



Photo: JAXA/SOHLA

Artist's image of "Maido No.1" satellite

Satellite “Maido No.1” Goes to Space

SMEs in Higashi-Osaka See Dream Come True

By Hideyuki TANAHASHI

Industry Hollowing-out & Successor Shortage

Higashi-Osaka City is known as a “town of *monozukuri* (manufacturing)” where a large number of small and medium enterprises (SMEs) form a cluster. Many of these firms boast top share in their respective markets or are so-called “only one” companies that have developed unique products. The presence of these SMEs in the city – adjacent to the east (*higashi*) of the Osaka prefectural capital, Osaka City – has gone a long way toward the successful launch of a space satellite of their own development.

Although the city prides itself on the high technological capabilities of SMEs, the global economic slump has had a severe impact here, too. The degree of concentration of factories here used to be the highest in Japan, but the city has been plagued by the hollowing-out of industry resulting from the overseas relocation of factories and the closure of businesses. Another serious problem is the shortage of people succeeding these SMEs.

From Toothbrushes to Rocket Parts

The space satellite project was launched in an attempt to revitalize SMEs and attract the attention of young people to *monozukuri* (especially the type of manufacture that requires skills). Since the city's slogan was “Higashi-Osaka: from toothbrushes to rocket parts,” we first thought of building a rocket. However, we had to give up the idea when we realized that it takes from 9 to 10 billion yen to build a rocket.

Photo: SOHLA



Assembling the body of “Maido No. 1”

“Let’s Build a Satellite”

Then, we met Professor Hisao Azuma of Osaka Prefecture University. Prof. Azuma advised us that even though a rocket might be too much for us, a man-made satellite would be within our reach. He suggested we make a small satellite because, in his opinion, compact satellites would be in the mainstream in the future. Heartened by his advice, the Higashi-Osaka Chamber of Commerce and Industry took the initiative in establishing a Higashi-Osaka space-related development study group comprising some 40 companies, mainly SMEs.

The group held study sessions and exchanged information by inviting Prof. Azuma, University of Tokyo professors and staff members of the National Aerospace Development Agency (NASDA), now known as the Japan Aerospace Exploration Agency (JAXA). In December 2002, six member firms of the group established Astro Technology SOHLA.

SOHLA = Universe

The group is often simply called SOHLA, which is pronounced “solah,” similar to the Japanese word *sora* meaning the sky or universe. This is because the group's Japanese name has two Chinese characters “宇宙” which together mean the universe and also because one of the characters “宙” can be pronounced *sora*.

The “H” in the middle of SOHLA represents Higashi-Osaka. More specifically, SOHLA stands for Space-Oriented Higashi-Osaka Leading Association, which reflects our wish to become the city's leader aiming at the universe.

Business-Academia-Gov't Cooperation

The first great hurdle in this project was funding.

In fiscal 2003, SOHLA was authorized to spend 700 million yen over a period of five years on R&D as a project commissioned by the New Energy and Industrial Technology Development Organization (NEDO), a government-funded independent administrative agency. It largely solved our funding problem. However, the money was entrusted to us and was not a subsidy. That is to say, we must pay NEDO profit earned from the project at the end. We also signed a technology support agreement with JAXA, which gave us full support ranging from human resources to test equipment. Our project was the fruits of cooperation involving SMEs (business), Osaka



Photo: JAXA

launching the satellite aboard the H-IIA

Prefecture University and Osaka University (academia) and JAXA and NEDO (government), among others.

The NEDO-entrusted money, however, was not sufficient for our project. Therefore, we asked the staff members of JAXA and students of Osaka Prefecture University to cooperate with us free of charge. We were also told that it would cost 100 million yen to send a 50 kg satellite into orbit aboard a rocket. Fortunately, JAXA invited the public to apply for a place to send a satellite aboard its H-IIA rocket. Our satellite was chosen for the free ride, thus clearing the problem of launch funding.

Finally Launched Despite Many Hurdles

We built the satellite under the guidance of JAXA, but communication with the JAXA staff was difficult as we were not able to understand technical terms they used, hampering progress in the project. The same problem existed with people from the universities and NEDO. Although Higashi-Osaka was known for its prowess in *monozukuri*, we were all amateurs when it came to space. While working on the project, we learned various conditions in space, such as the fact that the temperature rises to around 200 C on the side of a satellite facing the sun, but falls to minus 70 C on the other side, and that liquid and oil gasify in space. While learning these things, we conducted numerous tests and finally built our satellite, though well behind schedule. The satellite was finally launched aboard the Japanese-made rocket H-IIA No. 15 at 12:54 on January 23, 2009, from JAXA's Tanegashima Space Center off the southern tip of the Japanese archipelago. Its primary mission is the first of its kind in the world: to observe thunderclouds from space with equipment developed by Osaka University. After it was safely launched and put in orbit, our first rocket, SOHLA-1, was christened "Maido No. 1."

Satellite Named "Maido No. 1"

We are often asked why our satellite is called "Maido No. 1." "Maido!" is an Osaka dialect originally used by merchants in this area to greet someone or to thank someone for awarding a business deal, for example. We gave this name to our satellite in the hope that it would cheerfully greet other man-made satellites already in space and that it would give power to the recession-plagued Kansai region and become a guiding star for younger generations to succeed our *monozukuri* tradition.

Earnest Youths: Source of Vigor

The business-academia-government project often stalled because we lacked capability. However, looking at the young people earnestly working on the project, we thought: "We middle-aged guys, too, must do all we can. We shouldn't be looking down!" It was in this spirit that we managed to complete the project.

From this experience, we have learned that it is not we middle-aged people from SMEs that raise young people, but that the important thing is for us to grow together with young people. We will never forget the joy shared with our youthful partners when the rocket with our satellite lifted off.

Give Power to Higashi-Osaka!

"Maido No. 1" is a small cube-shaped satellite with each side measuring 50 cm. But one of the students who worked on it has come back to Higashi-Osaka after finding employment elsewhere upon graduation. He found *monozukuri* so attractive that he joined one of the member companies of SOHLA. We believe this is because he has felt the keen desire of SOHLA member companies to revitalize Higashi-Osaka and make it a place attractive enough to draw a large number of young people – the very factors that had led to the project.

We hope that our project will work as a catalyst for increasing the number of young people interested in *monozukuri* and also for increasing SMEs which endeavor to create new value added.

Never Give Up!

Thanks to the support and cooperation of many people, we were able to launch "Maido No. 1" on the strength of technology and skills each SOHLA member had and also in the "spirit of challenge" of SMEs. Times are tough now, but we believe dreams will always come true if we keep our dreams and aspirations alive without giving up. If we are doing our best, many people will come to help us. We will be happy if this bright topic can give people, even in small measures, courage and vigor. Thank you all!

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Photo: JAXA/SOHLA



A photo of Japanese archipelago taken from the satellite

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