

Tegal Awarded Key Patent For New Magnetron Sputter Source

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New sputter source represents break through in target efficiency - provides significant cost savings to chip manufacturers

Tegal Corporation announced that it has been granted United States Patent, No. 6,783,638 for the Flat Magnetron sputter source. The invention provides for the use of a greater percentage of the material from the sputter target than in existing conventional physical vapor deposition ("[PVD](#)") systems. Direct benefits of the novel design include lowering material cost, enhancing sputtering rate, and increasing deposition system availability. System uptime and availability is a key variable in [semiconductor](#) chip manufacturers' actual cost of system ownership.

Conventional PVD systems utilize about 35-45% of the target material before they must be replaced. The new Flat Magnetron's magnetic design and the physical placement of the sputter cathode in the magnetic field enables a significant improvement in material utilization. Initial test results of the Flat Magnetron show up to 65% target utilization. Tegal engineers believe this efficiency can be extended further. Such improved target utilization is especially important in the deposition of costly metals such as gold, ruthenium and platinum whose use is prevalent in MEMS and other nanotechnology devices. The new Flat Magnetron design allows higher levels of metal reclamation, further contributing to more efficient capital utilization.

The first Flat Magnetrons are in daily use at the Nanofabrication Center

of the University of California at Santa Barbara, where they are installed in a Sputtered Films Endeavor AT PVD cluster system. These Flat Magnetrons are used to deposit AlN, SiN, TiN, and a variety of pure metal films by researchers working on advanced nanofabrication issues.

The Flat Magnetron was the final invention of Peter Clarke, founder of Sputtered Films, prior to his passing in 2002. "My father referred to the Flat Magnetron as his "parting shot" in an industry in which he was known for finding very creative, and often simple, solutions for difficult problems. We're very pleased to add the Flat Magnetron to Tegal's growing list of advanced PVD technology offerings," said Carole Anne Demachkie, General Manager of Tegal's Sputtered Films Product Group.

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