



HALL DESIGN

INDUSTRIAL DESIGN

PRODUCT ENGINEERING





PRODUCT DESIGN AND DEVELOPMENT

Over 600 products developed for major manufacturing companies including Apple, Motorola, IBM, HP, Medtronic, Philips, Johnson & Johnson.

World's first handheld GPS (Trimble)

World's first laptop computer (Gavilan)

World's first handheld Glucose meter (Lifescan)

Trimble Navigation



World's first handheld GPS locator - 1983

Trimble Navigation – Worlds First GPS Locator



- Antenna parallel to ground plane
- Tracks up to 8 satellites
- Removable battery pack
- Rubberized grip
- Waterproof housing

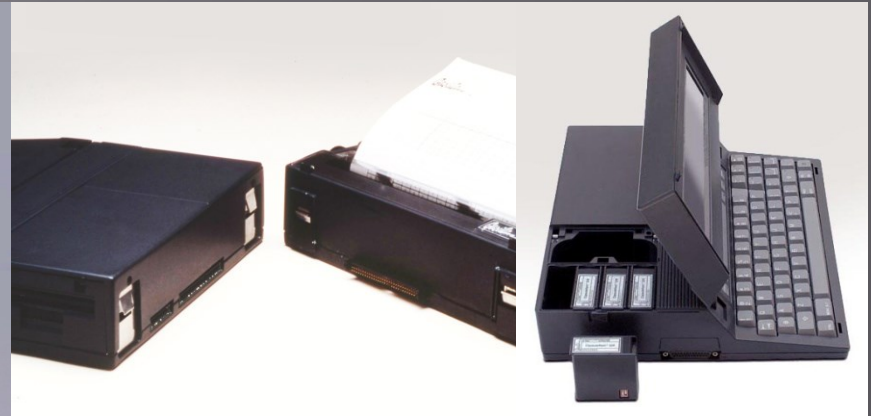
Gavilan — World's First Laptop



- Intel 8088 processor
- 128 kb CMOS ROM

- Microsoft DOS
- Rechargeable NiCad

Gavilan — World's First Laptop



- \$4000 initial retail price
- \$350 per memory capsule
- 4 – 32 kb memory expansion capsules with backup battery
- Monochrome LCD display
- Dashboard touchpad
- Clip on printer

Circa 1982

Lifescan — World's First Handheld Glucose Meter

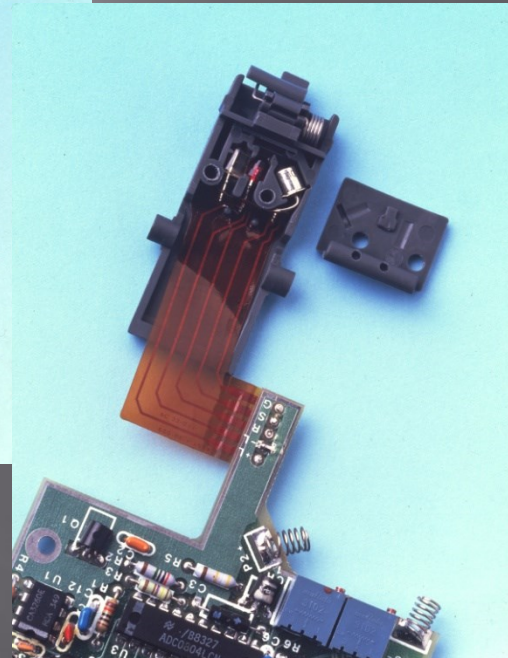


- Battery powered
- Disposable reagent strips
- Disposable sterile lancets
- Custom reflectance photometer
- Fits in shirt pocket
- Patentable “Penlet” for sampling

