

## The Page Team

When you choose to work with Page, you instantly add a group of seasoned product development specialists to your team. Page will complete your project with creativity, discipline, and tenacity. We build on your ideas with research, brainstorming, user centered design, prototyping, testing, and engineering. We finish what we start, supporting you from ideation through manufacturing.



We know you need robust, revenue-capable products and systems. For Page this means delivering innovative design solutions that are done on time and on budget, exceeding your customer's expectations and meeting your business requirements through your product's life cycle.

## The Work We Do

Product Ideation and Road Mapping Mechanical Engineering **Regulatory Compliance Electrical Engineering Embedded Systems Reliability Testing** Industrial Design **User Experience Brand Language** Human Factors **Graphic Design User Research Mechatronics** Prototyping Software Testina DFMEA DFMA **FMEA** DFSS FEA DFE



Our office locations in Florence, MA and San Francisco, CA enable us to tap into a broad spectrum of ideas, technologies, and people.

## **Partial Client List**

Reynolds Cycle Technology Pursuit Electric Bike **Outland Engineering** Accu-Time Systems Sun Microsystems Malleable Devices **Assistive Devices Beyond Products Reading Coach Big Belly Solar** Light & Motion Idexx Labs Starbucks FloDesign Spalding SiC USA Stryker Nufern Ardica Texcel Depuy Apple



We have extensive expertise in sourcing from manufacturing facilities around the world. We understand regional differences in project management and communication, allowing us to work successfully in virtually any environment.

## **Design For Manufacture**

Designers and engineers at Page draw on the team's wealth of manufacturing experience. Our staff includes deep experience at world-leading fabricators, molders and resin suppliers. This enables us to target the best materials and manufacturing processes out of the gate, and to design for efficient tooling, fabrication and molding.





## BigBelly Solar Solar Powered Waste Compactor

Page was asked to lead a redesign of critical features on an existing solar powered product. The goals of the redesign were to improve the user experience, reduce costs and increase product robustness.

Page met with the client at the manufacturer's facility and documented the design challenges, manufacturing concerns and quality issues with the team. The Page team responded with an approach that allowed for a quick redesign which met all of the client's goals.

The Page team's experience in manufacturing processes, user experience design, FMEA and mechanical engineering coupled with an enthusiasm for alternatively powered devices made Page the development partner of choice for the client.







## **Beyond Products**

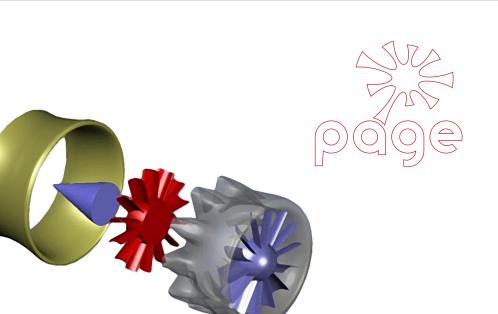
Portable Electronic Lift

The Mule is a complex electromechanical assembly capable of lifting 350 lbs. It contains custom assemblies in plastic, aluminum, and steel sourced worldwide.

The task was to take the alpha prototype to production launch. Page engineers designed complex plastic parts, die castings, formed metal, wiring and PCB assemblies. The Page team adapted all designs for manufacturing and assembly as well as validating the design with static load testing, end-use simulation, and life cycle testing. Suppliers for all parts were identified and qualified along with regular site visits to vendors in the US and Asia to augment the essential communication flow.

With just three months to beta prototype and six months to full production, the Page team's expertise at project management kept design information flowing to suppliers. Page supported the production launch with work instructions and quality plans, bringing in all subassemblies to Beyond's Connecticut plant for final assembly and test.





### FloDesign Scalable Wind Turbine Shroud

FloDesign's mixer-ejectors can be used to efficiently create large volume, low speed fluid pulses from low volume, high speed input flows. A reversed style can be used to improve the efficiency of wind turbines.

FloDesign needed to be able to easily create models of mixer-ejectors of different sizes for many different applications. Page created a parametric modeling system based on equations provided by FloDesign. This new modeling system automatically designs complete mixer-ejectors of any size from parameters input into a simple spreadsheet.

The design system allows FloDesign to create a new size ejector design in under 5 minutes, instead of several person-days per design.

Page also worked with FloDesign to find optimal methods of prototyping and testing several multi-stage mixer-ejector systems.





## Pursuit

nhaulenbee

Modular Electric Bicycle

The inventor of this technology chose Page to transform a rough, bullet point product spec into a revenue capable product.

The challenge was to design an integrated electric drive system including motor, transmission and linkage which could be cost effectively manufactured using traditional bicycle suppliers. The system also needed to completely disengage from the bike in one step.

The process began with patent research and concept sketches. Within six weeks of project kick-off, Page was performing FEA analysis, prototyping within twelve weeks and developing the supply chain within twenty weeks. Phase II prototypes passed all testing and met all product specifications. The final design achieved a 10% greater efficiency over any other product of its kind on the market.





