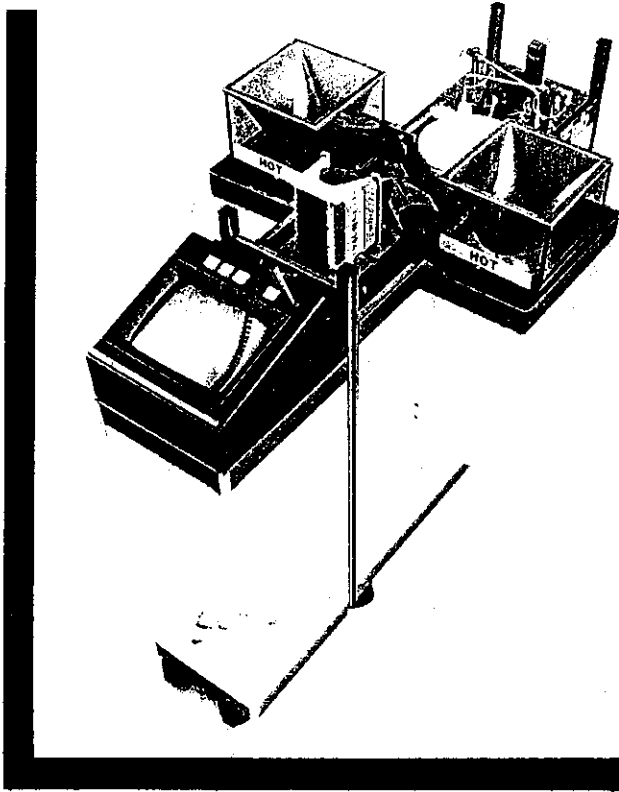


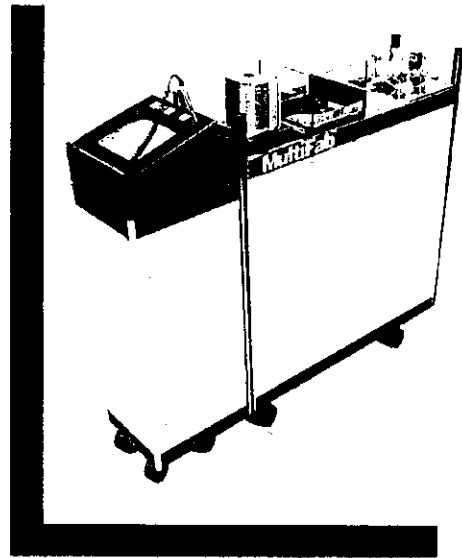
MultiFab[®]

SUBSTRATE PROCESSING SYSTEM

S P E C I F I C A T I O N S



Coat/Bake
Configurations



MTI

MultiFab System Specifications

CONFIGURATION

SYSTEM DESIGN:	Base chassis provides mounting locations and facilities connections for drop-in process and handling modules
PROCESS FORMATS:	Coat/single-bake and coat/dual-bake versions; dual-bake systems programmable for sequential or parallel bake processes
TRANSPORT FORMAT:	Automated single-cassette with slot-to-slot integrity
TRANSPORT METHOD:	FlexiArm pick-and-place system available on single and dual-bake systems <ul style="list-style-type: none">- full backside-support vacuum hand- programmable to process cassettes from top-to-bottom or bottom-to-top Flexible-band load arm available only on single-bake systems <ul style="list-style-type: none">- vacuum tip secures substrate- processes cassettes from bottom-to-top
MATERIAL SIZES:	76mm - 150mm diameter wafers; rectilinear materials to 100mm x 100mm
CASSETTE TYPES:	All H-Bar cassettes, 3/16" or 1/4" pitch
CHASSIS FEATURES:	Removable Alucobond® side covers Four leveling casters on track and controller Pneumatic floor brake Exhaust plenum at bottom of track maintains clean air flow through system

ELECTRONICS

CONTROLLER:	8086 microprocessor
USER COMMUNICATIONS:	Power On/Off, Run, Reset and Stop switches Light-pen selection of CRT-displayed programming options/parameters Key switch and access code for security lockout of process creation/edit and diagnostics functions Real-time display of hot plate temperature, spin speed and process step Error message display SECS I and II capability
PROGRAM CAPACITY:	9 processes composed of 9 recipes, each recipe composed of 9 steps each; 45-process storage optional
PROGRAM STORAGE:	Non-volatile E ² PROM
DIAGNOSTICS:	Manual activation of all outputs, singly or in combination Real-time display of sensor status LED display of I/O line status

