



proto labs<sup>®</sup>  
**Journal**

2009 ISSUE 2

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I'd like to share a frustration, if only to make myself feel better.

Just over ten years ago when this company was just starting out, we created a marketing slogan to let everyone know what we were all about. It was "Simple Parts -- Fast", and apparently it worked, because to this day that's what people think we do. That's the frustrating part, because it's just not true anymore.

I'm not talking about the FAST part—speed is the backbone of the business, always was, always will be. No, the problem is "simple." Sure, we started by focusing on fairly small, straight-pull injection-molded parts. But soon we were doing much larger parts with complex shutoff surfaces, and in 2003 we added side-action capabilities, so we could support undercut designs that weren't possible before. By 2005, we had tripled the size of the parts we



could handle. Meanwhile, we introduced our First Cut quick-turn CNC machining service for customers who needed just 1-10 parts, and we recently added aluminum to the list of materials First Cut supports.

And we're not stopping there. In the coming months you'll see us continue to introduce significant enhancements to our quick-turn Protomold and First Cut services, and maybe even add another one to the family.

But here's the key thing to remember about all this expansion: We won't do anything if we can't do it fast. Not just reasonably fast—Proto Labs fast, which is to say faster than anybody else in the world.

So maybe it's time for a new slogan—something like "Much More Complex Real Parts Than You Think ,But

Still As Incredibly Fast As Always". I kind of like that, but cooler heads have shortened it up to "Real Parts. Really Fast."

So if you need real (i.e., with the required geometry, material and surface finish) parts in a hurry, please keep us in mind. And stay tuned for further developments, because we really do have some cool things in the works.

Brad Cleveland, CEO  
brad.cleveland@protolabs.com

## HOW ARE WE DOING?

### April 1, 2009

"In my 45 years of experience I have never found anyone faster than Protomold, and you back it up with great customer service."  
—Roger Hodder, nSpire Health

### April 21, 2009

"... low prices, fast turnaround and helpful staff. My parts arrived early and looked great!"  
—Matthew Oelke with the Botball Educational Robotics Program

### May 15, 2009

"... the speed with which parts can be obtained is incredible."  
—Steven Sheldon, Max Vision Corporation

### May 29, 2009

"... the quoting process, on-line help/technical assistance, and responsiveness to this project was the best I have seen from a supplier."  
—Todd Moore, Garelick Mfg Co.

### June 4, 2009

"Great company! I think you are moving in the right direction with slides, bigger parts and TPES."  
—Jeff Sommers, Solomon Scientific

### June 9, 2009

"The quality and quick turn-around of the initial prototypes to the production units has been well beyond our wildest expectations."  
—Ronald L. Bate, National Biological Corp.

We would love to hear from you! Send us your comments at news@protolabs.com

## Micro Size, Macro Sizzle

### Aaxa P1 pico projector & iPhone cable



Weighing in at 6 ounces, no bigger than most PDAs, and modestly priced at \$219\*, Aaxa's new P1 micro projector gives you heavyweight performance, projecting a usable 12 lumens at a resolution of 640x480, with excellent picture quality and brightness in most lighting conditions. Unlike some of the other products out there, the P1 has a superior optical engine and LCOS image for bigger, brighter, cleaner pictures and video. Connect with

the dedicated iPhone/iTouch/iPod cable and you're set to project, big time. \*MSRP



## No Sweat

### Gocycle Electric Bike

Don't you just hate it when you have a nice, invigorating, eco-friendly bike ride to work, only to arrive all sticky and grungy, with your colleagues casting meaningful looks toward the company shower? Fed up with this scenario in his life, Gocycle founder Richard Thorpe developed a sleek, strong, yet lightweight powered-two-wheeler designed for modern urban environments. You still get a decent, virtually carbon-footprint-free workout, but you get where you're going faster, and in a reasonably presentable condition. Now THAT'S innovation!



## Sit Down, Get Smart

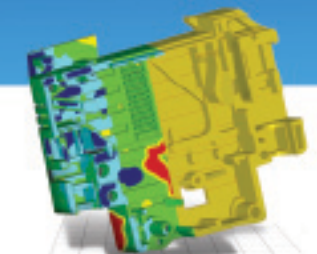
### Herman Miller Embody Chair



"Sitting is bad for you" declares Herman Miller's website--an interesting point of view from a chair manufacturer. Nevertheless, seeing that most of us spend our days firmly planted in the seated position, the folks at HM have come up with a solution—a chair designed to support the bodies and brains of people who work hours sitting in front of computers. Agile in look and feel, the Embody chair is made to leave you limber and refreshed at day's end rather than stiff and stupefied—"the first chair that benefits both mind and body."



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# THE SECURITY OF SPEED



## SPEED = SECURITY

Let's just go out on a limb and say it: Engineers are not in general a risk-seeking group. Yes, in our off hours we may be bungee jumpers, deep sea divers, snake handlers and disco dancers, but step in the office door and prudence prevails.

