

EUV machines to swing into commercial action in 2015

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Credit: ASML

(Phys.org) —ASML develops technology for high-tech lithography machines for the semiconductor industry. The company, based in The Netherlands, manufactures equipment that is used to transfer circuit patterns onto wafers. For them and their customers, EUV, or extreme ultraviolet, is a significant term that comes down to producing wafers in a better way. The chip industry has long hoped to use the short-wavelength light to make circuits that are cheaper and denser. The company, according to *IEEE Spectrum's* detailed report, has announced its work with extreme ultraviolet and related goals, and that its EUV machines will by 2015 be bright enough for commercial production.

This is an important prediction because that is the year when the machines will be needed to pattern transistors in the 10nm node—the

generation after the next generation of logic chips. The announcement suggests the company is on a solid path to sorting out complexities intrinsic to EUV, which requires sophisticated light sources.

Those familiar with the technology have commented that one of the biggest problems that interfere with [chip manufacturers](#) achieving smaller, faster, processors has been the lack of a proper light source. For the moment, the industry is making do with 193-nm lithography. EUV researchers hope that it will serve as a replacement technology in time, to make circuits that are cheaper and denser.

EUV machines use light to draw finer features that go beyond the capabilities of 193-nm lithography machines. The problem is insufficient brightness of the light source with EUV machines, which has made commercialization difficult. The dimmer the light, the longer each wafer must be exposed, and the longer it takes to make each chip. As *Hot Hardware's* Joel Hruska has put it, "We've reached the limits of what a 193nm wavelength is small enough to etch, even when using [immersion lithography](#) (in which the chip is immersed in water)."

ASML's goal is to eventually produce 125 wafers per hour with its machine. At that rate, ASML expects 250 watts of EUV light is needed. According to the company, many of the major kinks in EUV light production have been worked out and the company is more confident the light source brightness can be boosted all the way to 250 watts. To make sure that is a reasonable goal, the company has focused on showing that the light source is not just bright but reproducibly so.

According to *IEEE Spectrum*, ASML revealed its plans in July at the [semiconductor industry](#) conference Semicon West in San Francisco.

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