SPIN MODULE

MOTOR FEATURES:	115 VDC direct-drive motor with double-sealed bearings; N ₂ purge optional Optical digital encoder for spin-speed control Mechanical indexing device for rectilinear substrates optional
PROCESS CUP FEATURES:	All-Teflon® cup matched to substrate size Design prevents splashback and creates symmetric exhaust pattern Programmable cup rinse Dispense nozzle fluid catches Single drain with fluid/exhaust separator Adjustable exhaust damper and flow-level sensor One-gallon internal sump with liquid-level sensor; external sump with liquid-level sensor or direct drain optional

Coat/Bake Configurations

COAT MODULE

PROCESS FEATURES:	Two radial-sweep dispense arms: one pneumatic and one motorized 1/8" or 1/4" O.D. dispense lines Nozzle tips less than 1/2" from wafer surface Millipore or Tritec pumps, or pressurized systems controlled by air-operated valves with fluid drawback Backside rinse/edgebead resist removal system; topside edgebead resist removal system optional One 1/8" O.D. stationary side dispense
PROCESS CONTROLS:	Adjustable dispense arm extend/retract speed Dispense arms programmable for static, dynamic, radial, and oscillating dispense actions Programmable predispense

BAKE MODULE

PROCESS FEATURES:	Soft-bake (52°C - 150°C) and hard-bake (52°C - 275°C) versions 200 watt, 220 VAC heater plate; element compensated for edge-effects Thermocouple temperature sensor Hard-bake fume-exhaust system contains fumes, concentrates air flow over hot plate and creates symmetric exhaust pattern
PROCESS CONTROLS:	Temperature programmable in 1°C increments Vacuum pull-down in contact bake mode standard Transfer pins pneumatically controlled in soft-bake module and manually adjusted for proximity bake height Transfer pins stepper-motor controlled in hard-bake module and programmable in 0.001" increments for proximity bake height

PERFORMANCE

SPIN-MOTOR CONTROL:	
Speed:	100 - 7500 rpm, programmable in 100 rpm increments
Acceleration:	30,000 rpm/sec. maximum, programmable in 10% increments
Control:	±40 rpm
RESIST-COATING UNIFORMITY†:	
Across-Wafer:	±50Å for films ≤1μ ±0.5% for films >1μ
Wafer-To-Wafer:	±0.25% of average across-wafer film thickness
BAKE CONTROL:	52°C - 150°C: ±0.5°C 150°C - 275°C: ±0.5%
CONTAMINATION CONTROL:	Particles ≥1μ added per wafer pass: <0.03 particles/cm ²
THROUGHPUT:	60 wafers per hour typical, dependent upon process
RELIABILITY:	98% uptime guaranteed; less than 0.01% wafer breakage guaranteed

†Unless otherwise specified by material manufacturer.

COAT_MODULE:

- * Two pneumatically driven dispense arms.
- * 1/8" or 1/4" dispense arms.
- * Teflon dispense tips.
- * Nozzle tips less than 1/2" from wafer surface.
- * Arms programmable for static, radial or oscillating dispense.
- * Arm speeds are adjustable for extend and retract movements.
- * Programmable predispense.
- * One stationary 1/8" side dispense.
- * Topside edgebead removal.
- * Bottomside edgebead removal.
- * Backside rinse.
- * All dispenses regulated with metering valves or flow meters.
- * Millipore pumping package.
- * Tritec pumping package.
- * Pressurized dispense with fluid suckback.
- * Storage cabinet for millipores or canisters.

DEVELOP_MODULE:

- * Two pneumatically driven dispense arms.
- * Fan spray nozzles or puddle dispense.
- * Arms programmable for static, radial or oscillating dispense.
- * Arm speeds are adjustable for extend and retract movements.
- * Two side dispenses.
- * Backside rinse.
- * All dispenses regulated with metering valves or flow meters.
- * Teflon lined canister for develop fluid.
- * Storage cabinet for canisters.
- * Temperature control of develop fluid.

