PRESCO
ENGINEERING

Predictive
Product
Development

Who are we?

WE ARE PRESCO ENGINEERING

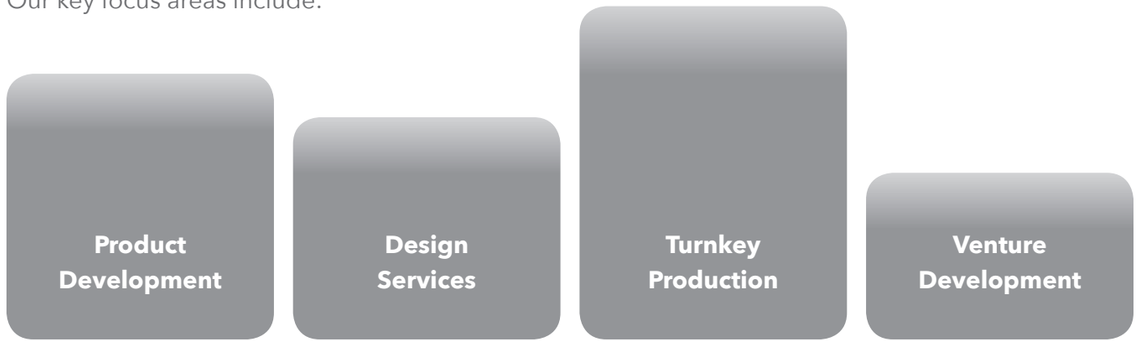
For over 40 years, we have been helping technology companies successfully bring new products to market.

- PRODUCT DEVELOPMENT FIRM
- INDUSTRY LEADER OVER 40 YEARS
- EXCEPTIONAL SYSTEMS ARCHITECTS
- STAFF OF 20+
- LOCATED IN NEW HAVEN, CT
- 12,000 SQ. FT. FACILITY

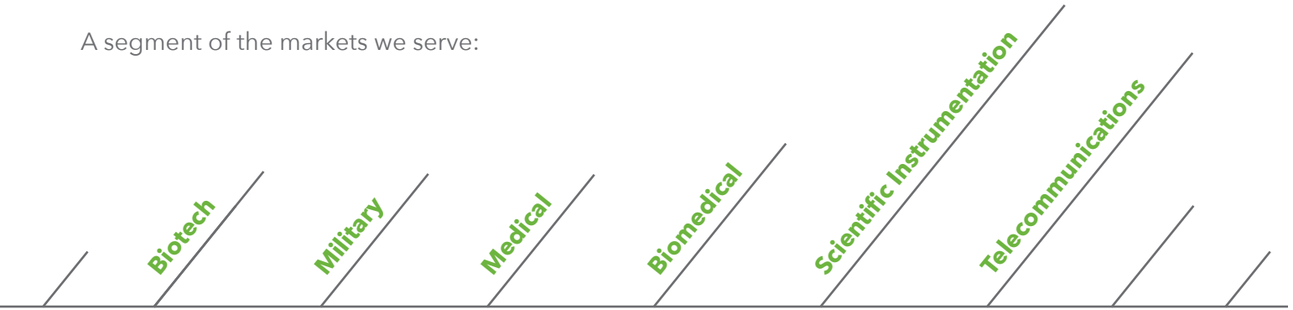
What do we do?

WE ENGINEER SOLUTIONS

Our key focus areas include:



A segment of the markets we serve:



Who do we serve?

SERVING ALL TYPES OF CLIENTS

Our growing list of clients is diverse in size and industry sector. From technology feasibility studies to full product development programs, we help our customers introduce new products and enhance their market position.

We love our clients

Agilent Technologies
Analog Devices
AstroNova
Branson
Defibtech
GE
General Foods
Hamamatsu
Hologic
Life Technologies
Memorial Sloan Kettering Cancer Clinic
Nikon
Northrop Grumman
NYNEX
OFS
PerkinElmer
Philips
ProteinSimple
SAIC
Scan-Optics
Smiths Detection
Sonics
The Lee Company
Thermo Fisher Scientific
Ward Leonard
XiJet

WE ARE A TECHNOLOGY DEVELOPMENT PARTNER TO
OVER $1 BILLION
IN EXITS

What makes us stand out?

