

# CPI®

Control Products, Inc.

# SENSABILITY

PRECISION • EFFICIENCY • RELIABILITY • SAFETY

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## A Note From CPI



### Here Come the Colors!

It seems as though we were just enjoying the beach when suddenly, we're well into Fall, and it's dark at 7:00. Don't worry, though. I'll spare you a count of the shopping days 'til Christmas.

Speaking of shopping days, 2007 has been a year of what I'd call healthy moderation. Things began cooling in the third quarter, including downward revisions to construction equipment forecasts, along with the softening housing starts. European indicators pretty closely parallel the U.S., with slowing growth, but it's certainly nothing drastic. And our new project activity continues to be strong. We'll never stop looking for ways to solve the problems you face -- whether it's an issue with a standard machine or with new equipment. It's what we do... and it's why we get up in the morning.

We've already started preparations for the busy trade show season this spring. Con Expo in Las Vegas always gives us many opportunities to bring Precision, Efficiency, Reliability, and Safety to world class equipment manufacturers. And just one month after Con Expo, we bring our wares to the UK for the Commercial Vehicle show. There are several new product releases planned for

## Closing Thoughts

these shows, so stay tuned for those announcements. You may discover that we've developed exactly what you need.

In this issue, you'll find an exciting story about some inspiring teenage engineers. It's the kind of story that makes us especially proud of what our products can accomplish. You'll also read about a new product feature on an indestructible plunger switch and a couple of application spotlights that remind you exactly what CPI is all about -- innovative solutions that can be counted on to perform every time. Finally, we'll introduce you to one of our long-time tool and die makers who came to this country 30 years ago from Vietnam and now keeps our production floor running smoothly (thanks, Jimmy!)

I hope you're enjoying the change in the weather... and I'll see you at the mall on Black Friday. Sincerely,

A handwritten signature in black ink, appearing to read 'Mac', with a long, sweeping flourish extending upwards and to the left.

**Mac Stuhler**  
**Vice President**  
**Control Products, Inc.**

## Feature Articles

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**Teens Design a High-Tech Human-Powered Submarine Using CPI Waterproof Switches**



If you think teenagers today are lazy and aimless, the students at Sussex County Technical School in Sparta, New Jersey will quickly change your mind. Led by teacher and project mentor, Chris Land, 12 students designed and built a full-scale submarine and took part in the [2007 International Submarine Race](#). Not only did they place Third in the race, but they won First Place for Innovation, thanks in large part to CPI's waterproof switches. Pretty impressive considering Sussex County Tech was one of only two high school teams in the competition among more than 20 college teams from mechanical engineering and naval architecture programs. In fact, Chris says, "A High School's not supposed to be able to do this."

Most of the submarines are designed using a human-powered bicycle pedal or rotary system. The students at Sussex County Tech wanted to increase their horsepower, so they used exercise machines that work out the entire body as models, which is what led to their award for innovation. "This was a big deal that we won this award," Chris says. "We were the first team ever to try to incorporate both the upper body strength and lower body strength of a single person."

But, naturally, the idea wasn't without engineering problems to solve. The pilot's arms and legs would be moving back and forth, which made steering an issue, so the students designed a computer-controlled system based on sonar inputs. Since the race takes place 22 feet deep in a 100-meter long underwater course, they developed two sonar systems in the sub that would provide input as to how far they were from the left wall and how far they were from the bottom. The computer would take those readings and keep the sub in position by sending signals to the pneumatic powered control surfaces.



The team wouldn't be able to significantly test this complex and unique system until the race, however, which meant they needed to have a manual override. This is where CPI's waterproof switches saved the day. They used two switches for the rudder -- left and right -- and two switches for the stern planes. Since they never went to full autopilot during the race, the switches proved to be a critical design element.