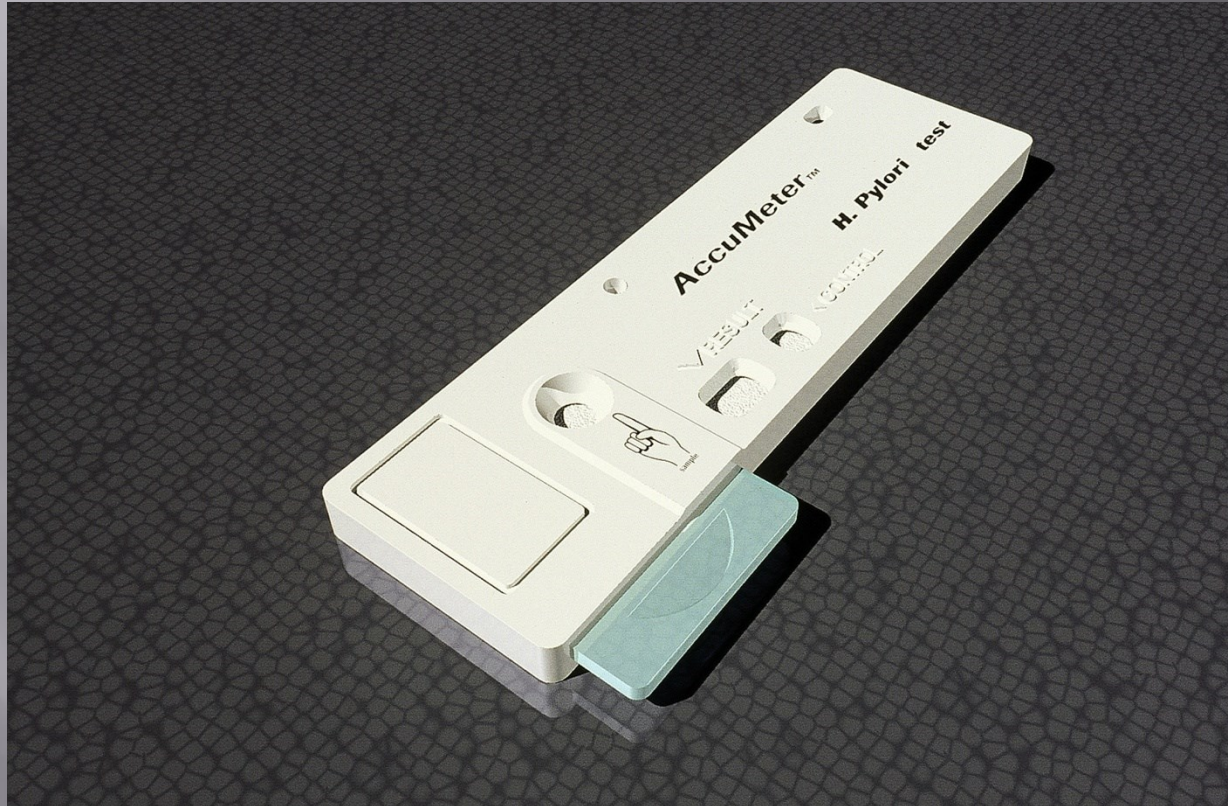


- Reflectance photometer
- Flex circuit
- Easy to clean
- Single PCB construction
- Battery saver mode

Acquired by Johnson & Johnson
in 1991

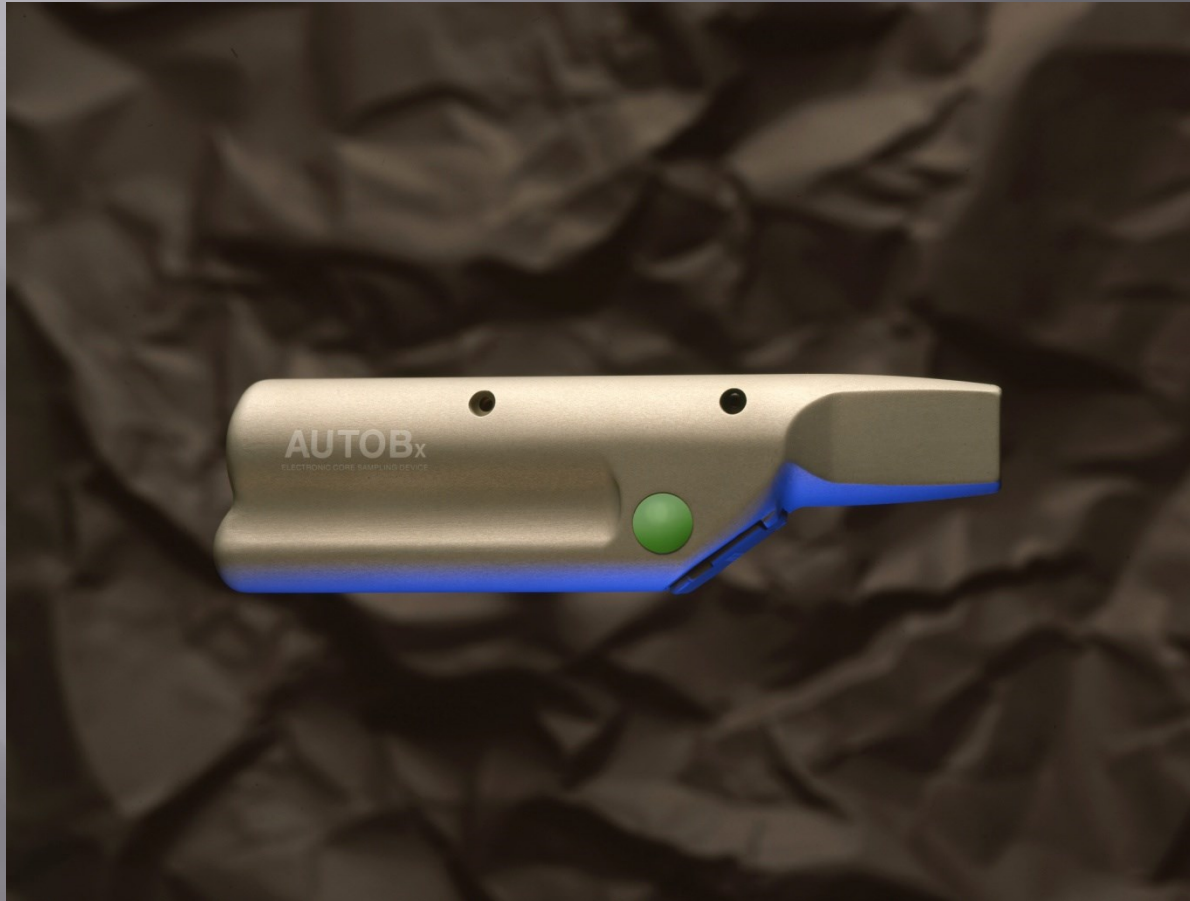


Chemtrak – Disposable Test Kit



- Sample port
- Internal reagent reservoir
- Pull tab to release fluid
- Control indicator
- Ultra low cost
- Million+ production volume

