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Late 1990s
300mm Standardization Activities
~ Discrete Semiconductor/Others ~

The diameter of Si wafers for devices fabrication had been enlarged by 1.3 to 1.5 times for each generation to improve productivity in the semiconductor industry. Standardization of wafer external dimensions was promoted by SEMI in 1974 (SEMI Standard). Afterward, standardization of manufacturing equipment and materials had been led by SEMI. Wafer fab construction and related costs soared as silicon wafer diameter increased from one generation to the next. In particular, the rate of increase in the costs was significant when the 150mm wafer was replaced by the 200mm which required the larger size equipment. In addition, automation of the entire fab started in the 200 mm generation. For this reason, further standardization was required to lower those costs throughout the semiconductor industry which was shifting toward the 300 mm wafers generation.

First, a liaison group for 300 mm wafer standardization (J300) was organized by five semiconductor-related organizations in Japan: JEIDA, SIRIJ, JSNM, EIAJ, and SEAJ in 1994. A semiconductor technology joint development company (Selete: Semiconductor Leading Edge Technology Inc.) was established by Japanese semiconductor companies in 1996, and began to evaluate manufacturing equipment and materials for the 300 mm wafer process. In 1996 of the same year, a consortium I300I (The International 300mm Initiative) led by SEMATECH started with the participation of semiconductor companies from the U.S., Europe, Korea, and Taiwan.

The first WSC (World Semiconductor Council) meeting was held in 1997. At this conference, the importance of international cooperation on standardization of semiconductor technology was confirmed, and it was decided to exchange information on 300mm wafer technology between I300I and J300, and between I300I and Selete. This had enabled international semiconductor device, equipment, and materials companies to collaborate on standardization activities. SEMI standardization of the 300 mm generation extended to a wide range of wafer geometries, wafer transport, operation interfaces of wafer load ports between equipment and wafer transfer system, fab utilities, CIM systems, and EHS (Environment, Health, and Safety). These standardizations had significant effect for semiconductor device companies to increase selection options of manufacturing equipment and material suppliers, and for manufacturing equipment and material companies to reduce their development and manufacturing costs.

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