OUR FIRST PRINCIPLES DRIVEN APPROACH

In order to better understand – and therefore solve – a given problem, we utilize our first principles driven approach to break down that problem or idea to its core principles and basic knowledge.

first prin·ci·ples
plural noun

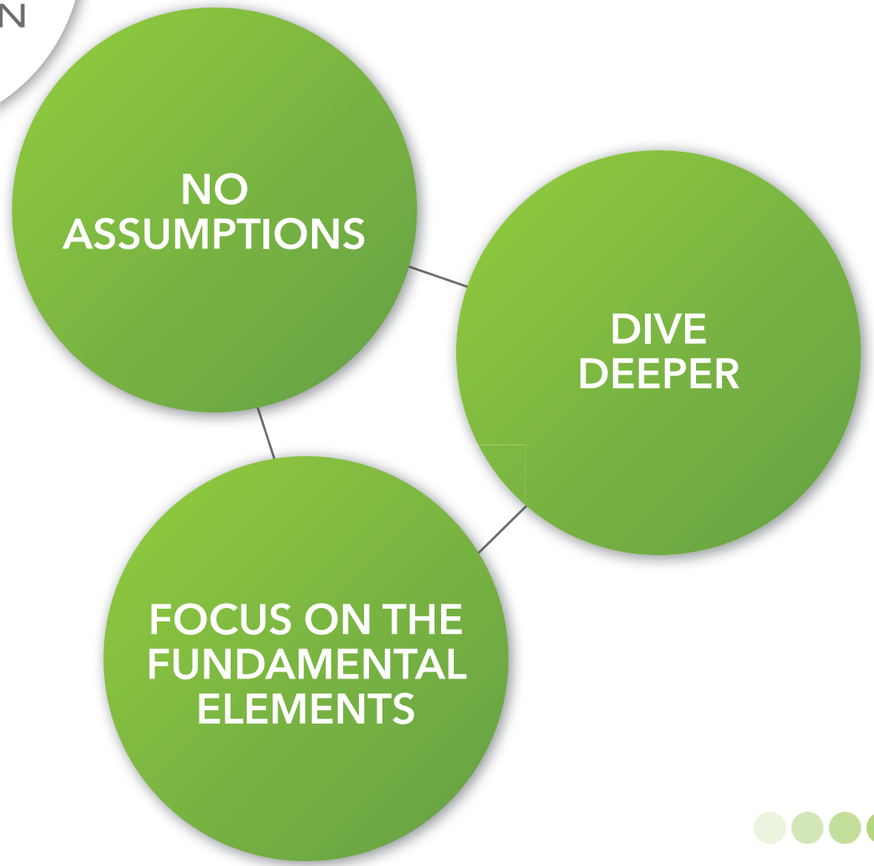
the fundamental concepts or assumptions on which a theory, system, or method is based.

The things best to know are first principles and causes, but these things are perhaps the most difficult for men to grasp, for they are farthest removed from the senses.

~Aristotle

TO THIS:

PRESCO'S SOLUTION



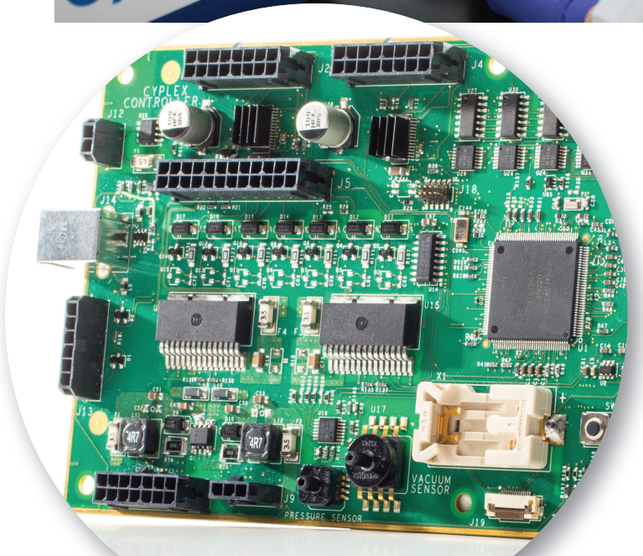
We are experts at high-performance instruments for an array of applications.
We help clients innovate and bring breakthrough products to market.