SCRUB_MODULE:

- * Brush rinse continually keeps brush wet when not in use.
- * Brush texture selection for all wafers.
- * Brush dispense administers detergent during scrub motion.
- * Two side dispense for N2 or fluid.
- * High pressure nozzle and pump optional.
- * All fluid lines regulated with metering valves.
- * Exhausted bowl eliminates overspray.

MULTIFAB SYSTEM SPECIFICATIONS

CONFIGURATION:

- * Automated single cassette with slot to slot integrity.
- * Programmable to process wafers from top/bottom or bottom/top.
- * Pick and place handler with bottom side vacuum channel and top side transfer of wafer. Capable of rotating 360.
- * Processes wafers in size from 76mm to 150mm.
- * Loads from any H-bar cassette 3/16" or 1/4" pitch.
- * Base chassis provides mounting locations and facility connections for drop in modules.
- * Four leveling casters on track and controller.
- * Pneumatic floor brakes.
- * Removable side panels.
- * All fabricated parts are nickel plated or coated with anodize.

PERFORMANCE:

- * 6,000 maximum spin speed for wafers 2"- 5".
- * 5,500 maximum spin speed for 6" wafers.
- * Spin speed programmable in 100 RPM increments.
- * 30,000 RPM/SEC maximum acceleration.
- * Acceleration programmable in 10% increments.
- * +/- 40 RPM spin speed control.
- * +/- 50A uniformity across wafer for films <1u
- * +/- 0.5% uniformity across wafer for films >1u
- * Wafer to wafer uniformity +/- 0.25% of average across wafer film thickness.
- * +/- 0.5c temperature control from 52c to 150c.
- * +/- 0.5% control of programmed temperature between 150c & 275c.
- * >1u particle contamination added per wafer pass.
- * 60 wafers per/hr typical, dependent upon process.
- * 98% machine uptime.
- * Wafer breakage less than 0.01%

FACILITIES:

- * Power requires 100-120 VAC, 60 Hz, 15 amps standard; 208.
- * One air line 1/4"OD to supply 60 PSI @ 3 SCFM filtered to 2u.
- * One vacuum line 1/4"OD to supply 25"HG @ 1.5 CFM minimum.
- * One bowl exhaust line 2.0"ID to supply 250-300 FPM @ 1.5 DLTA P"H2O.
- * One bake exhaust line 1.5"ID to supply 250-300 FMPC & 1.5 DLTA "H2O.
- * 1/4" OD lines to all fluid inputs.
- * One 1/2" OD for direct drains.

ELECTRONICS:

- * 8086 microprocessor.
- * Light pen selection of CRT displayed programming options.
- * Key switch and access code for security lockout.
- * Real time display of plate temp, spin speed and process step.
- * Error message display.
- * SEC I and SECS II capability.
- * Maximum program capacity consists of 9 processes composed of 9 recipes with each having 9 steps.
- * 45 process extended memory storage optional.
- * Programs stored on non volatile E2 PROM's
- * Manual activation of all outputs, or in combination.
- * Real time display of sensor status.
- * LED display of I/O line status.

BAKE MODULE:

- * Soft bake (52c - 150c). *Not applicable for facility requirements*
- * Hard bake (52c - 275c).
- * Temperatures are programmable in 1c increments.
- * 200 watt, 220 VAC heater plate; element compensated for edges.
- * Thermocouple temperature sensor.
- * Hard bake exhaust system contains fumes, concentrates air flow over hot plate and creates symmetric exhaust pattern.
- * Vacuum pull down for contact bake.
- * Transfer pins can be pneumatically or stepper driven.
- * Stepper driven pins are programmable in increments of .001"
- * System can support two hot plate modules.
- * Dual bakes are programmable for sequential or parallel process.
- * Single sidecar systems can be right or left side mounts.

SPIN MODULE:

- * 115 VDC direct drive motor with double sealed bearings.
- * Optical digital encoder for spin speed control.
- * All teflon cup matched to wafer size. This design prevents splashback and creates symmetric exhaust pattern.
- * Size specific delrin chuck for maximum backside exposure.
- * Programmable bowl wash for each wafer or end of cassette.
- * Dispense nozzle fluid catches.
- * Exhaust separator with adjustable damper and flow level sensor.
- * Direct drain or external sump options.