Ingress — Biopsy Instrument



Motor driven biopsy with disposable reciprocating cannula

Ingress — Biopsy Instrument



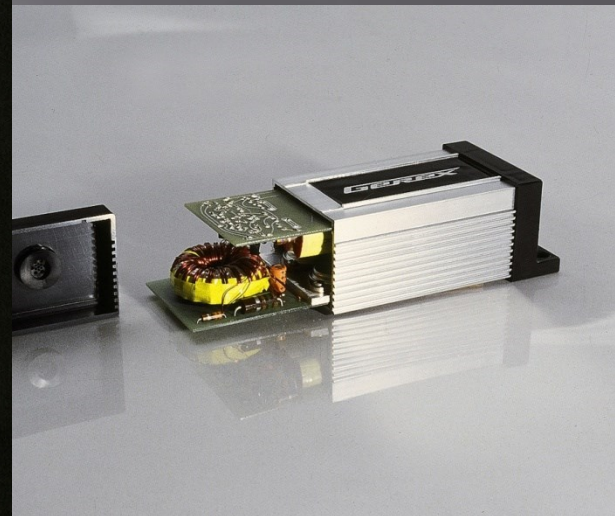
- Machined alum housing
- Sealed for autoclaving
- NiCad Charger base
- Disposable needle sets

Acquired by Cook Medical
1998

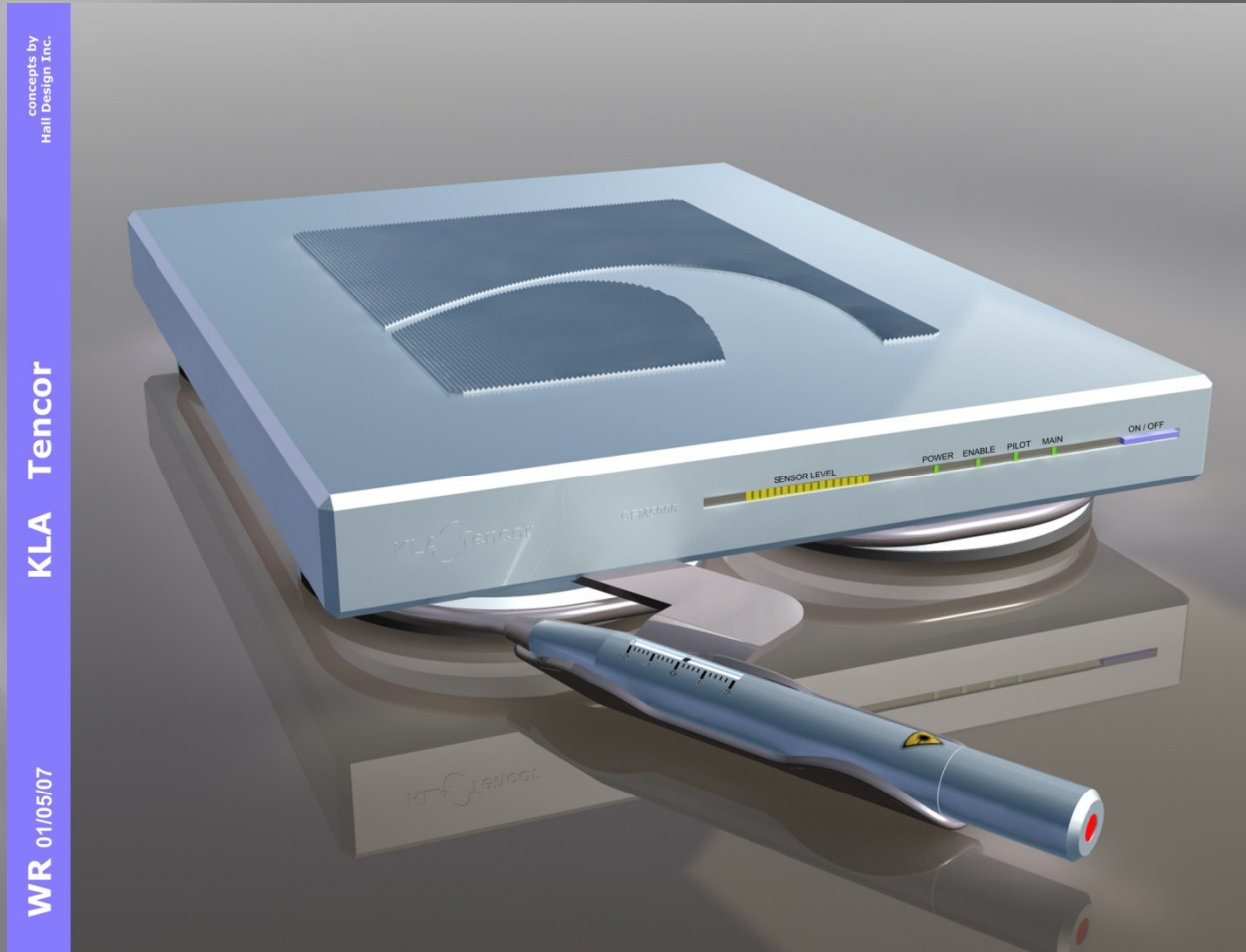
Gerex — Ignition System



- Motorcycle ignition coil
- Works-in-a-drawer design
- Low cost alum extrusion
- Water proof end caps