Electronics

- Miniaturized Designs
- High-Throughput Computational Engines
- Low-Noise Circuitry
- Battery Management
- FPGA Design
- Robotics and Motion Control

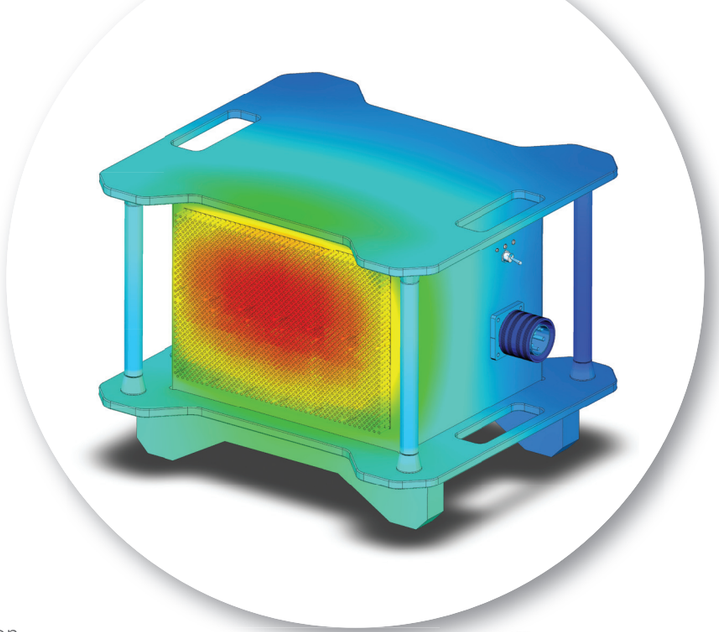
Software

- Embedded Software
- Machine Learning / AI
- Desktop and Mobile Apps
- LabVIEW Development
- Edge and Cloud Computing



Mechanical

- SolidWorks and ProE 3D Design
- Chassis and Sheet Metal Design
- Thermal Analysis
- Plastics and Injection Molding
- Optics Design and Lasers



Manufacturing

- Dedicated Manufacturing Facility
- Highly-Technical Assembly Staff
- Rapid Prototyping to Volume Production
- Quality Control and Warranty

Medical

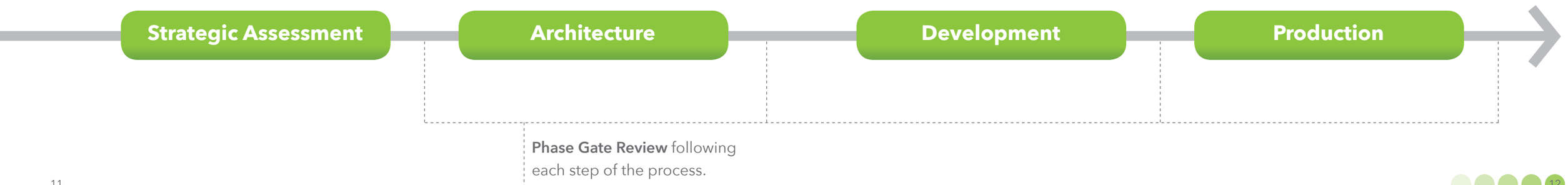
- FDA Documentation
- Verification and Validation
- Industrial Design
- Human Factors

How do we do it?

WE USE AN ESTABLISHED PROCESS

Our process is based on over 40 years of experience and client feedback, to best serve each individual project and client. It is adaptable to suit the specific needs and demands of project and client.

- Provides **predictability** of project cost and schedule
- Frequent **communication** with client through regular discussion and progress reports
- **Scalable** and **adaptable** to suit project needs and budget
- Promotes **early identification** of risks



Why work with us?

