

Solid

design solutions, inc.



ENGINEERING
AND DESIGN
SERVICES



E N G I N E E R I N G
E X C E L L E N C E

a member of
VERTICAL
DEVELOPMENT
GROUP

VDG

ENGINEERING VISION ENGINEERING QUALITY

Since 1997 Solid Design Solutions, Inc. has been providing quality product development services from concept through production. Our staff includes Mechanical Engineers, Electrical Engineers and designers with tens of thousands of hour's collective experience using Pro-ENGINEER, SolidWorks and SDRC I-DEAS software packages. To complement our talented design staff we offer CNC Machining, welding and contract manufacturing services. Our competitive rates, quality services and fast response times will allow our services to quickly become a valuable extension of your Engineering Department.

- **MECHANICAL** Working with your engineering department, our mechanical engineers develop innovative designs that have a high degree of manufacturability. Our design team comes from a wide variety of technologies and expertise, supporting cross pollination of solution ideas and 'outside the box' approaches. Using an advanced computational tool such as Finite Element Analysis (FEA), we offer our clients the opportunity to improve components and equipment. We have the expertise to handle a wide variety of fluid and thermo dynamic problems.



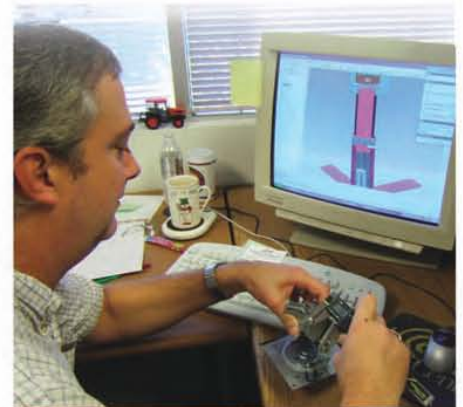
- **ELECTRICAL** We offer full electronic design development and prototype manufacturing services including: Electronic Packaging, Schematic Capture, Electronic Component Purchasing, Printed Circuit Board Layout, Software Development, Embedded Microcontroller Design, Product Cost Estimating, Prototype Assembly and Testing.



- **MACHINE AND FIXTURE DESIGN** Working with your production and floor managers we create reliable solutions for demanding applications. Our engineers and sales personnel work side-by-side with you to find the right solution for your application. From material handling and packaging equipment to off road equipment and system integration, we can meet your needs. We are known as a premier designer and manufacturer of innovative and dependable specialty designed machines. From small product assembly machines and packaging machines to total system integration, we have the insight and know-how to deliver quality designs and superior manufactured equipment. Whether you need a new design or are looking to reinvent your existing production or package line our professional design and development team has the experience and knowledge to increase your throughput with superior, efficient and reliable equipment and systems.



PROJECT MANAGEMENT Our project managers bring decades of experience to the task of developing, building and testing of new products and equipment. The primary scheduling tool used is Microsoft Project software. Weekly status reports with up to date cost summaries ensure that project schedules and budgets are realized.



ENGINEERING EXCELLENCE

MEDICAL AND CONSUMER PRODUCTS

Our professional design & development group will serve as an extension of your existing resources to help you develop innovative solutions and bring your products to market faster. Our designers pay special attention to the end users of your product. Within our designs it is essential to adopt an ergonomic, user friendly approach to design, including studying people using equipment. This is especially important when everyday products are designed with older and disabled users in mind. Solid Design & Prototype, Inc. will get your product to market.



ELECTRONIC PACKAGING Developing plastic and metal packaging tailored to your specific application is one of our core competencies. Based on projected production quantities, our designs will support utilizing the most appropriate manufacturing process(s) to minimize overall costs. Drawing from our experience and your production volume projections we can address your EMI/RFI shielding requirements through a variety of techniques.



PLASTIC PART DESIGN Using the latest CAD design tools our engineers and designers create parts that provide the required functionality and aesthetics while minimizing part weight. Features are designed into parts which reduce the need for fasteners, minimize over part counts and support ease of molding and assembly.

PROTOTYPING, TESTING AND CONTRACT MANUFACTURING

Having design, prototyping and manufacturing services under one roof allows our clients to shorten their overall product development lead time and cost. To enhance your prototype needs our in house services include CNC machining, sheet metal fabrication, welding, tube bending and assembly. Our manufacturing services are supported by Alliance Manufacturing Software with MRP, SFC and purchasing modules.



