# VALENTIN BALTER

## EXPERTISE

Over thirty years of experience in leading development and design in the following fields:

- Semiconductor capital equipment
- Hard disk drive equipment and robotic devices
- Precision mechanisms
- Heat transfer and temperature control systems
- Medical instruments
- Manufacturing

## WORK EXPERIENCE

**Nextech Enterprises, Inc.,** Menlo Park, CA 2000-present

***Founder, President***

Nextech Enterprises is an engineering consulting and manufacturing company providing services to semiconductor, hard disk drive, biotechnology and alternative energy companies.

Partial list of completed projects:

- Development, design and manufacturing of Dual XYZ Robotic System for testing sensor pads (touch pads) by simulating simultaneous movements of two fingers. All stages were equipped with encoders to provide complete closed loop control as well as feedback of fingers gram load on sensor pad. Different finger configurations were used with automatic finger change during operation.
- Design and manufacturing of End Effector for pickup and loading into trays multiple diode strips for solar panel production.
- Concept and design of voltage measuring system at high temperatures (850˚C) during testing of stacks of fuel cells.
- Concept development, design and production of mechanism for winding automatic watches (www.kunstwinder.com).
- Concept development and design of Magnamosis Device for Gastroenterology Department of UCSF.
- Design of Vaginal Speculum with Adjustable Blades. Interaction with physicians, testing, data collection. Optimizing product for functionality and manufacturability (plastic injection molding). Reference US patent number 6,379,299
- Design of Vibratory Treatment Apparatus for treating internal muscle and connective tissue disorders. Reference US patent number 4,911,149.
- Design, manufacturing and testing of high precision hard disk certifier system (Komag)

- Design and manufacturing of assembly supporting equipment for Applied Materials CMP system. Multiple lifting devices, installation and adjusting fixtures, etc.
- Design and manufacturing of special electronic rack with temperature control for semiconductor system.

**Automated Biotechnology, Inc.,** Menlo Park, CA 2001-2004

***Founder, CEO***

- Concept development, design and production of robotic system for automated sample analysis by atmospheric pressure Matrix Assisted Laser Desorption Ionization (MALDI) mass spectrometry. The system was fully automated and movements of all mechanisms and drives were controlled by a data preliminary inputted to a central processing unit. US patent number 6,825,466 has been granted.
- In conjunction with this system sample medium carriers with build-in memory elements were developed. Memory elements were preprogrammed using information input/output station. US patent number 7,118,708 has been granted. Several other related patents are pending.

**Noah Precision, Inc.,** San Jose, CA 1996-2000

***Engineering Manager***

- Developed and designed temperature control unit based on Peltier thermoelectric elements for wafer processing equipment. Product was developed from prototype to full production. Thermoelectric unit allowed precision and dynamic temperature control of the wafer inside process chamber of plasma etch semiconductor equipment. For the information on the product, please refer to www.noahprecision.com. Several patents were granted. The company merged with Advanced Energy, Inc., in 2000.

**Nextech Enterprises,** Cupertino, CA 1996

***Founding Partner***

- Developed concept for precision temperature control unit for semiconductor wafer processing equipment using Peltier thermoelectric modules. Designed and manufactured working prototype. Company has merged with Noah Precision, Inc. for production development of temperature control unit.

**Lam Research Corporation, Fremont, CA** 1990-1996

***Staff Engineer*** 6/93-6/96

- Managed Turbo Molecular Pump Interlock project for TCP 9600. Analyzed failure scenarios and defined interlock logic. Project involved partial redesign of vacuum pump-purge system, intensive electrical changes satisfying S2-93 and CO mark safety requirements. Managed a group of engineers and designers. Released all necessary documentation in stringent schedule environment.
- Initiated, designed and implemented through manufacturing Fixed Gap upgrade for metal etch tool (TCP 9600). Project consisted of redesigning top process chamber

assembly. Created detailed layout and supervised design/drafting group to produce retrofit kit and forward build documentation.

- Designed, evaluated and implemented multiple hardware upgrades to metal process reactor: bottom actuated clamp, chamber liner, gas delivery and distribution system, etc.
- As a special project for the customer designed, developed and build high temperature lower electrode for pure copper etch.

***Senior Mechanical Engineer*** 4/90-5/93

- Provided support for numerous metal etch engineering projects:
  - Eliminated arcing and reduced maintenance costs of AutoEtch Cathode;
  - Parallel plate etch system (4600) upgrades: extended quad seal rings and removal tool, gap bellows, wafer lifting mechanism, APM improvements;
  - High temperature wafer paddle for stripper.
- Participated in conceptual design of ECR CVD "Epic" system. Was responsible for the layout and detailed design of reactor assembly. Design included plasma chamber, gas delivery and distribution system, process chamber, wafer chuck positioning mechanism, wafer lifting mechanism. Worked closely with process engineers in optimizing reactor design, evaluating new materials. Through process chamber internals design achieved excellent particle performance (<0.1/cm$^2$) and met most Sematech and IBM process specifications.

**Huntington Mechanical Laboratories, Inc.,** Mountain View, CA 1984-1990

***Engineering Manager*** 7/88-4/90

- After assuming a position of engineering manager of a group of two engineers and four designers, I continued to lead R&D work and also scheduled daily activities of engineering department.

***R&D Engineer*** 2/84-6/88

- Design and development of special equipment for use in high and ultra high vacuum environment:
  - X-Y-Z manipulators, stepping motor and/or pneumatically operated linear, rotary and multi-motion feedthroughs;
  - Custom vacuum systems;
  - Liquid nitrogen and liquid helium cooling systems;
  - Precision positioning equipment with micron range resolution;
  - Different types of elastomeric and all metal valves.

- All R&D projects were lead from concept development, building and testing prototype to a full manufacturing scale-up. Several projects resulted in new lines of products and ten patents were granted.

**Krass/West, Inc.,** San Jose, CA 1982-1984

***Mechanical Engineer***

- Tool and die designing for IC packaging processing. Design of IC processing and packaging equipment.

## Consulting Work

**Guzik Technical Enterprises, Inc.,** San Jose, CA 1989

- Design of high precision mechanical devices for 5 1/4" Winchester disk drive test equipment: read/write head feeding sliding mechanism, head loading/unloading, disk clamping.

**Poole Ventura, Inc.,** Ventura, CA 1988

- Design of a multiple wafer transfer system for a CVD tool, including load-lock chamber, linear-rotary transfer arm with end effector (gripper), cassette indexing mechanism and rotary indexing table for main process chamber.

# PUBLICATIONS

- 15 patents in the field of machines and mechanisms.

# EDUCATION

**Moscow State University,** Moscow, Russia 1974

***MSME***

# COMPUTER SKILLS

- Proficient in Microsoft Office, AutoCAD Inventor, SolidWorks.