

Why should ESG be your first choice for product development

Qualified designers and engineers

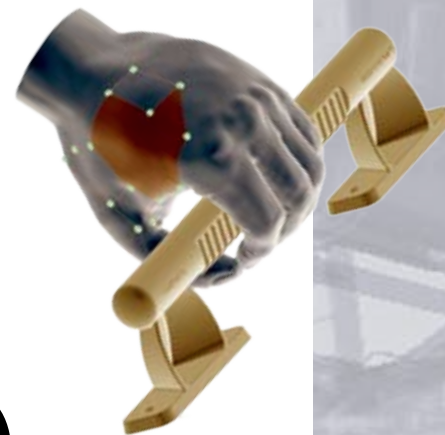
- Extensive industry experience
- Proven innovators—evidenced by over 50 patents
- Registered professional engineers on staff
- Team's educational excellence—
PhD, Master, and Bachelor Degrees in Engineering & Industrial Design

Proficiency with the most effective industrial design and engineering tools

- Industrial Design: Rhino 3D, Corel Painter, Solid Works
Z-Corp Scanner 700*, Adobe Creative Suite 2
- Mechanical Engineering: Ideas, CATIA V5, Unigraphics, SolidWorks
- Engineering Analysis: LS-DYNA, HyperWorks, Hypermesh, OptiStruct, Motion Solve, Computational Fluid Dynamics

In-house prototyping

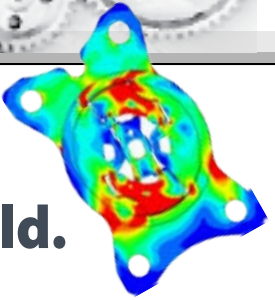
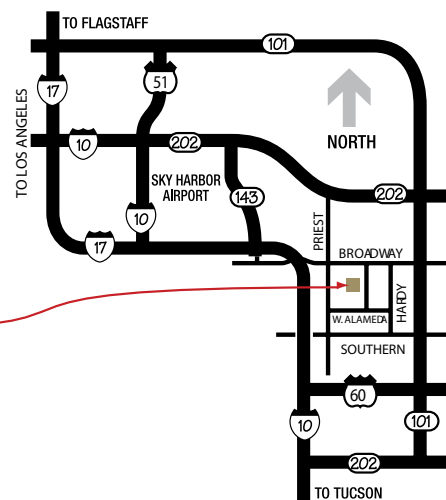
- Z Corporation rapid-prototyping 3D printing system
- Mechanical prototype construction



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Effective Design and Engineering Solutions for Today's Demanding Design World.

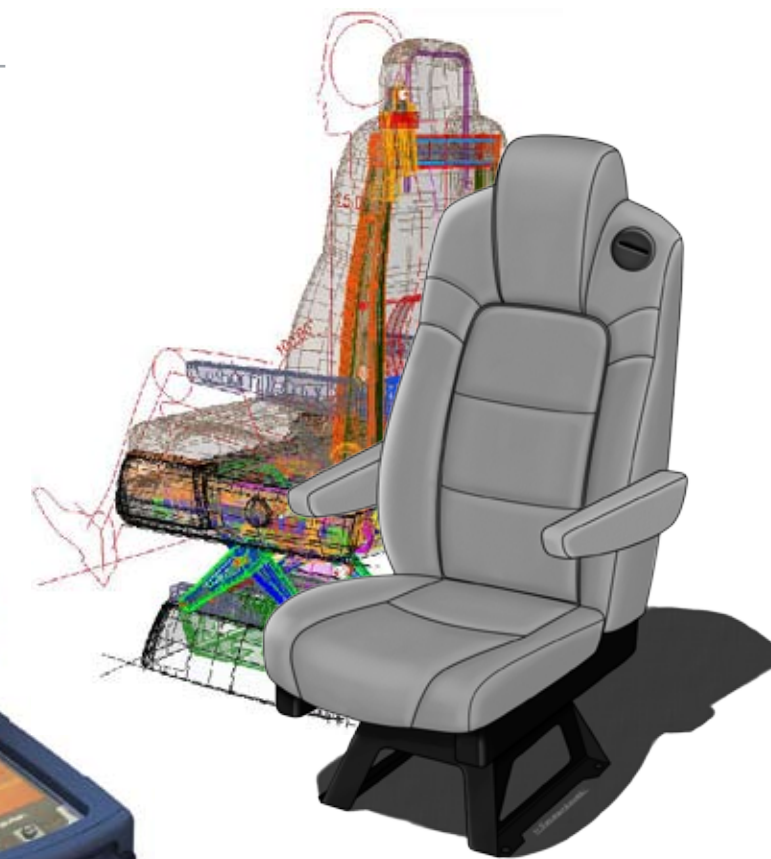
ESG's team is a unique blend of innovative Mechanical Engineers and creative Industrial Designers that have a passion for excellence. We bring to the table a track record of successful product design solutions with fresh insight and creative innovation to help your business successfully bring your brand vision to market.