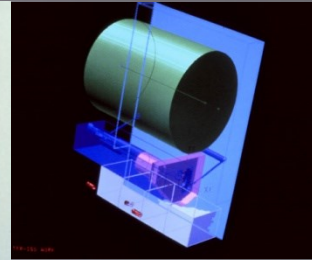


KLA / Tencor – Interferometer



- Alum housing / heat sink
- Swing out sensor storage tray

Scott Paper — Infrared Dispensers



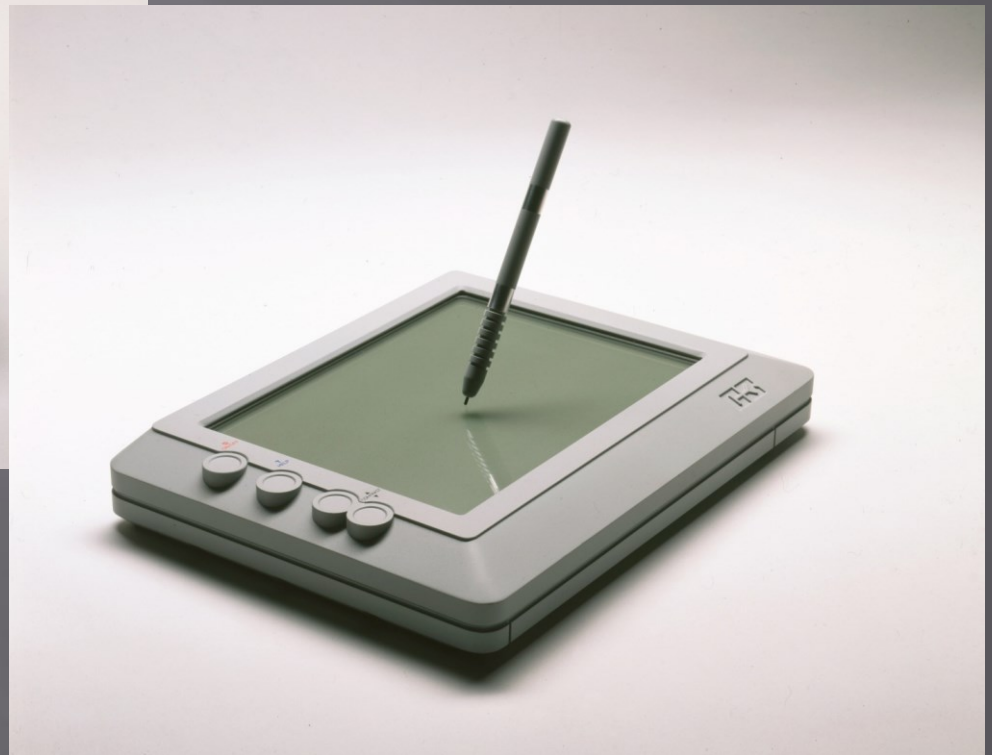
- Soap and paper towel
- Proximity sensor actuation
- Supply indicator
- Lockable
- Sheet metal and injection molded housings

C3 — Work Slate

Ruggedized for outdoor use by utility companies



- Environmentally indifferent
- Submersible to 3' under water
- Immune to dirt and sand storm
- Shock proof
(drop tested 6' onto concrete)



C3 — Work Slate



- External add-on modules for GPS and Telecom
- Onboard mapping system
- Rechargeable battery



VitaMed – RF Surgical Generator



- Generator for T.U.N.A. procedure (Trans Urethral Needle Ablation)
- Spill proof control deck
- Tempest level RF containment

Acquired by Medtronic 1999

VitaMed — RF Surgical Generator



- Portable
- Retractable handle
- Sleek design - easy to clean

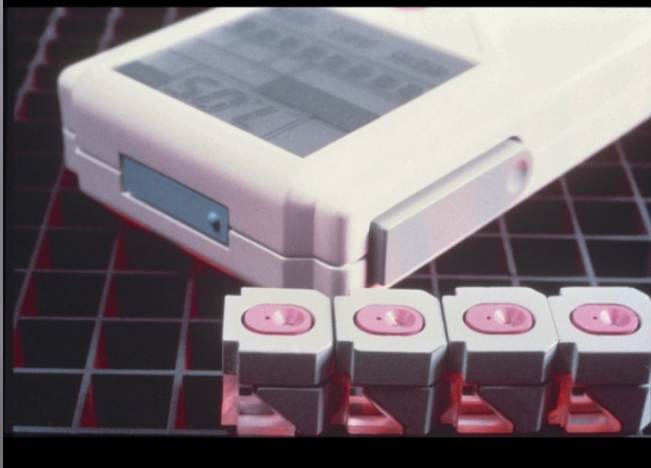


Biologix – Blood pH Meter



- Form studies for use by Paramedics and ER personnel
- Handheld unit with disposable test cartridges
- Focus group testing results led to final design

Biologix — Blood pH Meter



- Auto eject mechanism for disposable test cartridges
- Semi-permeable membrane separating sample from reagent
- Venous or arterial blood sample
- Stainless needle guard
- Cartridge ejection door

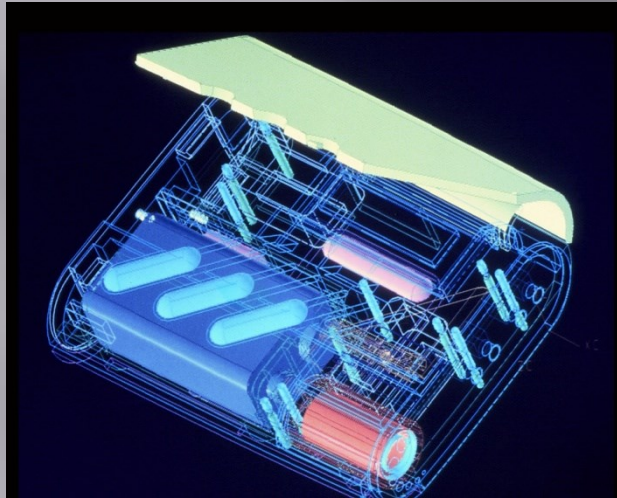
Iridex – Ophthalmic Laser

- Ophthalmic treatment device
- Spill proof
- Injection molded housing over metal chassis
- Modular tool design for product line extensions



