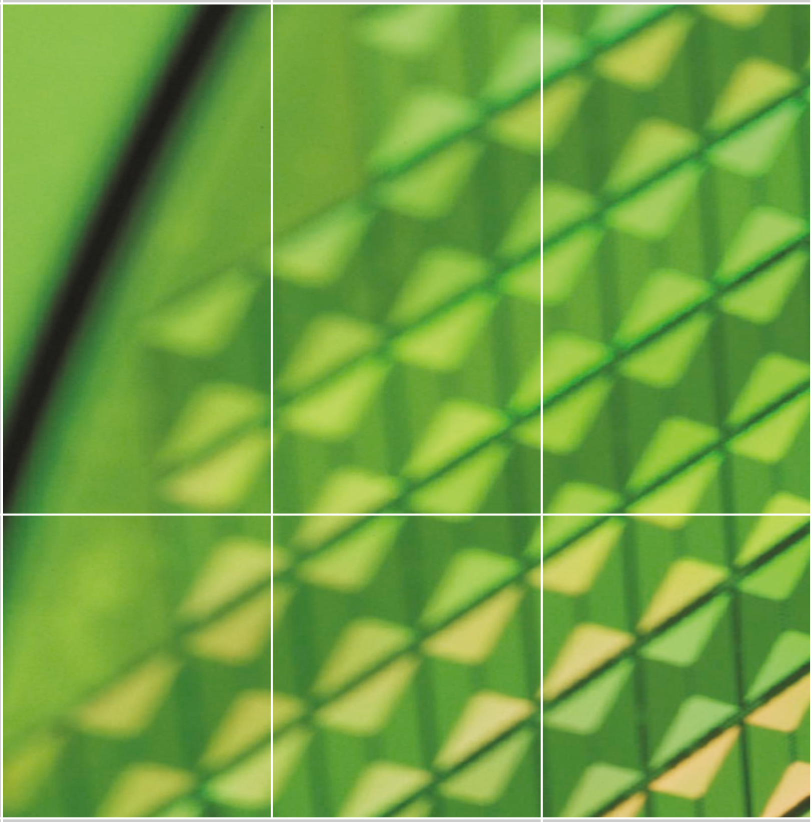
TWIN – SC IV

Implant Dose Monitoring System

- based on thermal wafer inspection
- patented technology
- meeting todays needs in 300 mm fabs



- Modular design allowing customized system
- Fully automatic System with pattern recognition
- Lowest cost of ownership due to the use of laser diodes
- Factory automation (SMIF, FOUP) available
- Short measurement time <8 min
- Patented double-modulation technique
- Intuitive graphical user interface, based on Windows

PVA TePla

The **TWIN SC** is a fully automatic photothermal measurement tool to monitor ion implantation dose in semiconductor industry as well as film thickness.
Using a focused laser beam, it works contactless and non-destructive. It is suitable for measurement on product wafers.
TWIN SC provides results of high sensitivity, especially in the low dose range.

Applications

- Control of implantation dose
- Control of implant parameters
- General characterization of radiation damage to semiconductor
- Characterization of thin non-transparent layers

Software

- Graphical User Interface based on a 32 bit Windows NT platform for controlling the system
- Wide range of user-defined measurement procedures
- Various options for monitoring and visualizing measurement results (1D, 2D, 3D, coloured)
- Calibrating measurement data (dose, metal layer thickness, oxide thickness)
- Accumulating trend information
- Comparing measurement results
- Output options (printing graphics, numerical data files)
- SECS/GEM interface for host communication
- Software support for diagnostic and maintenance

	Technical Data
Measurement Module	
Measurement principle:	Single beam technology, double modulation
Scanning unit:	X–Y 300 mm stage with vacuum chuck
Control unit:	Industrial PC (P4, OS WIN)
Housing:	Stainless steel, clean room class 1 compatible
Handling Module	
Handling unit:	Robot with prealigner and slot scanner
Load port:	Open cassette load port, SMIF-load port (bridge), FOUP
Filter Fan Units	
Dimension of each filter:	524 x 755 x 550 mm
Filter type:	H14 or U16
Software	TWIN 1.3
Operation Conditions and Parameters	
Wafer	Diameter 150 mm, 200 mm, 300 mm
Wafer support:	Rear-side, by vacuum
Ion Implantation Process Control	
Species:	B, P, Si, BF_2, Ar, As, Ga, In, He, Sb
Dose range:	10^{10}– $5x10^{16}$ ions/cm^2
Energy range:	1 keV–100 MeV
Layer Thickness Measurement	
Metal:	Al, Ti, TiN, TiW
Thickness:	40 nm–1,2 µm
Resolution:	1 nm
General Performance	
Short term repeatability K:	0.5% (1s) for ion implantation process control
Long term repeatability K:	1.0% (1s) for ion implantation process control
Throughput:	8 wafers/h, 12”-wafer, 96 points map
Laser Diodes	
Laser wavelength:	785 nm
Laser power in spot:	4-16 mW
Effective spot radius:	3 µm
Modulation frequency:	5 kHz–15 MHz
Laser Safety	Class 1
Installation Requirements	
Foot print:	Module 1,350 x 1,400 mm
Total weight of connected modules:	700kg
Media supply:	Electricity: voltage 230 VAC, 50 Hz standard, power <1.5 kVA
Vacuum:	Pressure <20 kPa, flow 4 m^3/h
Environmental Conditions	
Temperature:	22°C ± 1°C
Environmental factors:	3K2 according DIN IEC 721/3–3
Relative humidity:	<60%
Floor:	Flat, air exhaust to bottom

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