WE ARE A PROVEN PARTNER

Certifications and Partnerships

- ISO 13485 Certified Manufacturing Partner
- ISO 9001:2015 Certified Manufacturing Partner
- National Instruments Alliance Partner
- ITAR (International Traffic In Arms) Regulations Compliant
- Analog Devices Development Partner

Facilities

- 12,000 sq. ft.
- 2,000 sq. ft. Manufacturing Space
- Environmental Testing Lab
- Fully-Equipped Engineering Lab
- Manufacturing Capabilities

We are risk absorbers

Predictable R&D

We take the guesswork out of R&D by performing important and systematic work up front. Our process seeks to reduce the unknowns through early risk identification and design simulation.

Reliability

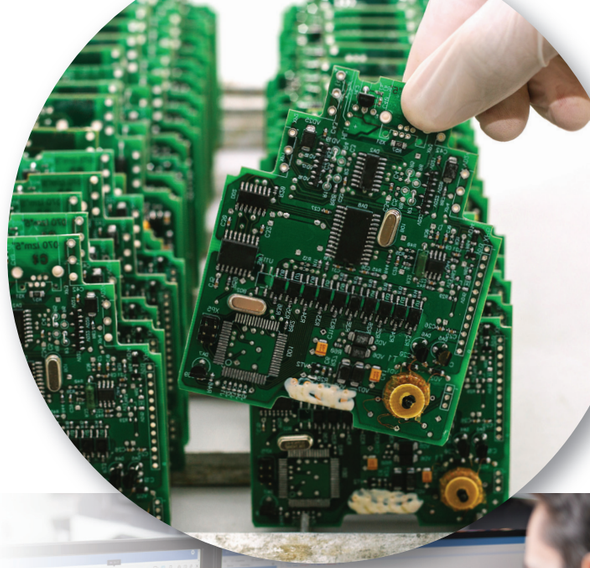
For over 40 years, we have developed reliable, dependable products for our clients. We stand behind our work, providing warranties and ongoing support throughout the life cycle of your product.

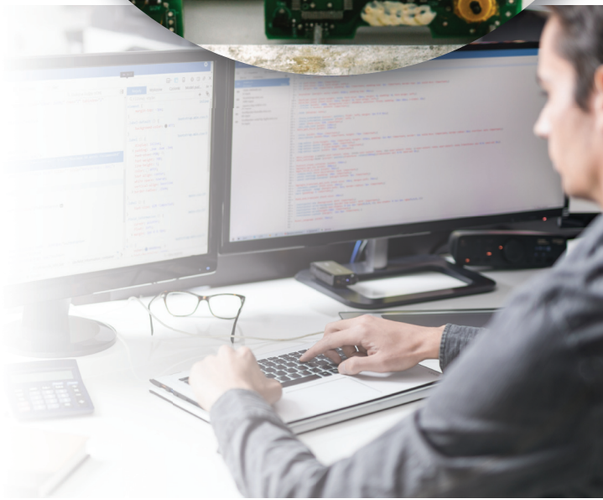
Transparency

Through periodic progress reports and status updates, clients receive a clear breakdown of hours and progress per task.

Team of Experts

Our multi-disciplinary team of electronics engineers, software developers, mechanical and industrial designers provide our clientele complete, seamless solutions to their most challenging projects.

