SMIC Seizes Progress in Solder-Related Markets

INTERNEPCON Japan 2014, the largest trade show in Asia, took place at Tokyo Big Sight in Tokyo, Japan from January 15 to 17. It gathers equipment, technologies, components, and materials for manufacturing and packaging of electronics under one roof.

In the solder field, leading Japanese manufacturers showcased their latest products and technologies. Among them, Senju Metal Industry Co., Ltd. (SMIC) set up the largest booth at this year's event. The company's booth and the seminar corner drew many visitors from day one.

Eietsu Hasegawa, President & Chief Operating Officer of SMIC, says, "If we perceive markets in Japan, such as Home Energy Management Systems (HEMS), with new keywords, they could provide opportunities to vitalize monodzukuri (manufacturing)…(From here) we would like to provide more advanced solder products to market."

SMIC exhibited the Injection Molded Solder (IMS) system, the first equipment that forms solder bumps for three-dimensional (3D) packaging of semiconductors; the RGS800 Series solder paste, which ensures secure mounting of 0201 chips; M758 solder ball, which is suitable for bumps on the wafer; and copper-cored balls for component-embedded 3D packaging.

Eietsu Hasegawa, President & Chief Operating Officer of SMIC, says new challenges are arising in the development of solders as well.

In an interview with AEI, Hasegawa looked back at 2013 and described future challenges and opportunities related to the solder industry.

AEI: *How can you assess the solder industry in 2013?*

Hasegawa: In 2013, the solder industry was driven by smartphones, tablet computers, and automotive electronics. The miniaturization of components advanced, creating needs for new technologies in the packaging process.

Departing from the world of tin (Sn), silver (Ag), and copper (Cu), the diversification of solders advanced, including low-Ag and no-Ag solders, and solders using various alloys.

SMIC's booth at Nepcon Japan 2014 held in Tokyo, Japan in January

SMIC built Solder Technical Center on the premises of its head office in Adachi-ku, Tokyo, Japan, which commenced full-fledged activities in Nov. 2012. In 2013, we saw the Solder Technical Center produce steady results. Combined with the activities at R&D Center in Moka-shi, Tochigi Prefecture, Japan, we have been accelerating the development of solder materials that meet the needs of the market.

AEI: *How do you expect changes to accelerate in 2014?*

Hasegawa: With the recent emergence of wearable devices in addition to mobile devices, the keywords of "light, thin, short and small" and "ultra-high-density packaging" have gained more importance. In the field of electric vehicles (EVs), the practical use of fuel cell vehicles has advanced, in addition to EVs and hybrid electric vehicles (HEVs), and solders with higher reliability have come to be required.

With these changes, new challenges have arisen in the development of solders as well. We would like to seriously take these changes into consideration, and accelerate the development of solders.

Replacing conventional solders using Sn, Ag, and Cu, the development of solder alloys has also become diversified, including the addition of nickel (Ni), bismuth (Bi), and cobalt (Co). It is also a challenge to efficiently produce solders that meet diversified needs. Meanwhile, the installation of smart energy systems, including HEMS, has expanded business opportunities. If we view markets in Japan with new keywords, they should provide opportunities to vitalize monodzukuri.

We have also been researching silver nano pastes, and find that total cost is a challenge. From now on, we would rather strengthen the development of new products, placing importance on inherent properties of solders that exhibit ex-

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cellent reliability both mechanically and electrically.

Setting the goal of increasing the sales ratio of new products to 30 percent, we hope to provide more advanced solder products to market so that we can achieve this goal in three years.

AEI: *Could you describe the production system of your company?*

Hasegawa: In Japan, our company has four production bases, in addition to the Tochigi Plant in Moka-shi, Tochigi Prefecture, which is the mother plant. They are Senju Electronic Corp. in Ichinoseki, Iwate Prefecture; Soka Works in Soka, Saitama Prefecture; Kansai Plant in Takacho, Hyogo Prefecture; and Senju Giken in Miyazaki, Miyazaki Prefecture. At these plants, we have been producing diverse solder materials, including fluxes, flux cored solders, and solder balls.

Overseas, we have been producing mainly in Asia, including China, Korea, Taiwan, Thailand, Malaysia, and the Philippines. We also have production in European countries and the United States.

By the end of 2013, we bolstered the production system at Senju Metal (Huizhou) Co., Ltd., a local production manufacturing base in Huizhou, Guangdong Province in China. In order to expand the production of flux cored solders and solder pastes (powder), in addition to bars and fluxes, we improved our production facilities. SMIC positions Senju Metal (Huizhou) as a major comprehensive plant.

Senju Metal (Huizhou) has significantly increased the local procurement and production ratios of raw materials and intermediate materials, which the plant previously imported from Japan. The company intends to enhance cost competitiveness through local procurement and production. ❑

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