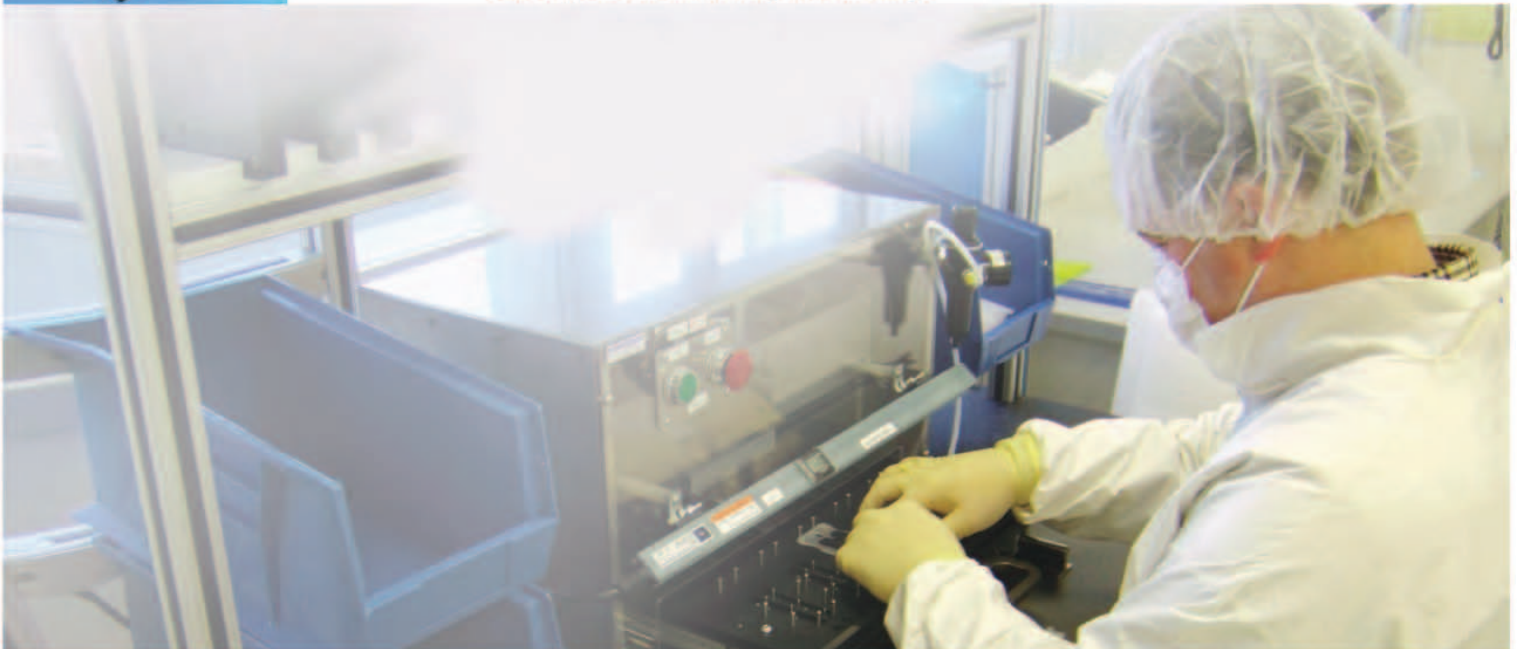
MECHANICAL DESIGN

MACHINE & FIXTURE DESIGN

ELECTRONIC DESIGN

PLASTIC PART DESIGN

CONTRACT MANUFACTURING.



Our degreed engineers have decades of collective experience designing products and specialty machines. Working with our Clients to understand fully their product requirements we design products which are good looking, functional and manufacturable at the lowest cost.



Pro/ENGINEER



Inventor



Mechanical Engineering and Development

Mechanical Design

Machine & Fixture Design

Electronic Design

Plastic Part Design

Contract Manufacturing

SOLID DESIGN SOLUTIONS, INC.

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www.verticaldevelopmentgroup.com

Solid

design solutions, inc.

Product Development

A Vertical Development Group Company



Solid Design Solutions Engineers and Designers have extensive backgrounds in Product Development. We support these activities from concept through prototyping, testing and into production. In addition to our standard CAD software tools, we will also perform Finite Element Analysis (FEA), Kinematic Analysis, Tolerance Analysis, and Thermodynamic Analysis as required.

Our primary mission is supporting new product development from concept through to production. To support these activities we offer the following services:

- **Project Management**
- **Industrial Design**
- **Mechanical Engineering & Design**
- **Electrical Engineering & Design**
- **Manufacturing Engineering**
- **FEA (Finite Element Analysis)**
- **CFD (Computational Fluid Dynamics)**
- **Fixture design and build**
- **Specialty machine design**
- **Contract Manufacturing**
- **Order fulfillment**
- **Inventory management**
- **Supply Chain Management**

Software

Our CAD software packages used at Solid Design Solutions, Inc. include SolidWorks(11 seats), Pro-Engineer(5 seats), Inventor(2 seats) and SDRC-Ideas(3 seats). We also use a full 3D CAM software package called CAMWorks. FEA software includes CosmosWorks, Addina, Marc and Ansys. Our Process and Inventory control MRP software package is called Alliance MFG from Exact Software.