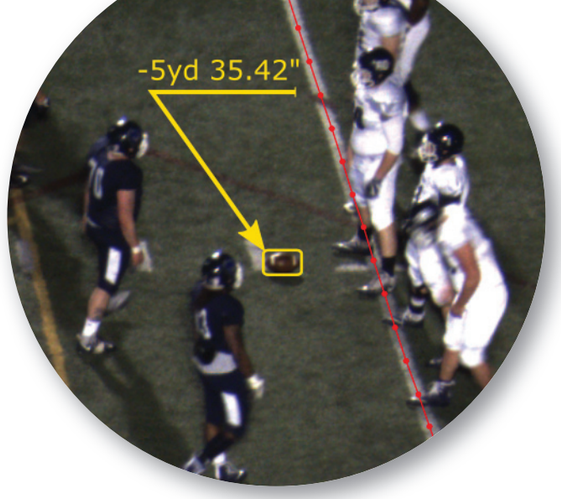




Cutting Edge

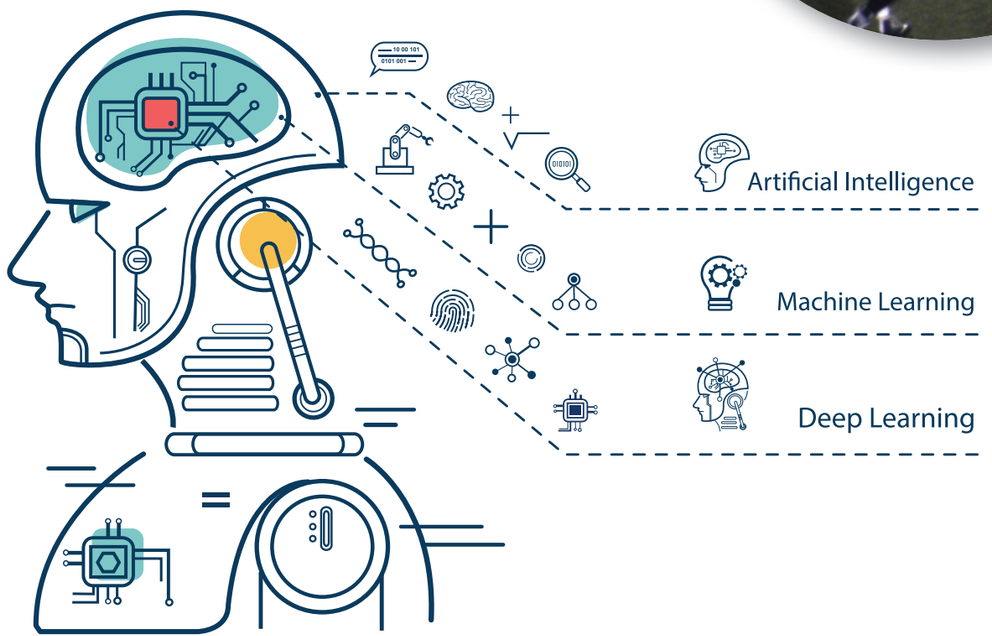
DATA PROCESSING & ANALYTICS

For decades, Presco Engineering has utilized advanced data processing techniques to help solve our clients' most difficult problems. Experienced with various machine learning and image processing frameworks, we are experts at designing, developing, and deploying advanced data processing solutions.



Advanced Data Processing

- Digital Signal Processing Experts
- Advanced Algorithm Development
- Neural Networks and Deep Learning
- High-Performance Real-Time Analysis
- GPU and FPGA Acceleration



Machine Learning / AI

- Multiple Frameworks (TensorFlow, Caffe, MxNet)
- Intelligent Dataset Annotations
- Model Optimization
- Deploy Models on Edge Devices
- Real-World Applications
  - High-Speed Optical Character Recognition (OCR)
  - Acoustic Recognition and Classification
  - Real-Time Object Detection and Segmentation

Image & Video Analysis

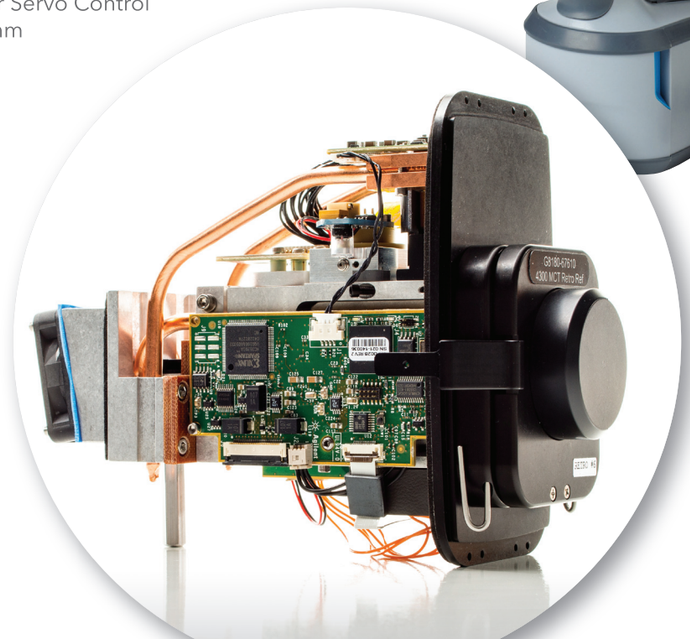
- Multiple Frameworks (OpenCV, MATLAB, AForge)
- High-Speed Data Acquisition
- Support for FPGAs and LabVIEW
- Specialized Algorithm Development
- Feature Extraction and Classification
- Object Detection and Segmentation