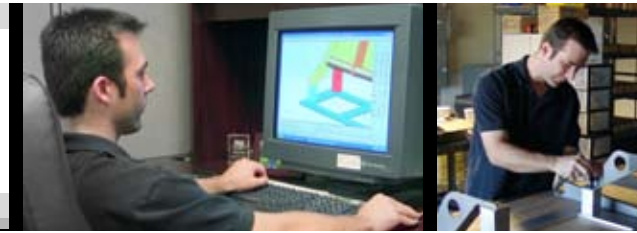
Reduce Risk and Lead Time. ESG has developed innovative design and engineering processes that reduce your product development risks, and reduce lead-time to market. We'll work with you to develop a sound design and engineering base for your product early on in the development process so your product has a firm foundation on which to build.

Big and Small Projects Welcome. With our staff of over 30 and our 10,000 sq. ft. facility, we can execute large engineering projects. We are also equipped to handle small, quick turnaround projects.

Diverse Experience

- Aerospace**
- Alternative Energy**
- Automotive**
- Consumer Products**
- Defense**
- Heavy Truck**
- Medical Devices**
- Mobility Engineering**
- Motorcycles**

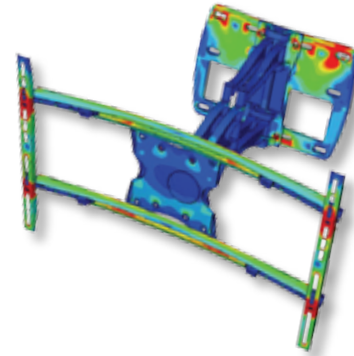




ESG Engineering Capabilities and Tools

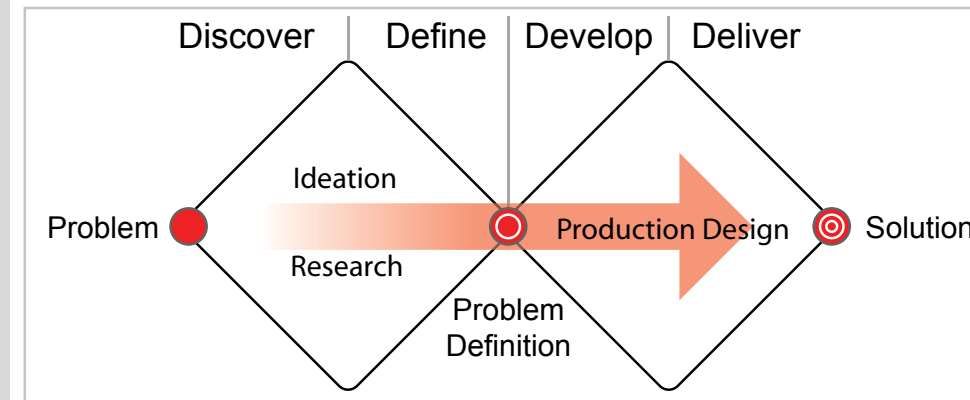
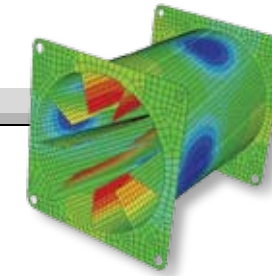
- Design and Solid Modeling
- Packaging Design
- Product Design Engineering
 - Concept to Production CAD design
 - Experienced in SolidWorks, Ideas, Unigraphics, Pro-E, CATIA, and Rhino
 - Detail Drawings Including Full Geometric Tolerancing
 - Complete Vehicle Design Capabilities
 - Complex Assemblies
 - Reverse Engineering – Scanning Capabilities for an Entire Vehicle, ZScanner 800
- Product Reverse Engineering
- Six Sigma Analysis and Implementation – DFSS, DFMEA, PFMEA, Mean Time-To-Failure Analysis
- Advanced FEA Simulations and Analysis:
 - Tools used: LS-Dyna, Optistruct, Hyperworks, etc...
 - Non-Linear Crash Analysis
 - Drop Test Simulations
 - Dynamic Analysis
 - Static Analysis
 - Fatigue Analysis / Life Prediction
 - Advanced Thermal Analysis
 - Fluid Flow Analysis
 - Thermal Multi-Physics Modeling
 - Combustion Modeling
 - Advanced Engine Simulations
 - Material Selection
 - Composite Analysis
 - Linear Statics, Buckling & Frequency Analysis
 - Design Optimization – Shape, Size & Topology
- Off-Shore Development Services - Variable Work Load Management, 24-Hour Clock for Engineering and Design (leveraging time difference), Reduced Cost, Skilled Manpower, Prototyping and Testing.