Ntron – T.E.N.S. Unit

(Transdermal Electronic Nerve Stimulator)



- For chronic pain
- Programmable
- 9V battery
- Belt clip
- 4 electrode ports
- Injection molded



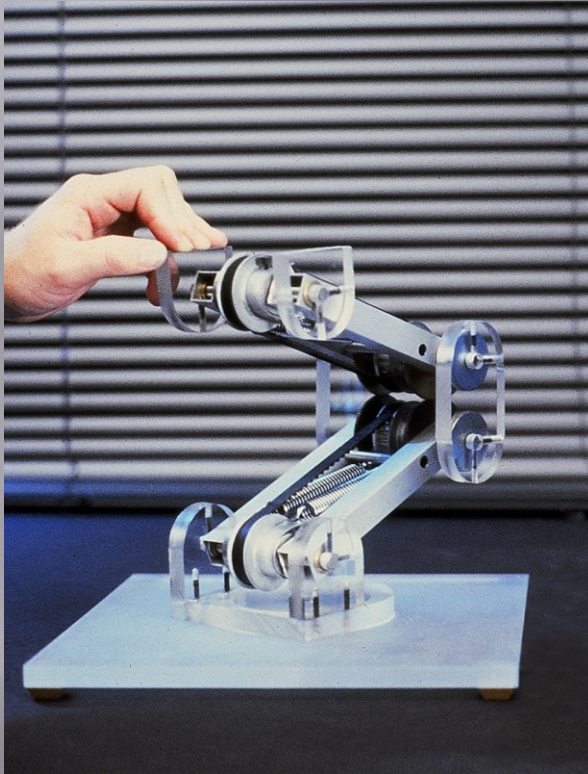
Starkey — Acoustic Array



- For the profoundly deaf
- T coil neck loop antenna
- 6 microphones
- Ambient noise cancelling
- Splash proof
- Injection molded



Link – Computer Monitor



- Lift arm mechanism
- Injection molded housings



Harris — Front Desk Terminal



- Soft keyed menu screen
- Call management keys
- Pull out keyboard
- Injection molded housings



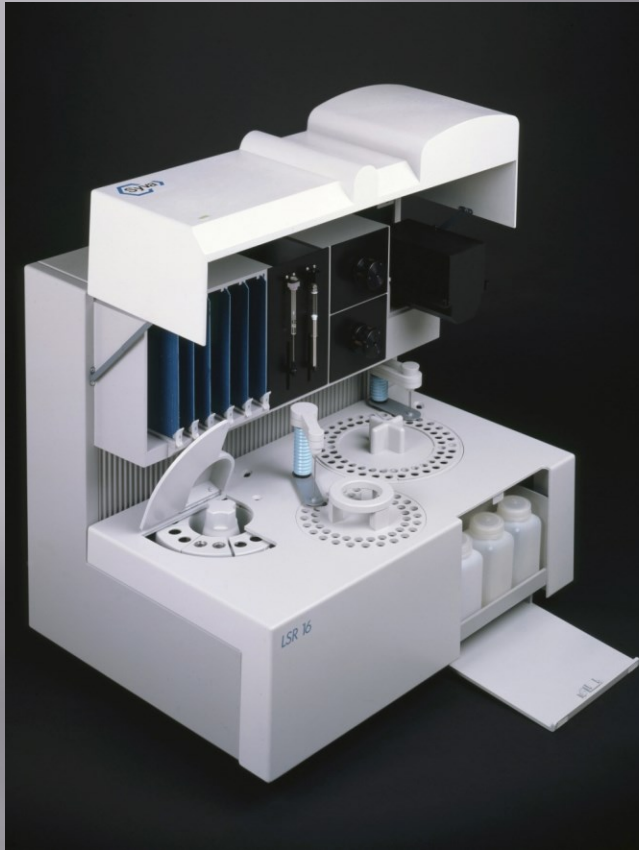
Weigh-Tronix — Commercial Scales



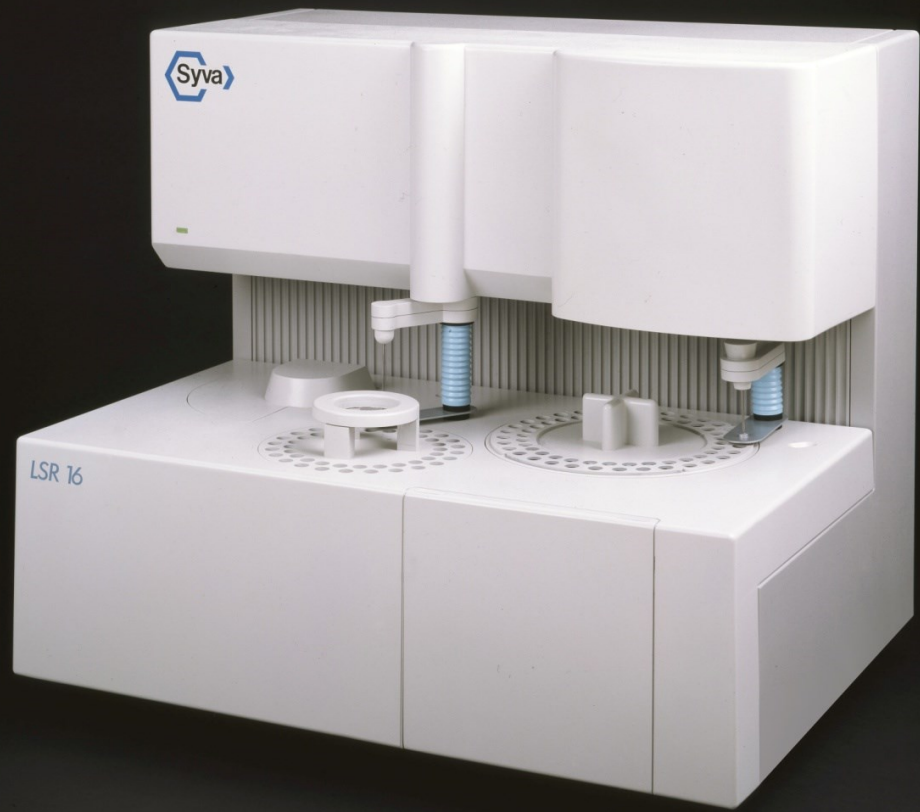
Product family using modular housing design for reduced tooling cost