“Anticipate Innovation”

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Specialty Machine Fixture Design & Build

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Solid Design Solutions, Inc. Engineers and Designers have backgrounds in both Product Development and Manufacturing Engineering. This dual background allows Solid Design Solutions, Inc. to quickly develop Jig and Fixture designs which reduce assembly time and increase product quality. Assembly fixtures and tooling can be designed for use within an existing system. Fixtures and tooling can also be designed for use in a semi-automated machine designed from scratch. Our Engineers can support these activities from concept through validation for agency approval. In addition to our standard CAD tools, we will also perform Finite Element Analysis (FEA), Kinematic Analysis, Tolerance Analysis, and Thermodynamic Analysis as required.



- **Clean Room Machines**

Assembly tooling has been designed and built for use in clean rooms.



- **Material Handling**

Fixtures can double as Kanbans and be used to transport sub-assemblies and provide protection during material handling and storage.



- **Manual Assembly Fixtures**

Assembly fixturing can be designed and built to align, and support parts during assembly and testing. Assembly fixtures have been designed to accurately position components using multiple axis of motion and to rigidly hold parts in place until all fastening hardware has been secured.



- **Semi-Automated Assembly Fixtures**

Equipment can be designed and built for production assembly operations using electrical, pneumatic, and hydraulic power inputs. Machine control can be designed for simple operator manual inputs, or to use PLC or PC based control.



- **Food Handling and Processing Equipment**

Our Engineers have experience designing and building equipment for use in food processing applications.

- **Cycle Testing Machinery**

Test equipment has been designed for precise and accurate operation for millions of cycles across a range of operating variables.



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Engineering Support Services

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Solid Design Solutions, Inc. Engineers and Designers have extensive backgrounds in mechanical engineering, machine design and mechanism development. We support these activities from concept through prototyping, testing and into production. In addition to our standard CAD software tools, we will also perform Finite Element Analysis (FEA), Kinematic analysis and tolerance analysis as required. Our primary mission is providing engineering services with the following disciplines:

- Mechanical Engineering
- Mechanical Design
- Manufacturing Engineering
- FEA (Finite Element Analysis)
- CFD (Computational Fluid Dynamics)
- Photo-realistic rendering
- Drafting Services
- Fixture design and build
- Specialty machine design
- Steel & Aluminum Welding
- Drilling and grinding
- Contract Manufacturing
- Tooling design & coordination

Softwares Utilized at Solid Design Solutions, Inc.

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Contract Manufacturing

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Solid Design Solutions, Inc. offers full service Mechanical and Electro-Mechanical Contract Manufacturing. Solid Design Solutions, Inc. has the experience and resources required to provide quality workmanship to meet your demanding schedule. We will efficiently procure, plan, assemble, test, and deliver on-time, whether you are prototyping, building for Beta testing, or fulfilling production requirements.

Facilities / Equipment

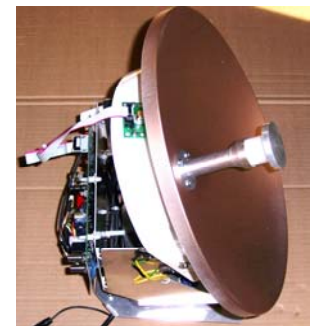
11,000 Square foot building with 8,600 Square feet of manufacturing floor space conveniently located in Mounds View, MN. We have truck docks as well as drive in doors.

Services

Electro-mechanical assembly of products to a Client supplied forecast or sales order. We will ship to your facility, drop ship to your Client or maintain a Finished Goods inventory for you. Our inventory management services include component procurement utilizing a complete Material Requirements Planning(MRP) software package called Alliance MFG. This software supports our Purchasing, Receiving Inspection, build and ship processes. To compliment these services Solid Design Solutions, Inc. provides product, machine and fixture design as well as manufacturing engineering services.

Software

Our Process and Inventory control MRP software package is called Alliance MFG from Exact Software. CAD software packages used at Solid Design Solutions, Inc. include SolidWorks(11 seats), Pro-Engineer(5 seats), Inventor(2 seats) and SDRC-Ideas(3 seats). We also use a full 3D CAM software package called CAMWorks.



Please see our Web Site for additional details

www.SolidDesignMFG.com

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