Business Strategy

The long-term growth of the semiconductor industry is the result of the principle that the power, cost and time required for every computation on a digital electronic device can be reduced by shrinking the size of transistors on chips. Today's transistors are around 250 times smaller than they were in the early 1970s. Using advanced semiconductors in industrial and consumer products often provides economic benefits, user-friendliness and increased safety. The technology revolution powered by semiconductors has brought many advantages: not only can information be more widely disseminated than ever before, affordable chip intelligence has also enabled industry and services sectors to create and distribute products and ideas at lightning speed.

Smarter, smaller and more energy-efficient chips are made with more sophisticated lithography systems like the ones produced by ASML. Lithography systems are crucial to the roadmaps of chipmakers to smaller transistors on chips. ASML’s business strategy is based on achieving and further developing a position as a technology leader in semiconductor lithography. When executed, this strategy results in the delivery of lithography systems which enable customers to produce highest performance and lowest cost chips. The superior value of ownership offered to customers as a result of ASML’s strategy also maximizes ASML’s own financial performance, aligning the interests of ASML and our customers. We implement our strategy through customer focus, strategic investment in R&D, and operational excellence.

Customer focus

We serve different types of chipmakers by ensuring that our products provide premium value for customers in the various semiconductor market segments, including Flash and DRAM memory makers, integrated device manufacturers, and foundries or made-to-order chip contractors.

Through 2009, 18 of the top 20 chipmakers worldwide, in terms of semiconductor capital expenditure, were our customers. We also have a significant share of customers outside the top 20 and we strive for continued business growth with all customers.

In 2009, we achieved a top three position in customer satisfaction rankings amongst large suppliers of semiconductor equipment, according to VLSI Research, an independent industry research firm that surveyed customers representing 95 percent of the world’s total semiconductor market. Our satisfaction ratings by customers surpassed every lithography competitor for the seventh year in a row.

Strategic investment in research and development

Our customer-base relies on ASML to deliver the right technology at the right time to meet long-term roadmaps which often extend many years into the future. In order to meet these demands, ASML is committed to significant long-term investments into R&D that are not significantly impacted by short-term cyclical swings. In 2009, R&D expenses (which include R&D costs and additions to other intangible assets regarding development expenditures) amount to EUR 467 million (2008: 534 million).

The foundation of our lithography scanners is our dual-stage wafer imaging platform - the TWINSCAN system - which we introduced in 2000 and which allows exposure of one wafer while simultaneously measuring the wafer which will be exposed next. Our strong leadership in this capability has allowed us to achieve the industry’s highest throughput, enabling reduced cost-per-exposure per wafer. ASML is the only lithography manufacturer that enables volume production based on dual-stage systems.

We have focused our R&D investments on three core programs: immersion, double patterning and EUV.

Our innovative immersion lithography systems place a fluid between the wafer and a system’s projection lens, to enhance focus and enable circuit line-width to shrink to even smaller dimensions than what is possible with "dry" lithography systems. ASML pioneered this "wet" technology and has experienced strong demand for immersion-based systems, driven initially by NAND Flash solid state memory chipmakers which have aggressive shrink roadmaps to reduce cost per memory function. Shrinking the feature sizes on chips by means of immersion systems has meanwhile been adopted...
by most of our customers in all other semiconductor market segments, including DRAM memory chip, as well as the Logic chip segment including the Foundry contract chip manufacturers.

With immersion becoming the cornerstone of the modern chip factory, we have developed different immersion systems for different needs. We have optimized our TWINSCAN XT immersion systems for cost-effective imaging down to 40 nm patterning, while we have simultaneously developed a new dual wafer stage system called TWINSCAN NXT with improved positioning ("overlay") and imaging. The TWINSCAN NXT platform enables next generations of semiconductors through the so-called Double Patterning technique which requires two exposures per layer on a chip. Imaging patterns and lines between one another without creating contacts is very demanding on the exact placement of lines and patterns and this overlay requirement is uniquely served by our TWINSCAN NXT planar wafer stage and breakthrough grid metrology. Our first TWINSCAN NXT system was shipped in the third quarter of 2009 and achieved overlay below the specification of 3 nm, which is only 12 silicon atoms across, or the length a human hair grows in just half a second.