Embedded System Design

HANDHELD SPECTROMETER

A leading instrument manufacturer came to Presco to design their industry-leading handheld FTIR spectrometer. This instrument had a number of extremely challenging aspects, including:

- Michelson Interferometer Mirror Servo Control with Positional Accuracy of 0.3 nm
- Temperature Control Including TEC Control to 0.005 °C
- MCT Preamp with World-Class Noise Performance
- Battery Management
- 12-board Electronics System
- 4 Processors Employing System-Wide Synchronization



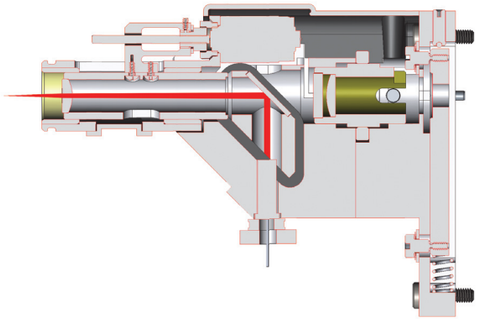
Electro-Optical Engineering

LASERS

Presco has worked with lasers since the 1970s. We've designed laser drivers, thermal controllers, and optical systems ranging from single milliwatt up to multi-kilowatt arrays.

- Zemax® Optical Modeling and Ray Tracing
- Power Supplies for CW, Pulsed, and Quantum Cascade Lasers
- Temperature Control Using Convection, Thermoelectric, and Liquid Cooling
- Single Module with Three Different Wavelengths with Coaxial, Shaped Output Beams
- Wavelength Stabilization for Raman Spectroscopy and FTIR Metrology
- Optical Systems for On-Axis or Grazing Angle Illumination
- Fiber-Coupled and Free-Space Designs