And that's the way it should be, because who wants a wild-eyed artiste designing a seat belt or a catheter? No, risk mitigation is the key to an engineer's success—which is why today it's so important to **work**

**fast.** Want to play it safe? Pick up the pace. That's right—move faster!

- **First to market reduces competitive risk.** Getting into the marketplace with your product before the other guys do gives you the opportunity to define the category, set the standard, build loyalty to your brand and scoop up market share while you're out there all alone. If you've done it right, everyone else is a me-too.

- **Buying time to test and refine reduces risk of failure.** A better product will

do better in the market in general. But it goes beyond that. For instance if you're a medical device company with a date scheduled for FDA testing, being able to iterate on your product many times more than your competitors can gives you a much better chance of passing the test. By testing and refining it to a higher level of performance, you dramatically improve your chances with the FDA—and ultimately the consumer.



- **Market testing multiple versions reduces the risk of missing the mark.** Who really knows what's going to appeal to consumers? You, if you can bring several versions of a product to test market in the time it used to take to produce just one. You find out which is the best seller, and choose that one for high-volume manufacturing.

### The speed you need

At Proto Labs speed is our currency and fast is our litmus test. That means if we can't do it for you really, really fast, we won't do it at all. Oddly enough, there aren't that many companies in our line of business that feel the same way.

Quick (true) story: When our founder Larry Lukis first got the idea of offering very small runs (1–10) on CNC-machined parts, he wondered what sort of competition we would find. So we

went out and asked for quotes. Only a few of the companies we contacted would even quote the part. And in the time it took to get the parts from them, Larry had 1) traveled back from Japan, 2) bought a CNC mill, 3) developed his own CAM software and 4) machined the parts himself. And that's how our First Cut service was born.

Whether CNC machined or injection molded, we manufacture low-volume parts faster than anyone in the world—all in order to give you the time you need. The time to be first. The time to be best. The time to be on the mark. The time to do all that and more. And, as odd as it might seem, the time to play it safe. 📺



First to market reduces competitive risk. Getting into the marketplace with your product before the other guys do gives you the opportunity to define the category, set the standard, build loyalty to your brand and scoop up market share while you're out there all alone. If you've done it right, everyone else is a me-too.

# A History of Managing for Quality

Book review by: **Kevin Crystal, Sr. Manufacturing Engineer at Proto Labs, Inc.**

As we all know, the industrial revolution started in the late 1700s. Mass production began in the early 1900s with Henry Ford's automobile assembly plants. And the quality geeks among us might say the quality control movement can be traced to statistical process control (SPC) used in World War II, followed by the "Japanese Miracle" of the '60s, '70s and '80s, which was then imported and translated with various degrees of success in the US.

But the roots of industrialization and quality control go back much further than that. In the 16th to 11th centuries BC, the Chinese had a highly structured process of producing quality handcrafts. And while it's not covered in the book, the Egyptians must have had a system for cutting massive stone blocks to size so they fit

together according to the master plan in the great pyramids at Giza. These quality



J.M. Juran, editor in chief, 1995, ASQ Press  
Hardcover, e-book

systems, dating back 3000 years, would have included regulations and standards of manufacturing and measurement.

Trained as an electrical engineer, Juran learned statistical process control tools at Western Electric's renowned Hawthorne Works in the 1920s. He gained fame for his work in quality management in Japan after the war during the 1950s and 60s, and went on to become a prominent consultant, writer and speaker on quality issues.

A History is organized in chapters authored by quality experts in a broad range of countries and eras, from ancient China and Greece, to the Venetian Renaissance, to historic perspectives on quality management in Russia and the United States.

The book is full of surprises. Who knew how long ago "modern" quality principles were developed, or how significantly manufacturing quality progressed during the so-called Dark Ages (when, according to my high school history teacher, absolutely nothing important happened), or that sophisticated techniques such as dimensional standards and interchangeable components have been around as long as three millennia!

What does all this mean to engineers today? First of all, for those of us who appreciate history, it's fascinating to see how quality management, along with manufacturing and technology, coincides with the rise of civilizations. Second, it illustrates how dimensional standards, procedures and national bodies are fundamental to design, building and manufacturing. And finally, it offers pride of heritage in a pursuit going back thousands of years, which forms one of the foundations of civilization and modern life. 📺

Guest column by:  
**Dale Backus, Co-Founder SmallHD, LLC**

Full disclosure: I am 23 years old, with no formal education in engineering, product design, CAD or anything like that. So I'm not exactly an industry guru.

Actually I'm a video guy. About three years ago a friend and I started a company called 5 Point Productions, making commercials and corporate videos for local businesses. We struggled along—until a commercial we submitted to Doritos won a contest and got aired during the Super Bowl 2007. The phone started ringing. High-profile work began rolling in, which meant production quality became REALLY important.