We complement our scanner products with a rapidly expanding portfolio of software and metrology products to help our customers achieve better imaging at aggressive resolutions, offering significant revenue-generating and cost-saving opportunities to our customers. As customers optimize their scanner performance by taking into account the entire chip creation process, from design to volume manufacturing, we have called this approach "holistic lithography". During the chip design phase ASML’s holistic lithography software uses actual scanner profiles and tuning capabilities to create a design with the maximum process window for a given node and application. During manufacturing, ASML’s holistic lithography leverages unique metrology techniques and feedback loops to monitor overlay and Critical Dimension Uniformity (CDU) performance to continuously maintain the system centered in the process window. During 2009 we launched new products such as FlexRay™ programmable illumination, Source Mask Optimization (SMO) tools and BaseLiner™ scanner stability, while announcing deals for sales of these products with major chip manufacturers.

Also in 2009, we confirmed our roadmap for EUV lithography with the first shipment of our pre-production system (for which we have received five orders) scheduled for the second half of 2010. EUV derives its name from the light source it uses the wavelength of which is 15 times shorter than the Deep Ultraviolet ArF light source used in our most advanced immersion systems. Despite the financial and economic crisis, assembly of our first pre-production systems started in 2009 in the new EUV cleanroom facility at our headquarters in Veldhoven, which was opened on schedule in May 2009. The NXE (EUV) system, which will be built on an evolved TWINSCAN platform, will enable our customers to extend their roadmap with chip features down to 22 nm and smaller. Industry support for EUV was boosted by the publication of excellent imaging results from many customers who have been working on our Alpha Demo Tools located at two major industry R&D centres (IMEC in Leuven, Belgium and CNSE Albany NanoTech in New York State, U.S.). Also, there was considerable progress reported publicly in EUV infrastructure development, ranging from reticles and resists to source power improvements. We have published a roadmap to develop a range of EUV models, offering the greatest extendability at the lowest cost of ownership for the future of lithography.

Operational excellence
We strive to sustain our business success based on our technological leadership by continuing to execute our fundamental operating strategy well, including reducing lead-times while improving our cost competitiveness. Lead-time is the time from a customer’s order to a tool’s delivery.

Our business strategy includes outsourcing the majority of components and subassemblies that make up our products. We work in partnership with suppliers, collaborating on quality, logistics, technology and total cost. By operating our strategy of value sourcing, we strive to attain flexibility and cost efficiencies from our suppliers through mutual commitment and shared risk and reward. Value sourcing also allows the flexibility to adapt to the cyclicity of the world market for semiconductor lithography systems. As a result of an increase in the number of orders in the second half of 2009, our suppliers went from very low to very high levels of deliveries to ASML. Our supply-base has been able to handle the volatility well, as they have mirrored our flexible business model and have reduced their exposure to ASML compared with the previous economic downturn. ASML more than doubled the frequency of planning communication with its supply chain during the financial and economic crisis, in order to assist those suppliers and maintain their viability throughout the crisis. Our supply-base proved to be robust in coping with the volume swings.
ASML has a flexible labor model with a mix of fixed and flexible contracted labor in its manufacturing and R&D facilities located in Veldhoven. This reinforces our ability to adapt more quickly to semiconductor market cycles, including support for potential 24-hour, seven days-a-week production activities. By maximizing the flexibility of our high-tech workforce, we can shorten lead-times: a key driver of added value for customers. Flexibility also reduces our working capital requirements. The flexibility in our business model was used in response to the sharp downturn. We reduced our workforce by approximately 1,000 temporary employees, including 700 in Veldhoven. We rehired approximately 400 temporary employees in 2009.

In view of the economic volatility of the semiconductor industry, we continue to strive to improve efficiencies in our operations: addressing our cost structure and strengthening our capability to generate cash. We started cost reduction initiatives in the second quarter of 2008 and by the end of 2009 we had cut our costs by more than EUR 200 million per year, of which we expect approximately 75 percent is sustainable during an economic upturn up to a sales level of approximately EUR 800 million per quarter. If the sales level increases above EUR 800 million per quarter, cost levels are expected to increase. We maintained our high R&D investments for our strategic R&D projects as well as our machinery and equipment capacity at our productions facilities, which is expected to give us a strong position for the anticipated recovery in demand for our products.