Syva — Blood Assay Instrument

- Slide out PCBs
- Refrigerated reagents
- Sample, reagent and mixing carousels



- Automated pipettes
- Inner spill catch tray
- Tilt forward service deck



Houston Instrument — Pen Plotter

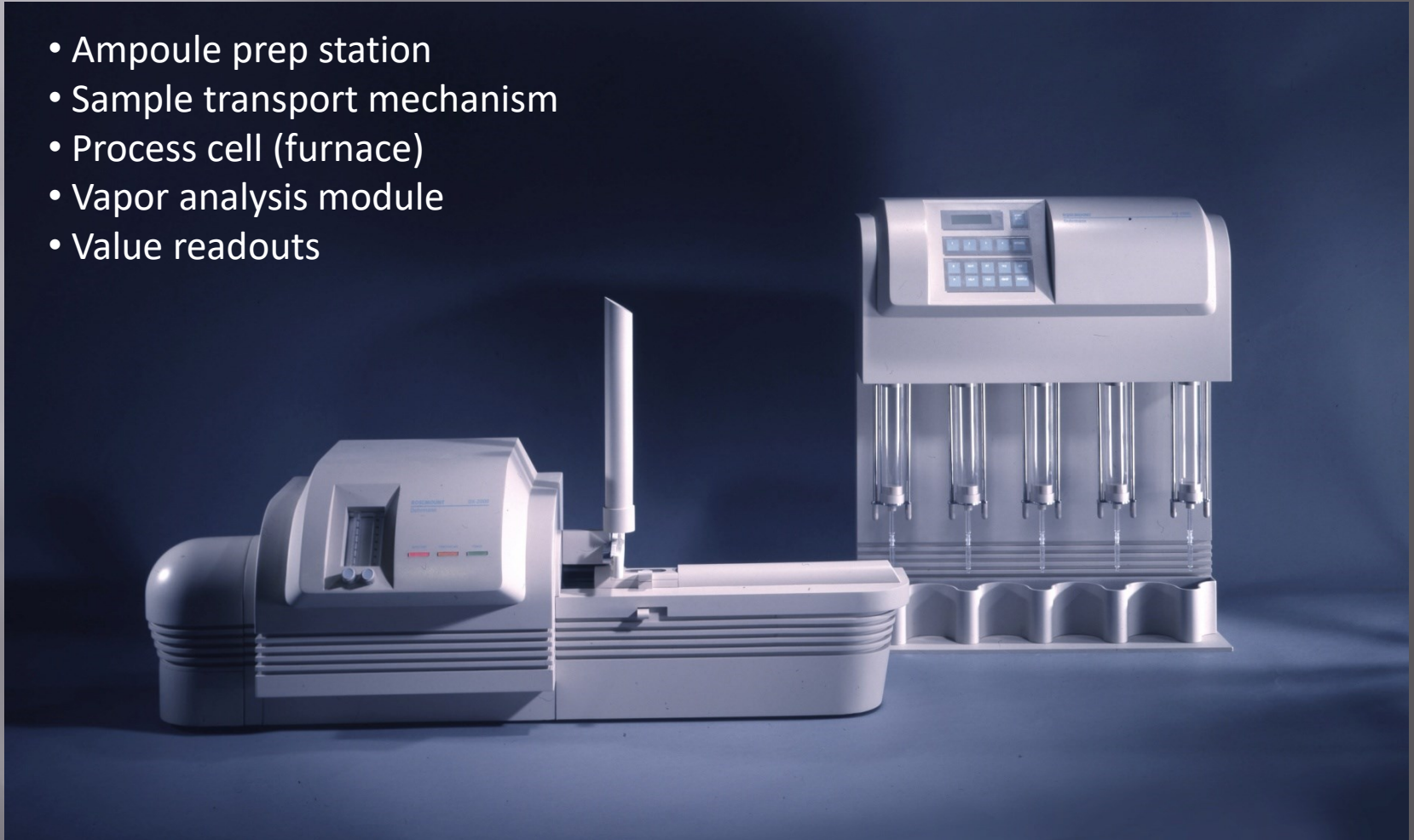


- KD assembly
- Quick change pen carousel
- Ergonomic Keypad
- SMC and sheet metal structure



Rosemont — Water Analysis System

- Ampoule prep station
- Sample transport mechanism
- Process cell (furnace)
- Vapor analysis module
- Value readouts



