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## **Is silicon-on-insulator technology mainstream?**

by **Richard Wilson**

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Silicon-on-insulator (Sol) semiconductor technology is one way of tackling the speed versus power trade-off in next generation devices. ARM is the latest processor firm to offer the power and isolation benefits of Sol chips to designers, so is the process technology in danger of becoming mainstream?

ARM has acquired Sol firm Soisic which develops standard cell libraries, embedded SRAM memory compilers and I/Os in Sol technologies. ARM also has a joint development with French firm Soitec to create chip design libraries for silicon-on-insulator (Sol) devices to be used by fabless firms when sending chips to foundry.

According to André-Jacques Auberton-Hervé, Soitec president and CEO: "It is definitely another important step forward in the broad commercialisation of Sol technology, which is becoming increasingly critical in the fables and foundry communities."

The aim, said the firms, is to support Sol adoption to take advantage of its isolation, speed and power consumption benefits.

"SOI technology will complement our existing CMOS-based physical IP by providing customers with an additional set of choices for improving performance, while conserving power, as semiconductor processes migrate to ever-smaller geometries over the next few years," said Mike Muller, CTO, ARM.

There has been some debate in the industry about the true cost benefits of Sol process technology for producing system-on-chip devices.

According to a report by Semico Research, Sol as a substrate can reduce the cost of ownership of some silicon by up to 40 per cent.

Interestingly this is contrary to the common wisdom about the costs associated with the use of Sol.

Cost has long been the objection of chip makers in evaluating whether or not to switch to silicon-on-insulator wafers. Despite this the number of firms adopting the technology is steadily growing. AMD and IBM have already made the switch for specific processors, while Freescale, Renesas and Atmel are also Sol adoptors.

Options are also increasing for fabless firms as foundries such as IBM and Soitec expand production to meet growing worldwide demand for Sol and other engineered substrates.

"To meet anticipated rising demand from chipmakers worldwide, including Asian foundries, we are further bolstering our global production capacity with a new production plant in Singapore," said Auberton-Herve.

Research indicates that Sol can be cost effective when the whole semiconductor manufacturing process from wafer to packaged die is considered. Semico analysis has found the Sol cost of ownership can add only four per cent to six per cent to the total manufacturing cost.