

# Photronics Relies on Synopsys for Photomask Manufacturing Solutions

*“We selected Synopsys to be our primary EDA partner because they are the only EDA company that delivers the complete range of design solutions we need for addressing key mask manufacturing challenges on a wide range of process nodes. The technologies we’re using from Synopsys enable us to maintain the level of quality and accuracy in our deliverables that our customers depend on.”*

**Peter Kirlin**

Senior Vice President, US & Europe, Photronics, Inc.

Photronics is a leading worldwide manufacturer of photomasks, high precision photographic quartz plates that contain microscopic images of electronic circuits. Photronics provides a complete array of photomask solutions for customers manufacturing semiconductors, flat panel displays, opto-electronics and data storage components. Photronics supports wide-ranging technology needs, from routine wafer production at 250nm and above to advanced sub-wavelength reticle applications at 40nm and below.

## Striving for Perfection

In the photomask industry, quality is of the utmost importance since semiconductor manufacturers rely on the mask deliverables as the blueprint from which mass production wafers are made. For Photronics, the challenge is to not only maintain a high standard of accuracy and quality, but to do so with fast turnaround times — the first several layers of photomasks are sometimes required to be delivered by Photronics within 24 hours from the time it receives their customers’ design data. To keep pace with the demanding needs of the semiconductor and flat panel display industries Photronics serves, Photronics requires mask manufacturing tools that handle large data files, provide tight critical dimension control and enable rapid mask manufacturing cycle times. To satisfy their unique requirements, Photronics adopted Synopsys’ CATS®

product line, the industry’s most widely used solution for mask manufacturing, inspection, metrology, and direct-write-on-wafer.

Photronics’ decision to utilize CATS was driven by both technical and business criteria. On the technology side, Photronics was able to improve symmetry and uniformity in its mask designs with CATS, critical characteristics for ensuring that the final design performs to specification and helping to reduce write times for mask writing machines. To address Photronic’s business objectives, CATS employs the latest techniques in distributed processing which allows Photronics to deploy cost-effective compute clusters that achieve near linear scalability and rapid turnaround.

## Partnering With An Eye To The Future

To maintain leadership in photomask solutions, Photronics is continually optimizing its manufacturing network to satisfy an expanding array of process nodes and reticle requirements. Recent investments in new technology and a joint venture partnership have given Photronics access to new market segments such as DRAM, flash memory and microprocessors. By employing Synopsys tools for many of their EDA technology needs, Photronics is putting in place a highly scalable mask manufacturing flow that can support its customers’ current and anticipated array of manufacturing technologies and output formats.