Emphasis on the Particularity of Japanese Mold Quality Aiming for "The Top Precision Plastic Mold Manufacturer in Southeast Asia"

TOHO VIETNAM is located in Thang Long Industrial Park in Hanoi, Vietnam, and supplies mold to local Japanese products or molding manufacturers. The company was founded in 2002 as a mold factory of TOHO INDUSTRIAL Co., Ltd. (Annaka-City, Gunma JAPAN), a plastics molding manufacturer, and began operations in 2004. While the headquarters specializes in light-electric parts, the factory handles motorcycle parts etc. according to the local needs and produces die-casting or rubber molds too. As the technical skills of local mold manufacturers are improving every year, the factory puts the focus on "the particularity of mold manufacturing as a Japanese company" to differentiate itself, and is trying to strengthen its competitive power.

Handling Various Molds: From Clamping Capacity 10t to 1,300t

There were two reasons for TOHO INDUSTRIAL Co., Ltd.'s expansion into Vietnam: One was to strengthen and expand the self-manufacture of molds; and the other was to respond to the clients' request. For instance, at the beginning of 2000's, the cycle of model changes of lap top computers, which was the No.1 handling product, was so fast that manufacture of mold in expedited delivery was accordingly required. The company, who was focusing on molding, had been equipped with mold making facilities, but been requesting their cooperative company to do the work in which expedited delivery manufacturing of mold that amounted to 40 parts per product was required, as they could not handle it with their in-house technology, facilities or staff organization. Meanwhile, around the same time, they had been asked to manage the supply and the maintenance of mold by a certain leading products manufacturer along with the foundation of a factory in Vietnam. So, the company decided to handle the both tasks by enhancing the in-house production capacity within Japan and transferring its outcome to Vietnam. There are about 80 Japanese factories in Thang Long Industrial Park now, and the company was the 12th establishment. That was a comparatively early expansion into Vietnam as a mold factory.

Presently, as of 15th year since beginning of operation, there are 180 local employees and 4 Japanese staffs at TOHO VIETNAM. The factory, 13,545㎡ of site area and 5,985㎡ of building area, is equipped with a 5-axis machining center (MC) by MITSUI SEIKI, 3-axis MCs by OKK and Taiwanese companies, 5 CNC jig borers by YASDA, 4 Wire EDMs and 4 Die-sinking EDMs by Sodick, and so on. They also own 3 injection molding machines of 110~550t for trials. They have introduced the same CAD/CAM software as at the headquarters and use 12 licenses of "CAM-TOOL" by C&G Systems for creating machining data. From mold-designing to machining, assembling and finishing, the Vietnamese staff can complete all the jobs basically by themselves.

They have about 100 local customers, and approx 80% of their sales is accounted by Japanese companies while the remaining of 20% is accounted by the headquarters and by another factory in Philippines that began operations in 2015. Broken down by product, in recent years motorcycle parts occupy about 50% of production, followed by printers, consumer electronics and so on. Broken down by type, plastic injection mold accounts for 70%, die-casting mold accounts for 20% and rubber mold accounts for 10%. " Around the beginning of our expansion, we had assumed the proportion of export to the headquarters to be much

Mr. Osamu Fukushima, President of TOHO VIETNAM

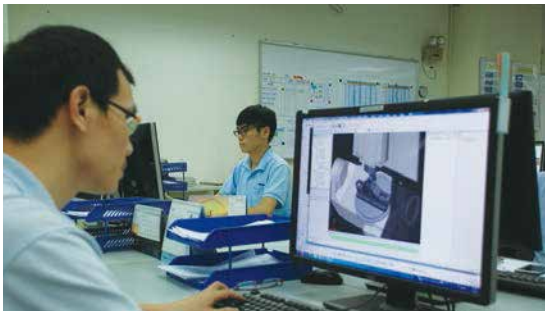
higher, but the local needs of mold were extremely high. Covering from precise mechanical parts of printers to motorcycle exterior parts, we have actually manufactured molds with cramping capacity of 10t~1,300t in molding sizes. We also started to handle die-casting and rubber molds, as being instructed by customers," says Mr. Osamu Fukushima, Company President. He served as local sales manager from 2009 to 2013 and in 2016, and has been now managing the company as President since 2017.