Multi-Wavelength Laser Module



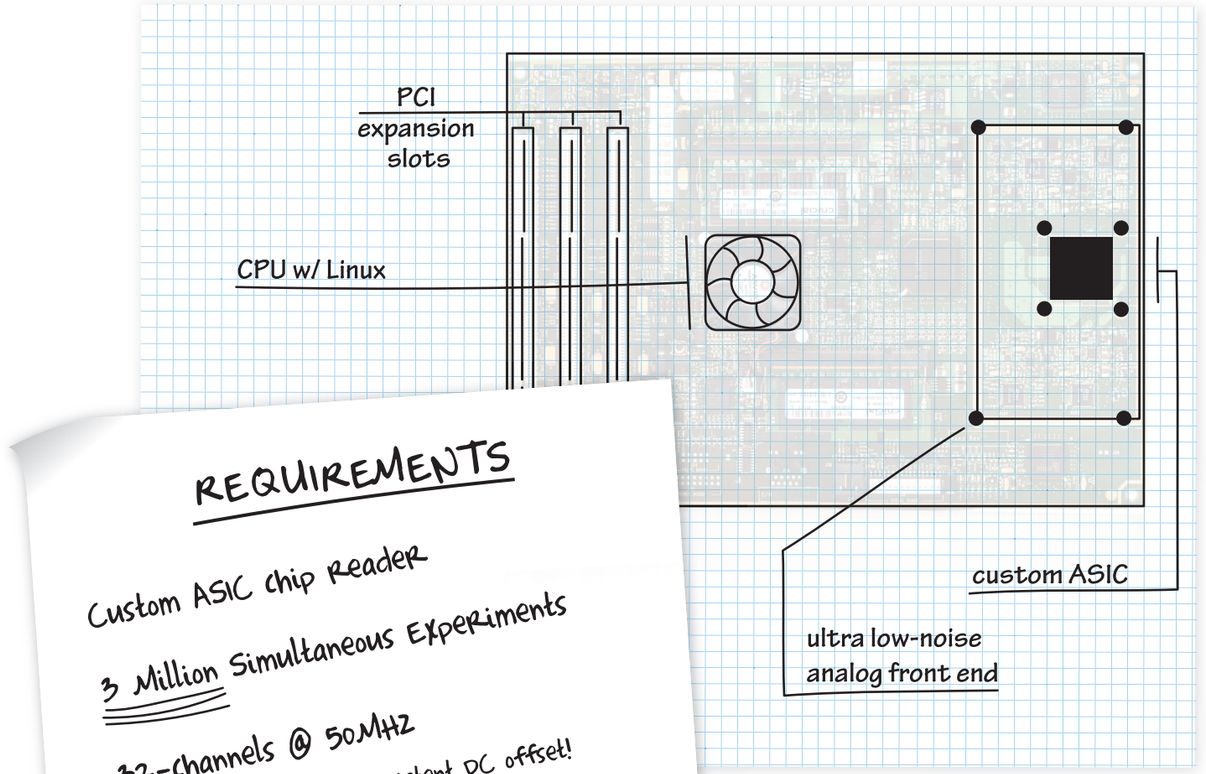
Cross Section of Raman Optical Design

DNA Sequencer

REACHING THE THEORETICAL NOISE FLOOR

Presco was challenged to capture ultra-faint hydrogen ion signals generated during DNA nucleotide incorporation. The problem was high bandwidth (1 GHz x 16 bit aggregate sample rate) and a noise floor very near the theoretical limit. An unusual factor was that the long observation time of this experiment stressed 1/f noise performance in addition to the usual thermal noise limits.

Prototype circuitry was developed and tested in an astonishing four months.



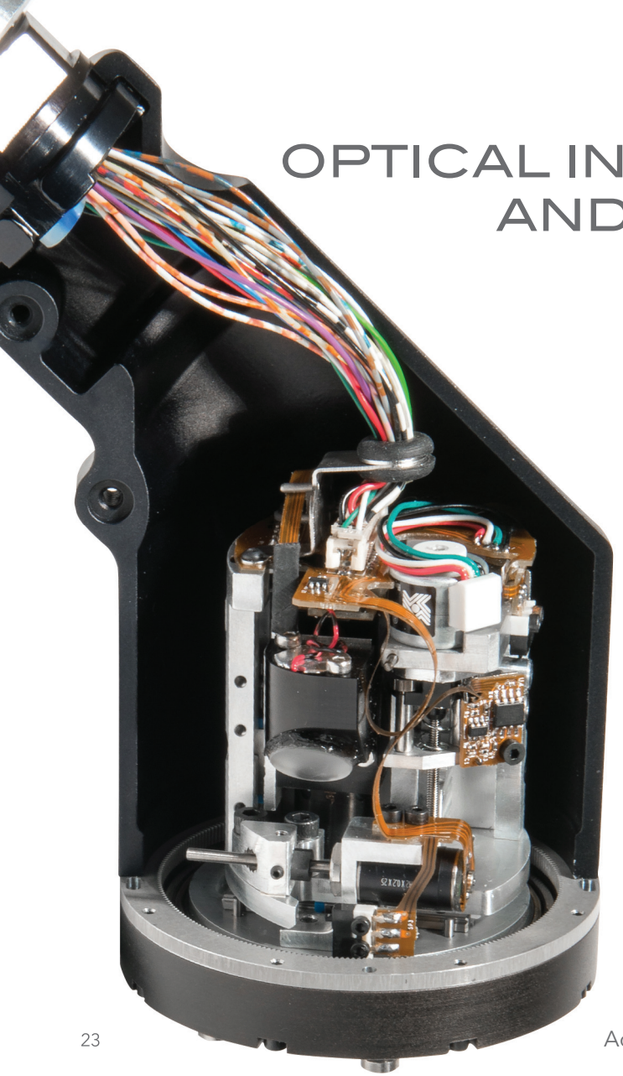
*Our client approached us with a rudimentary list of design requirements and required a functional prototype **within four months**.*

PRESCO ENGINEERING

IMPLEMENTATION

- Electronic and Firmware Development
- 640Msps by 16-bit ADC
- 1uV Noise Floor
- FPGA-Based Lossless Data Compression
- PowerQUICC III Processor with DDR
- Linux Operating System
- Custom Device Drivers
- Gigabit Ethernet
- Touchscreen

*Extraordinary low-noise performance and speed to market were two factors that helped our client get acquired for **$750M** shortly after product introduction.*



Micro-Robotics

OPTICAL INSPECTION DESIGN AND MANUFACTURING

Presco Engineering developed a miniature robot for an optical inspection and cleaning system. Presco's work included design, prototyping, and manufacturing of pre-production units.