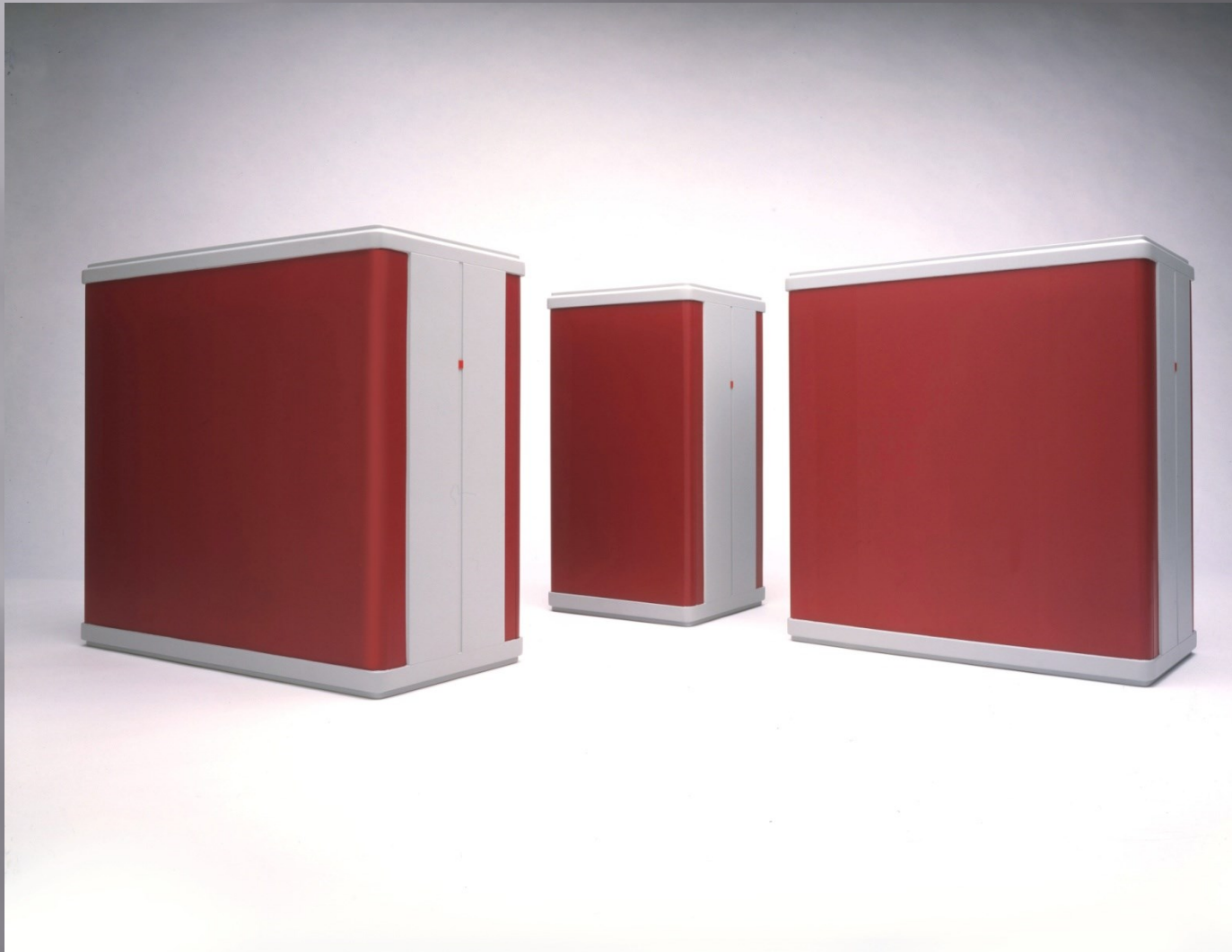
Used by municipal water districts testing for organic halides

Amdahl — Triad Mainframe Computer



Faraday cage using rolling way cover with copper contact strip

Amdahl — Liquid Cooled Mainframe



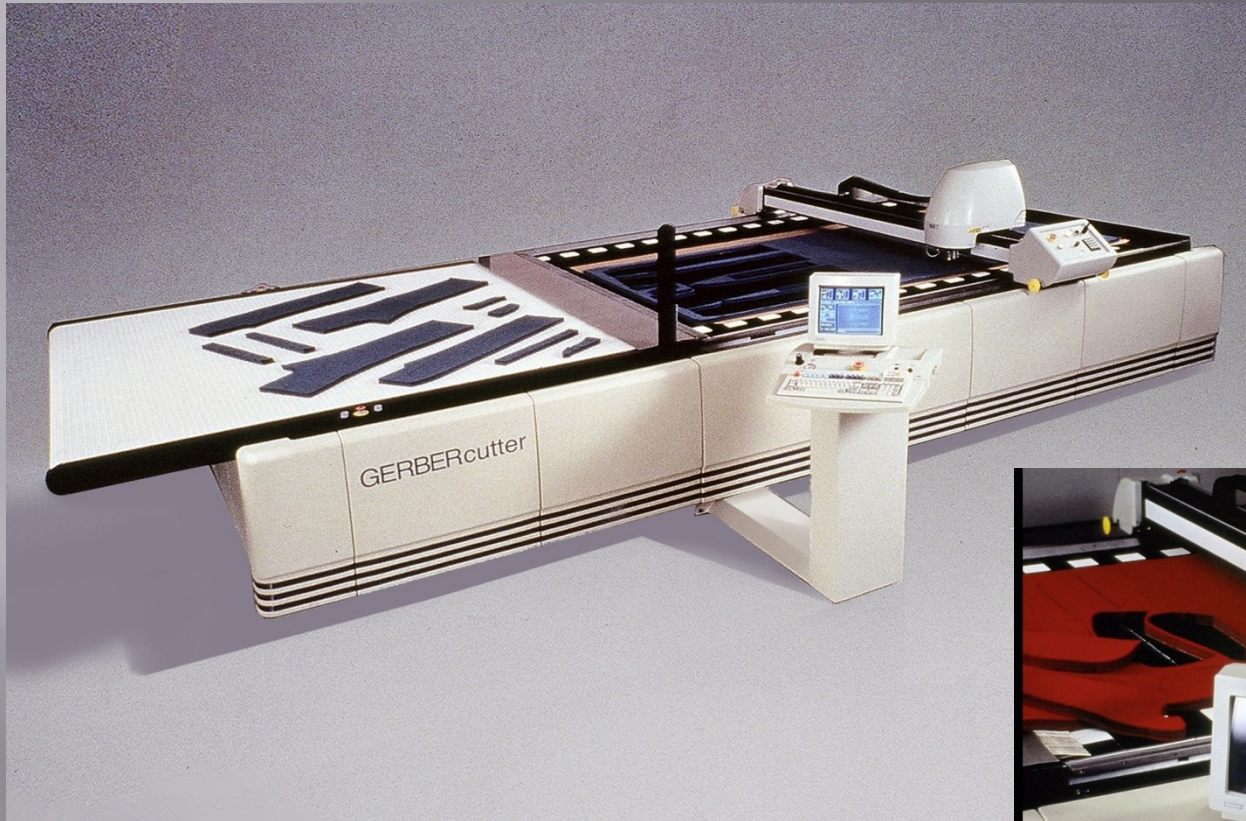
Wafer scale ICs Trilogy housing: CPU + Liquid cooling + Power supply