Aiming for High-Precision & High-Efficiency Machining by Improving Local Staff's Abilities

Mr. Kenichi Morii is working for the company as Design & Production Manager. As soon as graduating from a school in 2003, he joined TOHO INDUSTRIAL Co., Ltd. and was assigned to the mold production department which had been tackling to enhance the in-house mold production capacity, becoming in charge of CAM and NC machining. "Install the best equipment in anyway" – Under the top-down order from Mr. Masayuki Kitamura, President of TOHO INDUSTRIAL Co., Ltd., his team selected the machine-tool and the software. As a result of comparing plural products, CAM-TOOL was highly evaluated over other products because of its achievement of high quality finished-surface by surface-calculation logic that is effective on precision mold, and it was eventually introduced. "CAM-TOOL is exactly the software of 'all that one could ask for', being able to create the toolpaths for machining as expected even into details. Because of that, however, there are many parameters to set, and back in those days, as there was no expert in charge of it, we had a lot of trouble creating machining data. It was a continuous process of trial and error until we finally started up the system with the meticulous support from C&G Systems," he recalls. Manager Morii has been in the current position since April in 2011, after having been assigned to TOHO VIETNAM as technical advisor in the autumn of 2010 for 3 months. "Our policy is to increase the accuracy of machining and reduce the time for hand-polishing. CAM-TOOL's toolpaths and various functions to control fluctuation of cutting-load, are contributing to the improvement of accuracy and efficiency," he says.

Mr. Kenichi Morii, Design & Manufacturing Manager

10 Vietnamese engineers are in charge of CAM.



Machining Simulation by CAM-TOOL

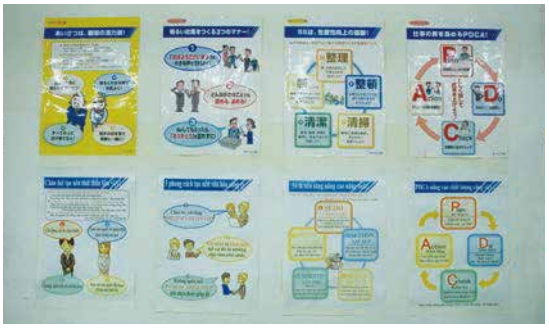
There are 10 Vietnamese engineers in charge of CAM. The leader has been in the company for about 13 years and manages their operations while instructing other members. Newcomers start with creating machining data for electrodes first of which machining conditions have been already templated, and step up to the machinings for smaller parts next, then larger parts. The company has been promoting the standardization of machining conditions for mold with templating step by step, enabling the engineers to find similar shapes and refer to them. However, the range of their product line is wide and the size and shape of mold they handle are various. So, they train the local engineers to also master how to create machining data with proper machining conditions judged by themselves.

"Fortunately, our staffs love studying so much as to read the manuals very thoroughly, and every time the system is upgraded they soon try new functions and each of them tries to devise his/her best way to create toolpaths. They are very ambitious and highly self-motivated. If only they were a little more careful about inspecting toolpaths, things would be perfect," Manager Morii analyses. While promoting the standardizing and templating for mold machining, the originality and ingenuity of each engineer should be also respected. Manager Morii's immediate management issue is how to balance them well.

The support for CAM-TOOL has been carried out by New System Vietnam (NSV), the sales agency in Vietnam. " It is quicker to handle daily operational troubles only among Vietnamese engineers," Manager Morii believes. At NSV, there are excellent Vietnamese engineers in

Equipped with a 5-axis MC by MITSUI SEIKI, CNC jig borers by YASDA and others.

EDMs by Sodick stand in line.



Thorough practice of 5S and PDCA with the posters in both Japanese and Vietnamese.

The company also handles die-casting molds for motorcycle.

charge, and their office is in the Thang Long Industrial Park where TOHO VIETNAM is also located. It is just a few minutes' walk between the two offices and most support cases have been solved without much time.

They introduced 5-axis modules of CAM-TOOL in 2014 and then 5-axis MCs in 2015. They had a Japanese engineer dispatched from CGS ASIA, a subsidiary company of C&G Systems in Bangkok Thailand, to get the support such as lectures on creating machining data; then could start up the operation as scheduled. Currently, they do not handle the types of mold which cannot be machined without 5-axis MCs, but focusing on the efficiency of one-chucking machining, they are utilizing positional 5-axis machining or simultaneous 5-axis machining in accordance to the work.

