



RATCHET & PAWL LLC
MECHANICAL ENGINEERING
DESIGN SERVICES

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ORGANIZATIONS LIKE SHARED STUDIOS AND ACTIVE ARMOR TRUST US FOR THEIR **MECHANICAL ENGINEERING DESIGN** REQUIREMENTS BECAUSE OF OUR PROFICIENCY IN CRAFTING ENDURING, FLEXIBLE SYSTEMS THAT THRIVE IN AN EVER-CHANGING TECHNOLOGICAL ENVIRONMENT. OUR UNWAVERING DEDICATION TO PUSHING THE BOUNDARIES OF MECHANICAL DESIGN EMPOWERS US TO PROVIDE INVENTIVE SOLUTIONS, ALL WHILE MAINTAINING A PROFOUND UNDERSTANDING OF THE SPECIFIC CHALLENGES OUR MECHANICAL SYSTEMS AND PRODUCTS AIM TO ADDRESS.



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WHO WE ARE:

- With over **20 years** of expertise, **RATCHET & PAWL LLC** has proven to be a valuable collaborator for mechanical engineering projects. Our efficient design and prototyping processes empower companies to boost their profitability and maintain a solid competitive position.
- We challenge traditional mechanical norms, delving into a multidimensional realm of possibilities to craft products that transcend the commonplace, optimizing their form and functionality.
- Our proficiency spans a range of manufacturing processes, allowing us to make informed choices regarding materials and design. This results in practical and cost-efficient products. We take the necessary steps to ensure that each product complies with safety standards and performs its intended function.
- Our engineering team possesses comprehensive training and a distinctive combination of proficiencies in numerous technical software. We are committed to ongoing skill development and retention, reducing the necessity for external outsourcing.
- We provide ongoing assistance and uphold our unwavering commitment to work alongside and aid our customers in resolving any issues with the products they have received, irrespective of when these issues may surface.
- We surpass our rivals by ensuring 24/7 accessibility accomplishing tasks more swiftly within our organization, which translates to time and resource savings. Frequently, we achieve the workload of multiple individuals with a single person.

WHAT WE DO:

MECHANICAL DESIGN

- Industrial Equipment and Automation
 - ✓ Pick-and-Place Equipment
 - ✓ Change Kits
 - ✓ Robotic Assembly
- Lab Equipment
- Aluminum Profiles Systems
- Test Jigs
- IC Sockets Design
 - ✓ Pogo Pins and Elastomers
 - ✓ Hand Loaded and Automated
- Thermal Management Equipment
- Electronic Cooling or Heating Equipment
 - ✓ Heatsinks and Heat pipes
 - ✓ Fans, Chillers, and Heaters
- Force and Pressure Control Equipment

PROCESS DEVELOPMENT

- Process Consulting
- Lean and Six-Sigma
- Removal of Process In-efficiencies
- Improvement of Process Flow
- Improvement of Documentation and Instructions
- Process of Lab Creation and Equipment Selection

IN-HOUSE MANUFACTURING CAPABILITIES

- 3D Printing
- Rapid Prototyping
- Small Batches Assembly and Testing

DESIGN OF EXPERIMENTS (DOE)

CONSULTING

MANUFACTURING DOCUMENTATION

- Drawings per GD&T
 - ✓ ASME Y14, ISO
- Bill of Materials
- Costing Analysis
- Assembly Instructions
- Selection of Standard Parts
- Selection of Replacement Parts for Assembly in Multiple Geographies

SIMULATIONS AND ANALYSIS

- Mechanical
 - ✓ Static and Dynamic
 - ✓ Drop Test and Vibrations
- Thermal and Thermo-Electrical
- Current Carrying Capacity
- Multiphysics
- Magnetics
- Mathematical Analysis
- Derivation of Equations
- Human Factors and Ergonomics Analysis
- Acoustic Analysis
- Weapons Mechanics Analysis

MANUFACTURING SUPPORT

- Turn-Key Manufacturing, Integration, and Final Assembly
- Supplier Selection for:** CNC Machining, Turning, Routing, Sheet Metal, Plastic Molding, Pneumatics, Electronics (PCBs and Assembly), Acoustics, Materials

CLIENTS:

