

Accel Automation is a provider of engineering and software development services.

Accel Automation derives its name from its core expertise which is the development of automated manufacturing systems, however product design & development make up a many of the projects we work on.

The staff of Accel Automation is highly innovative, and possesses exceptional analytical skills. Through innovation and a thorough evaluation of specifications, Accel Automation strives to create simple and robust designs that work consistently and reliably.

Our customers are often small or start-up companies which are looking for additional intermittent engineering support without the hassle and long-term cost of expanding their staff.

Accel Automation can provide you with the tools and expertise you need to accelerate your development and to help you accomplish your objectives on time.

## **Mechanical Design**

Accel Automation has many years of mechanical design experience with tools ranging from drawing boards to state of the art 3D solid modeling software. Although experienced with many different CAD systems, Accel Automation has worked primarily with SolidWorks since 2004.

SolidWorks is a 3D solid modeling software package with well integrated engineering analysis tools. It can display your product or system from any viewpoint in three dimensions with life-like backgrounds, and can display moving components with realistic effects such as gravity and centrifugal force. In addition to its 3D modeling capabilities, SolidWorks can also create technical 2D drawings for manufacturing, and can export data in a wide variety of formats for numerous manufacturing processes.

Using SolidWorks, Accel Automation provides its customers with top notch Mechanical Engineering & Design services. Whether you're looking for custom machine, or product design assistance, Accel Automation is ready to put our expert mechanical design skills to work for you today.

## Engineering Analysis

A critical part of any good design is thorough analysis. Whether it's calculating mechanical stresses or heat transfer on a component, or calculating fluid flow characteristics, Accel Automation has a wide range of tools to meet your needs. Accel Automation can provide:

- Kinematic Analysis of Mechanisms
- Stress Analysis via FEA (Finite Element Analysis), linear and non-linear
- Vibration Analysis
- Dynamic Response
- Buckling
- Fatigue
- Drop Test
- Thermal Analysis including conduction, convection and radiation
- Fluid Flow Analysis using CFD (Computational Fluid Dynamics)

## Manufacturing Engineering

Whether developing an automated manufacturing system, or designing a product for manufacturability, Manufacturing Engineering is an important component. At Accel Automation, we realize that many of our customers have excellent in-house Manufacturing Engineers, however sometimes assistance is needed. Whether you are a start-up company that isn't yet fully staffed, or your engineers occasionally have too much to do, we can help.

Accel Automation is skilled in performing a variety of tasks such as performing time studies, creating production flow maps, determining process capability (Cpk), contributing to FMEA's, creating qualification plans (IQ, OQ, & PQ) for FDA regulated equipment, establishing statistical process control (SPC), creating plans for Gage R&R's, and designing and performing experiments (DOE's).

## Control System Design

With almost any mechanical device comes controls. If your control requirements call for mechanical, pneumatic, hydraulic, or electrical controls, we have the skills to assist you. Whether designing a custom machine controlled by an off-the-shelf PLC, or developing a product which requires custom electronic controls, Accel Automation can provide the control design skills you need.

In addition to hard wired PLC, servo and stepper controllers, Accel Automation has extensive experience using PC's in conjunction with RS 232 and TCP/IP communications to control and acquire information from various off-the-shelf and custom electronic devices.

Beyond direct machine control, Accel Automation can provide assistance with creating SCADA (Supervisory Control And Data Acquisition) systems and integrating them into your corporate network, website, and database.

If your need is custom electronic controls, Accel Automation can provide these as well. Accel Automation enjoys a strong long term relationship with a local custom electronics development firm which specializes in the design of microprocessor based electronic devices. This strategic partnership allows Accel Automation to provide both mechanical and electrical product design services.

## Software Development

Accel Automation provides its customers with a wide range software development services but is particularly well versed with creating software which interacts with real world physical devices, often using RS-232, TCP/IP and IEEE 488 (GPIB) communications.

With experience developing SCADA systems, Accel Automation has harnessed the power of VB.NET to rapidly create HMI's, applications, and Windows services which facilitate the flow of information between physical devices, databases and users over local area networks and the internet.

Not only has Accel Automation created software to interface with standard off-the-shelf devices, but we have worked with device manufacturers to help create communication protocols for their new products and custom devices.

## Web Development

With ever increasing connectivity comes a demand for monitoring and controlling equipment and process via the internet. To meet this demand, Accel Automation has harnessed the power of ASP.NET to create web applications which allow users access to devices and manufacturing systems. Of course our website skills extend beyond ASP to html, JavaScript, etc.

In addition to website development and server support, Accel Automation can provide its customers with applications that provide notifications via email and text messaging and with remote control applications to access a PC's peripherals from anywhere in the world.

## Rapid Prototyping

At Accel Automation, we realize that even the best computer models are sometimes not enough, and that a real physical model that you can hold in your hand is just what you need to assess a design. To provide customers with hands-on models, Accel Automation has its own in-house 3D Printer.

A 3D Printer is an excellent tool for rapidly and inexpensively creating complex shapes. 3D Printing offers a distinct advantage over other types of rapid prototyping in that the parts created are often strong enough and tough enough to act as functional components. An added benefit of the 3D Printer is the ability to quickly and inexpensively prototype mechanisms for experimentation, and to quickly produce functional components for tooling and fixtures.

Accel Automation has leveraged its 3D Printer to rapidly and inexpensively create molds that can be used to fabricate parts from other materials such as using RTV Silicone to create elastic parts, and using sheets of heated plastic to create vacuum formed components.

Although originally intended for in-house use to supplement our engineering service, Accel Automation is happy to provide this service to any customers who are simply looking to have their parts printed. Although not yet available, Accel Automation hopes to have automated on-line 3D Printing quotes and order processing available soon.

## 3D Scanning

To expedite the creation of 3D images from irregularly shaped physical components, Accel Automation utilizes its in-house 3D Optical Scanner.

Our 3D Scanning capability is particularly useful for converting existing customer models into computer models for further product development, and for converting existing products into computer models to assist with the design of automated systems which handle those products.

Although originally intended for in-house use to supplement our engineering service, Accel Automation is happy to provide this service to any customers who are simply looking to create 3D images from their irregularly shaped physical components.

Please visit [www.accelautomation.com](http://www.accelautomation.com) for more information, or contact us today at:

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