

HORIBA's DNA and Fluid Measurement Control Technology



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“Measurement” makes vague and ambiguous matters clarified. The HORIBA Group contributes to human society through measuring technologies related to the environment, health and life. In particular, HORIBA STEC, Co., Ltd. (HORIBA STEC) contributes to the development of the industry by evolving the technologies for accurate measurement and control of fluids.

HORIBA STEC, offer a kind of fluid control equipment called “mass flow controller”, which is essential for the production of semiconductor devices and liquid crystal panels. Responding to the sophistication of production processes, we have commercialized unique monitoring devices such as in-line gas monitors where HORIBA’s analysis technologies are utilized. These monitoring devices support the production of high-performance semiconductor devices for cutting edge technologies. Our products are highly evaluated in mass controller market because of enhanced performance and multiple functions such as self-diagnosis function, as well as our capacity to provide high-quality products stably. This is the reason why HORIBA STEC currently have acquired the largest share in the market.¹

Our technologies for accurate measurement and control of gas flow can go back to the Standard Gas Generator developed by HORIBA, which was equipped with a glass capillary tube and micro manometer as core parts. In the early 1970s, environmental pollution was a growing concern in Japan, and many measuring instruments for such pollution were newly developed by manufacturers. At that time, there was no authorized standard for calibration gases for adjusting the sensitivity of analytical instruments, and so there was no standard procedure for measuring gas concentration. Therefore, the standardizing of the calibration gases was urgently demanded. The Ministry of International Trade and Industry (currently the Ministry of Economy, Trade and Industry) consulted analytical instrument

manufacturers about methods for determining gas concentration, and then adopted “capillary type flow ratio mixing method” which had already developed by HORIBA. After that the government decided to develop a “standard gas generator for calibrating pollution measuring instruments” as the national standard. Masao Horiba, our president at the time, looked for a way to establish a new company with other manufacturers in the same industry because he did not think it was a good idea to operate this business of such extreme importance to the public interest only by HORIBA. As a result, Standard Technology Co., Ltd., the predecessor of HORIBA STEC, was established in January 1974. Standard Technology Co., Ltd., initiated the development of a versatile standard gas generator that can indicate the concentration values of generated gas and be controlled using electric signals.

Then, with the company’s culture inherited from HORIBA, that encouraging the development of unique and distinctive technologies, we tried to develop a new mass flow controller for measuring and controlling gas flow accurately by ourselves. In 1980, we completed the SEC-L series mass flow controllers as the first domestic product in Japan. At that time, domestic home appliance manufacturers were focusing on the increase in production of products with microcomputers based on their “Made in Japan” brands and were actively engaged in in-house development and production of semiconductor chips used in such products. Semiconductor chips are made by coating several thin films with different electric properties on a silicon wafer and fabricating circuit patterns on it. Since materials in gaseous phase were used to coat the thin films, the demand for mass flow controllers increased as essential devices for the production of high-performance semiconductor chips. Our mass flow controllers, recognized for their excellent support system and high product quality, were adopted by domestic semiconductor plants, and we took the first step in the collaboration with the semiconductor industry. In the current semiconductor industry, high-performance semiconductor devices are produced with ultrafine, three-dimensional technologies at nanometer levels. HORIBA STEC has commercialized controlling and monitoring devices equipped with cutting-edge technologies essential for semiconductor production, contributing to the growth of the industry.

Kyoto, where we are located, has a culture of nurturing “hommamon (authentic ones)” based on its long history. At the new research facility, “Kyoto Fukuchiyama Technology Center”, completed in 2013, HORIBA STEC has initiated a project with the goal of developing and operating a standard flow measurement systems by ourselves, which is traceable to national standards, as one of such “hommamons”. Following the instructions of the National Institute of Advanced Industrial Science and Technology, we are going to obtain NVLAP certification in 2017 based on the international mutual recognition agreement established by the National Institute of Standards and Technology (NIST).

The spirit of “improving skills continuously and searching for products that are competitive in the global market” is alive in the HORIBA Group as our DNA. We thank customers all over the world who have supported us. We hope to contribute to the development of the semiconductor industry as the best partner by pursuing fluid measurement controlling technology further and offering HORIBA’s original solutions to customers.

*1: According to the research conducted by HORIBA STEC (as of March 2016)