Light & Motion came to Page for its expertise in rapid product development to create new products for their renowned bicycle division.

Page delivered market-ready designs for new LED based lights as well as an innovative mounting system in an aggressive time frame.

The final product features a simple tool-free mount for helmets and handlebars, replacing components which required multiple tools to install.







# Bicycle Stems Reynolds Cycle Technology & SiC USA

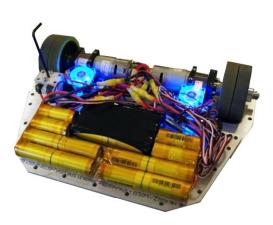
Page has worked with OEM and aftermarket clients to design and produce cutting edge bicycle components.

Page created a series of aluminum road stems for Reynolds Cycle Technology that were designed using FEA to exceed the performance of popular carbon fiber models. The new product line surpassed Reynolds' expectations in performance and market adoption.

With SiC USA, Page created stems for the freeride and downhill markets, including aftermarket products made in the USA and OEM products manufactured in Taiwan and South Africa.







### Page Product Design Recreational Combat Robotics

Page sponsors, and has team members on, the Atomic Carp combat robotics team.

Combat robotics pits machines against each other in a battle for survival. The latest design from Team Atomic Carp is the first ever fully modular multi-robot design; two half-size robots compete as a team, with interchangeable weapons based on the opponent.

Competing around the country, Robots from Team Atomic Carp have won many rounds and taken 1st place overall in weight classes ranging from 30 - 120 lbs.

Don't miss their next appearance: RoboGames 2009, June 12-14th in San Francisco, CA www.robogames.net







# Stryker Orthopedic Surgical Instrument Tray

Stryker Orthopedic engaged Page for the design of an orthopedic surgical instrument tray system to organize and support surgical instruments in a specialized kit. Page worked as an extension of the client's internal team.

Page eased the transition to production by staying in continual communication with the sheet metal fabricator throughout the design cycle.





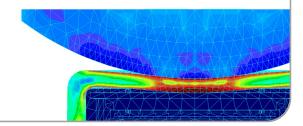


## **Medical FEA**

Page was asked to predict the performance of an implantable device subject to the European specification for impact absorption, which is 5 times greater than the US-based requirement.

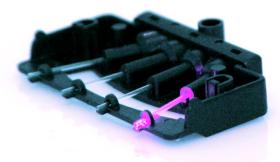
The original scope was very narrow: perform FEA on an existing design and deliver a GO / NO-GO verdict. After analyzing the client's second design, to help them achieve their goals, Page transitioned to working as an integral part of the device design team.

The result was a design that passed the physical test requirement on the first try, as predicted. In the process of performing this advanced analysis, Page worked closely with SolidWorks and Cosmos software engineers, which resulted in new service offerings in advanced material modeling by SolidWorks.









### Idexx Labs Milk Contaminant Test System

Idetek (an Idexx Labs acquisition) chose Page to provide expertise in mechanical engineering, DFM, FEA and production automation for their innovative new product concept.

They needed to optimize the design and manufacturing process for a disposable cartridge which is at the heart of their new system. Ease of use and manufacturing productivity were critical in order to meet demand and claim the dominant market position.

Page took the responsibility to analyze product features and process challenges from raw material specifications to final inspection. The Page team worked with Idetek's suppliers to implement component design improvements within Idetek's existing tight time frame. Page also designed and constructed a fully automated assembly system including environmental controls and optical inspection.

Page's efforts led to a 1000% increase in production capacity and a 95% reduction in failures and rejects. As a direct result of this success the Idetek team achieved their exit strategy through successful acquisition by Idexx Labs.



## **Page Delivers**

We consider everything needed to deliver a successful product right from the start, including the user experience, manufacturing processes, tooling costs, part count, assembly steps and product life cycle. We help you plan for scalability and think through the product's manufacturing processes as well as what happens at the end of the product's useful life.

We have the expertise and experience to take an idea from a napkin sketch to a product that meets the users' needs, looks great, is good for the environment, and can be efficiently manufactured.





## **Locations**

#### Florence, MA

Page Product Design Inc. 221 Pine Street | Suite \*430 Florence, MA 01060 tel 413.586.7132 fax 413.585.8254 info@pagepd.com

Page PD's east coast office is located just off of Interstate 91 in Western Massachusetts. We are 45 minutes from the Hartford International Airport and 1.5 hours from Boston.

#### San Francisco, CA

Page Product Design Inc. 2415 3<sup>rd</sup> Street | Suite \*271 San Francisco, CA 94107 tel 415.420.7213 info@pagepd.com

PagePD's west coast office is located in the thriving Dogpatch neighborhood near SoMa, just 3 minutes from downtown San Francisco. We are easily accessible from both the 280 and 101 freeways.