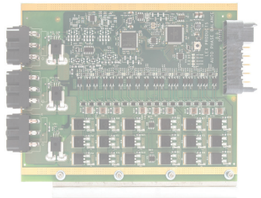
- Automated Functions for:
  - Inspection
  - Cleaning of Ganged Fiber Optic Connectors
- Five Axes of Motion
- 50 Micron Positional Accuracy
- Small Size for Installation in Tight Locations

Actual Size

Mil-Spec Power Electronics

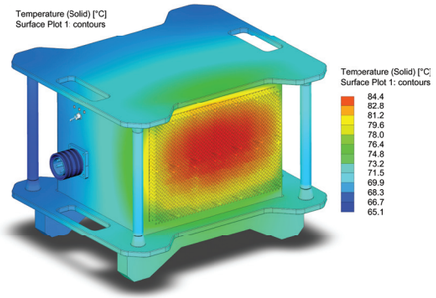
3-PHASE AC LOAD BALANCING SYSTEM

Designed for military use, the requirements for this system posed many challenges: seamless phase switching for all types of loads, passive thermal management, and zero single-point failures. Presco developed a complete electronics and software package, including an innovative phase switching technique, and a patent-pending thermal management solution.



Electronic Design

- 40A 3-Phase Generator Input
- 12, 20A Single Phase User Outputs
- Innovative Zero-Switch-Time Phase Rotation



Firmware Development

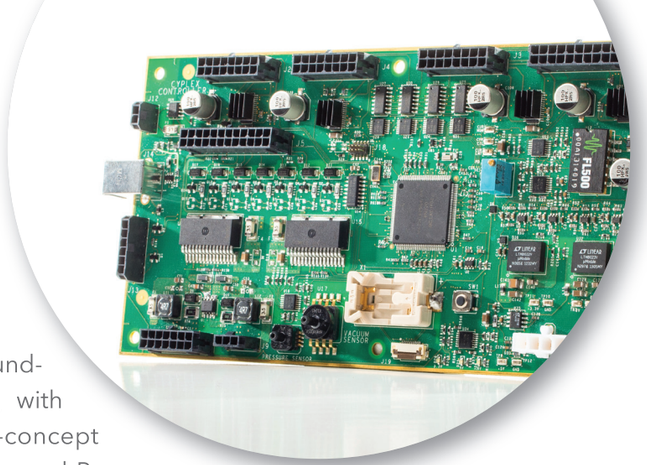
- Multiple ARM Processors with CAN Bus Communications
- Embedded Web Server for Configuration and Status
- Custom Lightweight, Thread-Safe Database

Thermal Management Solution

- -40 to 60°C Ambient Plus Sun Loading
- Metal Backing Plates with Integrated Heat Pipes
- Patent-Pending Design

Embedded Controls

MULTI-ANALYTE IMMUNOASSAY INSTRUMENT



CyVek Inc. selected Presco as their design partner for a ground-breaking high-speed immunoassay instrument. Starting with off-the-shelf components, CyVek developed a proof-of-concept prototype to confirm their methodology. Then they challenged Presco to design all-new electronics with a much smaller footprint and lower cost.

- Electronic and Firmware Development
- USB Communications
- Dual Temperature Control
- Hardware-Regulated Laser Power Control
- Three-Axis Motion Control
- Valve and Vacuum Control
- Precision Valve Timing Through Software Scripting

*This startup was acquired by Bio-Techne for **$60M** with a potential total earn-out of **$195M**.*

When do we get started?

LET'S TALK TODAY

Have a project waiting in the wings? Need to outsource something immediately? We're here and ready to talk when you are!

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Come visit our renovated office if you're in the area:

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