**Business Model**

Our business model is derived from our "Value of Ownership" concept which is based on the following principles:

- offering ongoing improvements in productivity, imaging and overlay by introducing advanced technology based on modular platforms and advanced applications outside the traditional lithography business, each resulting in lower costs per product for our customers;
- providing customer services that ensure rapid, efficient installation and superior on-site support and training to optimize manufacturing processes of our customers and improve productivity;
- maintaining appropriate levels of R&D to offer the most advanced technology suitable for high-throughput and low-cost volume production at the earliest possible date;
- enhancing the capabilities of the installed base of our customers through ongoing field upgrades of key value drivers (productivity, imaging and overlay) based on further technology developments;
- reducing the cycle time between a customer’s order of a system and the use of that system in volume production on-site;
- expanding operational flexibility in research and manufacturing by reinforcing strategic alliances with world class partners, including outsourcing companies;
- improving the reliability and uptime of our installed system base; and
- providing refurbishing services that effectively increase residual value by extending the life of equipment.

Our business model is based on outsourcing production of a significant part of the components and modules that comprise our lithography systems, working in partnership with suppliers from all over the world. Our manufacturing activities comprise the subassembly and testing of certain modules and the final assembly and fine tuning / testing of a finished system from components and modules that are manufactured to our specifications by third parties and by us. All of our manufacturing activities (subassembly, final assembly and system fine tuning / testing) are performed in cleanroom facilities located in Veldhoven, the Netherlands, in Wilton, Connecticut, the United States and in Linkou, Taiwan. We procure stepper and scanner system components and subassemblies from a single supplier or a limited group of suppliers in order to ensure overall quality and timeliness of delivery. We jointly operate a formal strategy with suppliers known as "value sourcing", which is based on competitive performance in quality, logistics, technology and total cost. The essence of value sourcing is to maintain a supply base that is world class, globally competitive and globally present.

Our value sourcing strategy is based on the following strategic principles:

- maintaining long-term relationships with our suppliers;
- sharing risks and rewards with our suppliers;
- dual sourcing of knowledge, globally, together with our suppliers; and
- single, dual or multiple sourcing of products, where possible or required.
Value sourcing is intended to align the performance of our suppliers with our requirements on quality, logistics, technology and total costs.

Zeiss is our sole external supplier of main optical systems and one of the suppliers of other components. In 2009, approximately 24 percent of our aggregate cost of sales was purchased from Zeiss (2008: 31 percent)

Zeiss is highly dependent on its manufacturing and testing facilities in Oberkochen and Wetzlar, Germany, and its suppliers. Moreover, Zeiss has a finite capacity for production of lenses and optical components for our stepper and scanner systems. The expansion of this production capacity may require significant lead-time. From time to time, the number of systems we have been able to produce has been limited by the capacity of Zeiss to provide us with lenses and optical components. During 2009, our sales were not limited by the deliveries from Zeiss.

If Zeiss is unable to maintain or increase production levels, we might not be able to respond to customer demand. As a result, our relationships with current and prospective customers could be harmed, which would have a material adverse effect on our business, financial condition and results of operations.

Our relationship with Zeiss is structured as a strategic alliance pursuant to several agreements executed in 1997 and later years. These agreements define a framework in all areas of our business relationship. The partnership between ASML and Zeiss is focused on continuous improvement of operational excellence.

Pursuant to these agreements, ASML and Zeiss have agreed to continue their strategic alliance until either party provides at least three years’ notice of its intent to terminate. Although we believe such an outcome is unlikely, if Zeiss were to terminate its relationship with us, or if Zeiss were unable to produce lenses and optical components over a prolonged period, we would effectively cease to be able to conduct our business.

In addition to Zeiss, we also rely on other outside vendors for the components and subassemblies used in our systems, each of which is obtained from a single supplier or a limited number of suppliers. Our reliance on a limited group of suppliers involves several risks, including a potential inability to obtain an adequate supply of required components and the risk of untimely delivery of these components and subassemblies.