



# 1987

## **SEMATECH**

### **semiconductor manufacturing equipment development**

~ Discrete Semiconductor/Others ~

SEMATECH was a semiconductor technology development consortium established in 1987 with the support of the Department of Defense (DoD), led by the Semiconductor Industry Association (SIA). The U.S. lost its lead to Japan in the global market share of semiconductor devices in the previous year, so that the consortium played a part in the aim to regain U.S. international competitiveness. The U.S. had antitrust laws which discouraged joint R&D between companies, so that establishment of SEMATECH was realized by the National Cooperative Research Act (1984), which was enacted considering the effectiveness of Japanese VLSI Technology Research Association which contributed to the success of Japanese semiconductor industry.

At SEMATECH, there was initially some debate over whether to focus on the development of semiconductor process technologies or to emphasize the development of semiconductor manufacturing equipment. But SEMATECH settled on the latter in 1989 based on the recognition that semiconductor technology was strongly linked to manufacturing equipment and materials. This direction had led to a shift to a business model in which manufacturing equipment and materials were positioned as process technology platforms to be strengthened by an industry consortium led by SEMATECH, and semiconductor device companies were differentiated their business through their product concepts and specification that opened up a variety of new applications. The standardization of manufacturing equipment and EHS (Environment, Health, and Safety) in collaboration with SEMI had further determined the direction toward the standardized technology platform. As seen in the separation of fabless LSI companies and silicon foundries, this direction taken by SEMATECH had significantly changed the structure of the semiconductor industry since the 1990s.

The National Technology Roadmap for Semiconductor (NTRS) committee was formed by SIA in 1992. SEMATECH played a central role of developing the roadmap with the Semiconductor Research Corporation (SRC). The NTRS was a roadmap predicting future aspect of technology platforms, the equipment and materials that enabled them over the next 15 years. The NTRS provided R&D guideline for device companies, equipment and materials companies. SEMATEC was initially a domestic consortium limited to participating companies located in United States. However, in 1998, it became International SEMATECH, and semiconductor-related companies from around the world began participating. At the same time, NTRS was internationalized and became ITRS (International Technology Roadmap for Semiconductor).

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