Division of Kyoritsu Gokin Co., Ltd., a manufacturer of ultrahard materials known under the “Everloy” brand. It is judged that this company will grow in the areas of [1] large ultrahard materials, [2] technology for machining large materials, [3] fine and precision areas. Ultrahard material is used because parts that are increasingly used in next-generation automobiles are being upsized, and it is considered that “fine and precision areas which are troublesome and require time and effort” (Division Manager Ikeda) will also remain in Japan. Development and investment were concentrated in these areas, and in the second half of last year, they announced a material that simultaneously realizes hardness and toughness. At the end of last year, they adopted the Sodick AL600P wire-cut EDM, which can machine workpieces of up to 440 mm in a pitch accuracy class of 1 µm. One other area in which they are making efforts for machining the fine and precision area. Division manager Ikeda says, “There is no need to be concerned about cemented carbide when carrying out a machining business. At any rate, we will continue to accept orders that are difficult and troublesome!” They also accept orders for parts related to small automobiles, such as those whose parallelepipeds are 1 µm, and which have a surface roughness of about Ra 0.1 µm. “10 years ago, our company refused to accept orders for parts that were troublesome to make.” However, in order to increase the added value per hour and stabilize our earnings, they changed over to accepting orders for parts that were troublesome to make. In any case, in the area of nozzles other than the above and also the machining business, it is necessary to secure stable profit.

Regarding the future, Division Manager Ikeda says, “The market for large parts related to the electrification of automobiles is expected to grow. In addition, regardless of whether processing is performed or fine and precision machining is carried out, the parts that remain in Japan will have high added value. We intend to invest management resources in these parts.”

Upsetting on rod material as well is progressing. Last year they acquired a “technology grant,” and can now supply ultrahard material 3 m lengths in addition to the previous 1 m lengths. Division manager Ikeda says, “We will reinforce our ability to supply large materials. Our strength lies in our ability to offer materials of the optimal composition, according to the material to be machined, regardless of whether it’s steel or stainless steel.” He also stated that the policy of the company will be “to continue to offer materials that match the customer’s materials to be machined” regarding their machining business as well, and they will change over to upsetting, as in the case of materials. This is because of requests to deliver products as half-finished products is on the increase. To this end, “Wire is indispensable,” stated Division Manager Ikeda. At the end of last year, they adopted the Sodick AL600P wire-cut EDM, which can machine workpieces of up to 440 mm in a pitch accuracy class of 1 µm. One other area in which they are making efforts for machining is fine and precision area. Division manager Ikeda says, “There is no need to be concerned about cemented carbide when carrying out a machining business. At any rate, we will continue to accept orders that are difficult and troublesome!” They also accept orders for parts related to small automobiles, such as those whose parallelepipeds is 1 µm, and which have a surface roughness of about Ra 0.1 µm. “10 years ago, our company refused to accept orders for parts that were troublesome to make.” However, in order to increase the added value per hour and stabilize our earnings, they changed over to accepting orders for parts that were troublesome to make. In any case, in the area of nozzles other than the above and also the machining business, it is necessary to secure stable profit.

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Food Machine

The Food Machine Division carries out manufacture and sales of food processing equipment centered on noodle making machines and rice cooking machines. Our noodle making machines are widely used by major food processing corporations and cooked noodle plants of convenience stores, and they are highly evaluated. We contribute to the development of food culture through food processing machines which effectively and efficiently produce delicious foods, aiming at fulfilling our mission of creating safe and reassuring food.

Description of new products

CIP Auto Boiling Machine with Reversing Basket

With Measuring Device To Supply Noodle of One Portion

- First in the industry! CIP® turning machine + weighing machine

We have a complete set of CIP® functions at places that require cleaning, and carry out fully automated unmanned drainage/washing/water supply. We installed a weighing machine that incorporates highly accurate weighing functions. Complete automation of the process from boiling and cooling to weighing of noodles.

- [Applications] Chilled noodles, frozen noodles, etc.

- HACCP-recommended CIP for Hygienic operation to ensure Food Safety and Reliability.
- Air piping for loosening noodle strings cools noodle evenly.
- Highly more accurate Measuring Device to supply One-portion of noodle for a desired weight.
- High lighting intensity enables foreign matter, human hair, and so on, to be identified.
- Thaks to the removable belt and guide, cleaning after each use is easy.
- The conveyor speed and LED brightness are adjustable.

- Weighing accuracy (Example)
  - 196 g settings (product + container)
  - Accuracy approx. +/-3 g, Approx. 1.5%

- Identification of foreign matter adhering to the rear side
- Foreign matter that can be easily discovered (human hair)

- Can be removed by a single touch when cleaning

Food inspection belt conveyor (with LED light)

Contributing to eliminate ingress of foreign matter

Light is emitted from the LED lamp directly beneath the inspection conveyor, enabling foreign matter, which was often overlooked previously, to be easily identified.

This contributes to measures to prevent ingress of foreign matter, which is the greatest issue related to food manufacture.

- [Application] Visual inspection of ingredients to be processed (vegetables, etc.)

- Examples of Introductions
  - Ready-made dishes (cut vegetables): Selection work after processing of the ingredients
  - Weighing accuracy (Example)
    - 196 g settings (product + container)
    - Accuracy approx. +/-3 g, Approx. 1.5%

With Measuring Device To Supply Noodle of One Portion

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*Cleaning in Place

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