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## SOI Equals Big ROI, Says Semico

Peter Singer, Editor-in-Chief -- *Semiconductor International*, 7/1/2006

[Semico Research Corp.](#) (Phoenix) recently conducted an analysis of the impact of silicon on insulator (SOI) wafers on the cost of operation and manufacturing and the ultimate cost of the end product. The results were contrary to popular belief. "On a straight manufacturing cost basis, the 10-15% SOI cost of ownership figure does not tell the whole story," said Joanne Itow, managing director of manufacturing at Semico. "Moving further into the semiconductor manufacturing process, looking at the cost of SOI once the wafer is tested, diced and the good die packaged, the Semico analysis has found the SOI cost of ownership adds only 4-6% to the total manufacturing cost."



Currently, the added cost of the substrate material is one of the perceived challenges hindering widespread adoption. In addition to a lower cost of ownership (CoO) than previously thought, other factors improving the benefits of SOI include new design solutions and logic architectures. While sometimes overlooked, the relationship between the performance of logic and the amount of on-die memory required in support of that logic has become a growing portion of the die area. "Use of SOI-enabled memory optimization tools can increase the benefits of SOI from breakeven to a cost reduction of over 40%, depending on the product, technology and process complexity," Itow concluded.

As semiconductor process technologies move down the nanometer scale, SOI can actually be less expensive than bulk. Considered in this broader context, SOI becomes a cost-effective and attractive solution, as detailed in Semico's recent study, "SOI = Big ROI." This report is available for purchase from Semico.