- Industrial Design
- Market Research
 - Competitive Analysis
 - Benchmarking
 - Interviews
 - Rapid Ethnography
- Concept Ideation – Brainstorming, Concept Sketching
- Concept Development – Rendering, Preliminary Product Breakup (Exploded View)
- Human Factors
 - Comfort/Usability Studies, People Packaging
- Packaging Design – Assemblies and Subassemblies
- 3D Development
 - Sketch Model Development – FreeForm Modeling
 - Finished Model Prototype
 - Conceptual and Class A Production Surface Design
- Graphic Design- Photoshop, Illustrator, InDesign
- Rapid Prototyping – Z Corp. Rapid Prototyping in Color and Black & White
- Program Management – Multiple Vendor Management, Quality Management and Process Control

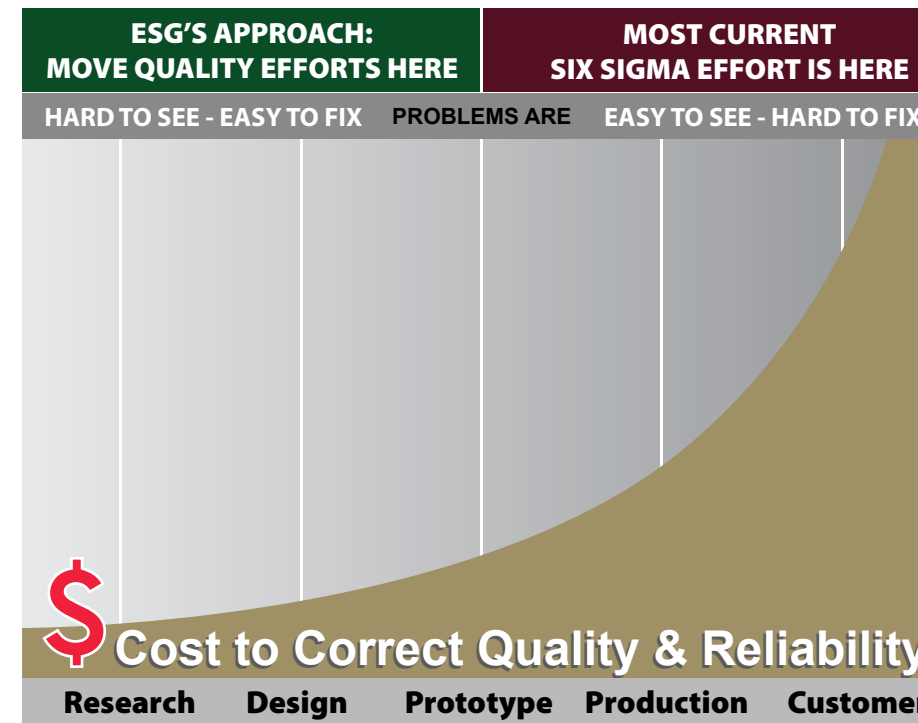


REGISTERED WITH CCR
(CENTRAL CONTRACTOR REGISTER - UNDER ELIO ENGINEERING)

THE CORE OF ESG ENGINEERING is INNOVATION



ESG uses the Double Diamond approach to product development



ESG's Proven Process

- DISCOVERY**
- Listen. Ask questions. Research competition. Understand users' motivations and needs.
 - Seek input from component manufacturers.
 - Define problems to be solved.

- PROJECT PLANNING**
- Define project scope and deliverables.
 - Develop project timeline and budgeting.

- DESIGN IDEATION**
- Concept ideation developed.
 - Styling exploration, evaluation models.
 - Alternatives, materials, trade-offs evaluated.

- ENGINEERING**
- Project thoroughly developed through analysis-driven design.
 - In-process prototype models developed.
 - Six-sigma analysis used to isolate and optimize what matters most.

- PROTOTYPING**
- In-house prototyping facilities utilized for mechanical prototype builds.
 - Appearance model construction.
 - Selective machined parts supplied by strategic partners.
 - In-house Z Corporation rapid prototyping.

- MANUFACTURING SUPPORT**
- Tool and fixture designed for product manufacturing.