

Annual Report 2004
SINGULUS TECHNOLOGIES

Focus on New Technologies



SINGULUS 



1

Coordination of the entire recordable disc manufacturing process on the EMOULD injection molding machines produced by our subsidiary SINGULUS EMOULD, Wuerselen/Aachen guarantees a high yield of good discs.

2

A newly-developed dye module provides process security and flexibility during disc manufacturing. This is true for the production of CD-R as well as the various DVD-R formats such as 16x DVDR or dual layer DVDR. The recorder is later used to burn the information into the dye layer.

3

The application of the silver layer onto one of the DVDR halves occurs in our standard SINGULUS V metallizer. This layer reflects the player's laser beam and so guarantees that the recorded information can be read.

4

Both disc halves are joined together and bonded in the central module. The bonded discs are cured, inspected in a scanner, and then sent to the output station.

5

Output module with an upstream laser marker. The finished discs are marked with a laser and placed on spindles. Discs that do not meet specifications are automatically rejected.



Business Areas

SINGULUS TECHNOLOGIES is the only global manufacturer of replication systems for all CD and DVD formats to offer a comprehensive line of optical disc manufacturing processes. The company has the entire value-added chain of supply at its disposal.

Business Areas

Optical Disc

SINGULUS TECHNOLOGIES is the only global manufacturer of replication lines for all CD and DVD formats to offer the full spectrum of optical disc manufacturing processes. Thus, the company has the entire value-added chain of supply at its disposal. SINGULUS is world leader for the most vital processes such as mastering and replication. In 2004, its worldwide market share for all ROM formats approached 65 %. For mastering its share was even higher.

Development efforts have now been focussed on DVD-R/Dual layer replication lines and on the HD DVD and Blu-ray "third generation" optical storage media.

Modeled on our SPACELINE II, the first HD DVD replication systems will be ready in the Spring of 2005. These will be

the dual use systems requested by our major customers, i.e., replication systems on which DVD as well as the new HD DVD can be produced.

To accelerate this development, a strategic partnership was established with our long-standing customer Memory Tech/Japan who, together with the HD DVD format developer Toshiba, could develop HD DVD manufacturing technology know-how.

The first replication systems for the production of the single-layer Blu-ray disc format will be completed by mid-2005, the dual-layer format will be ready by the end of 2005. After having signed a cooperation contract, Sony has become the format developer for this new product.

With these strategic alliances in place, we have positioned ourselves early and optimally as „first mover“ for the emerging systems business for the third generation of

Our product line for optical discs comprises:

- Mastering systems for all applications supplied by our SINGULUS MASTERING subsidiary
- Injection molding machines for all applications supplied by our SINGULUS EMOULD subsidiary
- Metallizers and targets for all formats
- SKYLINE II – the replication line for CD und DVD 5
- SPACELINE II – the replication line for DVD 5, 9 und 10
- STREAMLINE II - the replication line for all recordable formats (CD-R and DVD-R as well DVD+R Dual Layer)
- MODULUS and SUNLINE for all RW formats





optical discs, irrespective of the still unanswered question as to which format consumers will demand over the short- and long-run. SINGULUS has all the options at its disposal with which to successfully continue its market leadership for the foreseeable future.

Optical Coatings - First System Delivered

The OPTICUS machine, employing an automated inline process for coating eyeglass lenses and jointly developed with a key customer, was delivered following a successful trial and optimization phase. The coating technology was developed along with Rupp + Hubrach and the demanding process steps optimized during the second half of 2004. This was the basis for the expansion into new areas of application for inline technology.

The renowned SINGULUS inline process modeled on CD and DVD mass production techniques automates the ophthalmic lens manufacturing process and hence reduces customer costs. The process employs the technological expertise gained from inline vacuum coating experience. The optical coatings market was identified as one of the most attractive business arenas for diversification.

Age demographics suggest that the global market for eyeglasses will grow steadily for years to come. Over 70 million coated eyeglasses are sold annually in Europe while only 25 million are sold in the USA.

The OPTICUS ophthalmic fabrication system represents true “game-changing technology” and was developed to the level of market readiness. Following delivery of the first machine, the company expects initial contributions will be made to revenues and earnings in fiscal 2005.

The OPTICUS can fundamentally be utilized for other optical coating applications outside the ophthalmic industry, especially for fabricating lenses for telescopes, binoculars, projectors, etc. Consequently, the new business arena has significant potential for other applications in the refinement of optical substrates.

TMR Technology / MRAM

MRAM is a new „non-volatile“ computer storage medium which, unlike the conventional DRAM (Dynamic Random Access Memory) now in use, does not lose stored information when deprived of a power source. The MRAM chip also uses less energy than a DRAM element which has raised industry expectations for revolutionary possibilities in computer technology, primarily for laptops and “smart” hand-held devices.

We have concluded the process development of our TMR thin film coating systems for 200 and 300 mm semiconductor substrates. SINGULUS TECHNOLOGIES will take the next step of integrating these developments into the global semiconductor industry by aligning itself with a strategic partner within this industry. To this end, the Executive Board appointed an investment bank to identify a partner within the semiconductor industry with whom a strategic alliance for its MRAM (Magnetic Random Access Memory) manufacturing technology can be established. This new partner should augment SINGULUS TECHNOLOGIES' marketing expertise and assist in achieving a breakthrough in the market for its TMR (Tunnel Magnetic Resistance) thin film coating system for the production of MRAM wafers and thin film heads.

