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:

- Product Development
- Design Services
- Turnkey Production
- Venture Development

A segment of the markets we serve:

Biotech  Military  Medical  Biomedical  Scientific Instrumentation  Telecommunications

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 principles
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
NO ASSUMPTIONS

FOCUS ON THE FUNDAMENTAL ELEMENTS

DIVE DEEPER

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

Strategic Assessment | Architecture | Development | Production

Phase Gate Review following each step of the process.
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.
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
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

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

**Micro-Robotics**

**OPTICAL INSPECTION DESIGN AND MANUFACTURING**

**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.

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

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

**Thermal Management Solution**
- -40 to 60°C Ambient Plus Sun Loading
- Metal Backing Plates with Integrated Heat Pipes
- Patent-Pending Design
CyVek Inc. selected Presco as their design partner for a groundbreaking 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.

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

Embedded Controls

MULTI-ANALYTE IMMUNOASSAY INSTRUMENT

- 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
- 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

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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