Enhance the Company's Superiority by Contributing to the Development of the Mold & Die Industry in Vietnam

In the mold & die industry in Vietnam, local companies have gained power and the competition among firms is getting severe. "There are 6~7 local companies that can compete with us. When it comes to the product prices, ours tend to be higher than theirs; so we will enhance the handling of expedited delivery by improving machining speed and machining efficiency, and also focus on the quality more than ever. We will get the customers to understand 'the superiority of Japanese companies' and differentiate ourselves," says President Fukushima. For that, the education of the local staff is crucial. The company, in cooperation with Hanoi University of Industry, offers a comprehensive internship program which contains lectures, field trainings and periodic ability tests to about 10~20 students every year. This program provides a good opportunity to the company to recruit qualified employees, and about half the members of the local staff are the graduates from this university. Some of them have become successful managers. "We train the local staff patiently, and then that staff trains new members in turn. It is very important for an overseas factory to keep this cycle smoothly without the help from Japanese," President Fukushima points out.

While competing with local companies, the company is actively contributing to the upbringing and development of the mold & die industry in Vietnam. They founded " Japan-Vietnam Mold & Die Club" in 2013 along with YOSHINAKA SEIKO CO; LTD. and Nagoya Precision Mold Co., Ltd. One of its activities is holding a technical presentation exchange meeting once or twice a year, inviting machine-tool builders, cutting-tool makers or CAM developers to give lectures on the leading-edge technologies to Vietnamese engineers in the morning and to Japanese engineers in the afternoon. Its steady activities attracted many companies in the industry, and the number of members has increased from original 3 to about 90 companies, including machine-tool or cutting-material builders, supporting members such as Japanese government organizations and over 30 Japanese and Vietnamese mold & die manufacturers and molding companies. "We must build a basis for the local

procurement of customers to take more orders in Vietnam. There are still many tasks that cannot be handled with the capacity and the technology of Vietnamese mold & die industry. We will try together to improve our skills and enhance our competitiveness," says President Fukushima.

The company aims for "the top precision plastic mold manufacturer in Southeast Asia". "I would like to realize the mold manufacturing that can compete with Japanese mold manufacturers," says President Fukushima, referring to his goal. To achieve that, it is indispensable to have closer communication with the local staff, stabilize workers' movement by offering an easy-to-work environment and train them, and build strong partnership with the production-goods manufacturers such as C&G Systems. "We want to share our vision with the local staffs and have them be with the pride like as Japanese mold & die artisans," say President Fukushima and Manager Morii, pinning their hope on the local staffs.

New System Vietnam (NSV) contributes to Vietnamese mold & die industry with its policy of "Sell services, not products"

NSV was founded in 2002 as a joint company of Thai and Vietnamese companies and started its business in 2003. The company has served as one of the group companies of Argo Graphics in Japan since 2015, along with New System Service, the parent company. There are 27 employees at NSV, including 2 Japanese, President Mr. Tomoyasu Kita and General Manager Mr. Atsushi Okabe. They have offices in Hanoi, Ho Chi Minh City and Hai Phong. They handle the sales of CAD/CAM/CAE/PLM products like CATIA, DELMIA, CADmeister, Mastercam, Moldex3D as well as CAM-TOOL in Vietnam.

Currently, there are over 20 user companies of CAM-TOOL in Vietnam. They are aiming for 3 new companies to introduce the system per year. "We should keep our eyes open for everything to develop new business. Obtain the information of companies which are in trouble with machining quality or others quickly, make them understand the excellence of CAM-TOOL and offer them the solutions for the problems – this is our plan," says President Kita. The fist local firm introduced CAM-TOOL last year. Taking this as a model case, the company plans to expand their business into the local firms too.

They are confident in their service system. The person in general charge of CAD/CAM/CAE is a veteran engineer, Manager Bui Le Hung, who is an original member of NSV and formerly worked for a public research institution. The person in full-time charge of CAM-TOOL is Mr. Nguyen Thanh Chung, a former college instructor of mechanical engineering. In spite of his relatively short career of 3 years at the company, he is trusted deeply by his customers. Mr. Chung received a series of lectures for technical and communicational issues from CGS ASIA in Thailand. Making use of that experience, he is offering daily supports and trainings to the users.

Mr. Tomoyasu Kita,
President of NSV

From the left:
General Manager Atsushi Okabe,
Manager Bui Le Hung,
President Tomoyasu Kita,
Mr. Nguyen Thanh Chung