To that end, because we shot in high definition, we needed a high-def field monitor that showed exactly what our video images looked like, on the spot, in the highest resolution possible. Guess what? There was no such thing. Weird, I thought. Small, high-def LCD panels exist. Why doesn't anyone make a field monitor with one of them in it? Come to think of it, why don't I? And that's how my "engineering" career began.

Fast forward about six months. Using bent sheet aluminum, an online machine shop and some deeply awkward software, we produced our first monitor, the "XII". By the time that was done, I'd actually figured out a few things, with the result that we scrapped the XII and moved immediately to a completely new design, based on a single-bodied machined aluminum case with an injection-molded bezel and button membrane.

I learned SolidWorks, which gave me complete design control over

the product, dubbed the DP1. Then I looked for someone to do the injection molding, and ended up choosing Protomold, mainly because of their customer service. They had incredible communication, and that personal extra attention made all the difference in our success.



So that's it. With no engineering experience or education, I was able to manufacture and sell in less than a year, an advanced electronic product that is highly regarded in the industry. I couldn't have done it without today's software and Proto Labs. Moral of



the story: with work, persistence, good technical support and a little bit of luck, ideas can become reality. Even if you're not an expert.

I would have never believed it. Now I know.

P.S. If you've got a minute, check us out at [smallhd.com](http://smallhd.com) 📺

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**What it's all about**

As Alex Kunczynski says, "At day's end our work should mean something. Seeing an idea transform elegantly into reality, then producing and shipping that reality worldwide makes it all worthwhile."

**Why Proto Labs, Alex?**

- **YOU GET REAL PARTS** in your actual material, that you can hold in your hand and play with. Any engineer will tell you that makes a difference. You're always surprised that it's smaller, or bigger, or heavier or whatever than what you thought. The reality check is key.

- **IN-HOUSE MANUFACTURING.** A lot of suppliers outsource overseas to save money, but you don't know what you're going to get or when you're going to get it. We've had parts get stuck in customs and never arrive.
- **PAIN-FREE QUOTES.** The totally intuitive online quoting system gives you hard numbers fast, that you can revise as much as you want on the fly. And no haggling like a used car salesman.
- **JAW-DROPPING QUALITY.** Not only do the parts come in just a few days, they are absolutely gorgeous.
- **SPEED OF COURSE.** These guys really are as fast as they say they are. One time we ordered parts from another service, and they came back so bad we couldn't use them. Proto Labs got them to us overnight, and they were perfect.



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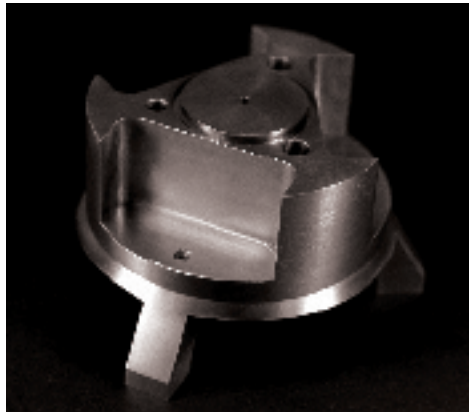
# > THE SPEEDWAY

A quick look at what's new from Proto Labs



## BEYOND PLASTIC

We're into metal! In addition to all your thermoplastic options, our First Cut service is now offering ALUMINUM as a material choice for your short run CNC machined parts



## GOING DEEP

Protomold now offers parts with depth UP TO 4" (101 mm) from the parting line with 3° of draft, or up to 8" (202 mm) total if the parting line can pass thru the middle of the part, inside and outside.

## LOWER COSTS!

Good news—our already low minimum mold price at Protomold is now just \$1,495 (USD), thanks to increased process efficiencies, software improvements and advances in our compute cluster technology.

## HELLO JAPAN!

With our Proto Labs K.K. facility fully up and running, we are ready, eager, and ideally positioned to handle the manufacturing, sales and customer service needs of our Japanese customers.

## WE'RE 10!

Celebrating our 10th anniversary in May, we took a brief moment to look back, and calculated that since 1999 we have helped design engineers reduce their cumulative time to market by about 1,200 years. That involved making some 22,000 molds and 24 million parts, in 5 offices worldwide, with multiple patents for software and automated manufacturing systems, resulting in national recognition by Inc Magazine and numerous others for rapid growth. Since we're not about to slow down, the next 10 years should be interesting...



## VISIT US AT THESE UPCOMING TRADE SHOWS...

### TCT 2009

Ricoh Arena, Coventry, UK  
Stand #H1      October 20-21, 2009

### MIDEST 2009

Paris Nord Villepinte, Paris, France  
Stand #F175      November 17-20, 2009

### Autodesk University 2009

Mandalay Bay Resort, Las Vegas, USA  
Stand #120      December 1-3, 2009

### Euromold 2009

Exhibition Center, Frankfurt/Main, Germany  
Stand # B21      December 2-5, 2009