Varian — Semiconductor Fab

- Wafer loading station
- Foot pedal airlock
- Touch panel control



Gerber Scientific — Fabric Cutter



- Multi-ply production cutter
- Conveyor and XY motion control
- Adjustable workstation
- Sound damping side covers

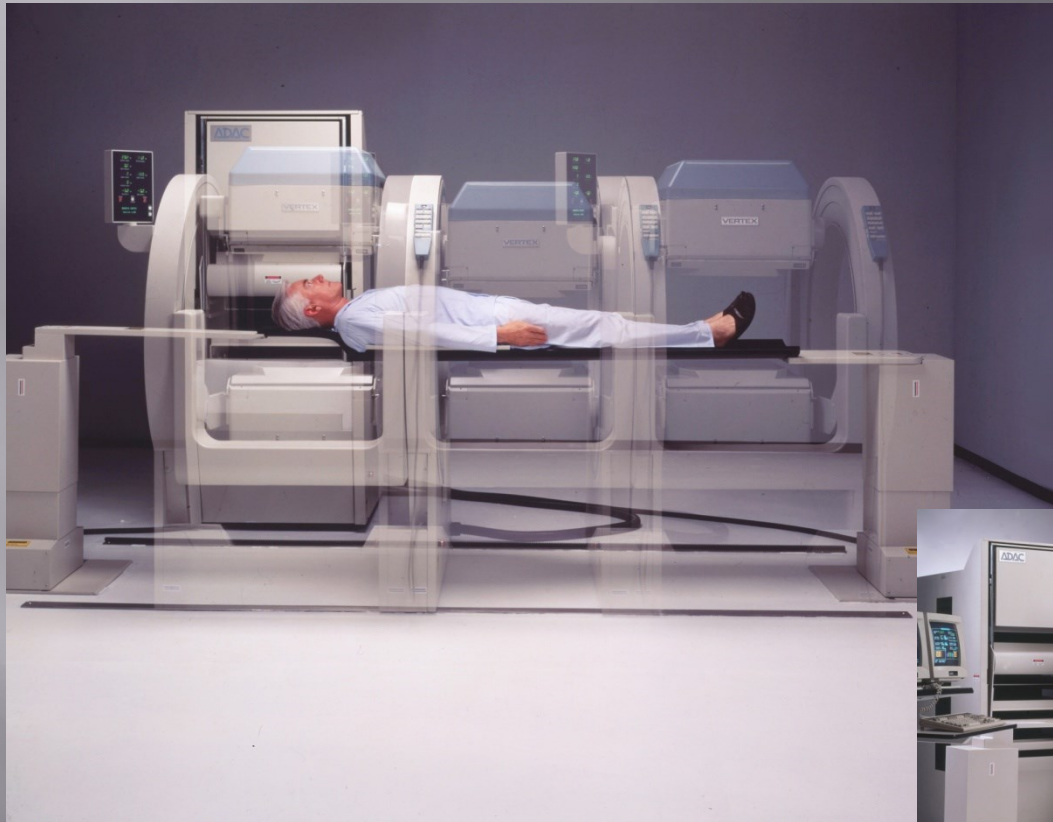


Gerber Scientific — Ultra Laser cutter



- 16' tall LASER tower
- Directional mirror
- Cuts at 1400" per sec.
- Fume hood
- Safety lockouts
- GE/Fanuc laser
- Conveyor table
- Used for heavy single ply such as auto / airplane carpets

ADAC Philips — Genesys Camera



- Total body and SPECT scans
- Collimator loading station
- Operator interface
- Sheet metal and molded housings



ADAC Philips — Skylight Nuclear Camera

SPECT (Single photon emission computed tomography)



- Dual head system
- Overhead gantry
- Collimator exchanger at back wall
- Collision detection sensors beneath covers



ADAC — Skylight Nuclear Camera



In position for cardio scan

ADAC — Skylight Nuclear Camera



Horizontal body scan



Standing body scan

ADAC — Skylight Nuclear Camera



Dual patient scan