The switches were mounted directly on the handles. On the right handle was a left and right switch, and on the left handle were switches that made the sub go down or up. The application of the switches may have been simple, but the environment in which they were operated was far from it. The entire inside of the submarine was "wet", meaning flooded

with ambient 50-60 degree water, the lighting was low, and the pilot was wearing gloves and breathing through scuba gear. "Not only were [the switches] totally immersed," Chris says, "but they had fluid flow over them constantly, and they were getting jerked back and forth. And we didn't have any problems."

CPI donated the switches in support of the students' efforts. "[The International Submarine Race](#) is a fantastic event that motivates young people to explore engineering," Mac Stuhler, CPI's Vice President, says. "Being able to take part in something that helps to develop the engineers of the future means a great deal to us."

Chris says that all of the seniors on his entire submarine project team last year went on to engineering schools, and this year's pilot was a sophomore girl who is busy encouraging other students to join the project next year. The race is a biennial event, and Sussex County Tech has participated and done well in the race in past years. Amazingly, the students build the subs in the course of one school year. This year's sub was named the "Umpty Squatch 3.2." following in the footsteps of Umpty Squatch I and II.

According to Chris, none of the race teams have ever had an accident, as full rescue teams are available, including zodiacs, buoys, and Navy divers, which allow the students to do "this dangerous, fun thing." The competition has only one rule book, which is all about safety. Otherwise, the race is run like the real world. The teams are encouraged to get components from corporate sponsors, and some teams naturally have financial advantages over others. Chris believes it significantly prepares the students for the world of competition and helps them to develop groundbreaking problem-solving skills.

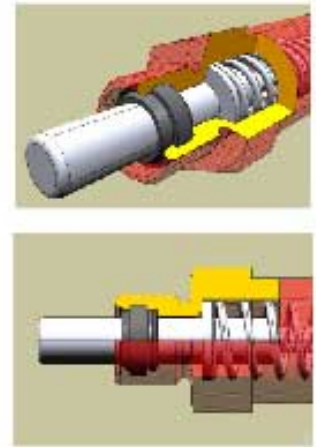
"We're putting them into the real world, and they already think big," says Chris, "which is what a lot of employers want from their new employees."

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## Product Feature

### CPI Engineering Takes the J4 Plunger Switch to the Next Level

Driven by our customers' very demanding applications, CPI Engineering has added an **exclusion seal** to our extremely rugged plunger switches. The exclusion seal acts like a wiper blade on the plunger, preventing fine dirt, mud, sand, ice, and slush from getting back to the seal. Even though the O-ring seals used on most other plunger switches are very effective fluid seals, contaminants will grate on these seals until they're eventually worn down and start to leak.



Adding the **exclusion seal** to the O-ring makes the newly bolstered front end of the J4 even more effective in the very harshest of environments, including military vehicles, construction equipment, marine and industrial machinery. The J4 Plunger Switch is now not only safer, but it will last longer, making it the most cost-effective sealed plunger switch on the market. Whether you work in an especially demanding environment or simply want a plunger that can withstand intense wear and tear, this new exclusion seal design in the J4 fits the bill. Give us a call (+1 973 887-9400) or [drop us a line](#), and we'll help you configure a system with the utmost reliability and long term, trouble free life.

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## Application Spotlight

**SAFETY** -- [Vermeer Manufacturing Co.](#) manufactures chippers that are used and stored outside, where they must withstand harsh weather conditions and powerful hose down cleaning. If the machinery's components cannot handle these conditions, the equipment fails, resulting in downtime for both machines and operators, which translates to lost revenue for Vermeer's customers.



That's where CPI's [E1 Series Limit Switches](#) come in. Our specialized switches are used for drum direction control and emergency stop, making Vermeer's chippers safer to operate, and the switches are able to easily handle the water and temperature conditions that the chippers are subjected to on a regular basis. Vermeer initially used the [E1 Series Limit Switches](#) on only a limited basis, but after the company's engineers experienced the switches' considerable abilities and reliability, they specified CPI's switches on several more chipper models and have been very happy with the results. Our job is to make your equipment as safe as possible, so drop us a line with any of your safety concerns, no matter how complex. We're the experts. Give us a call (+1 973 887-9400) or [drop us a line](#), and we'll help you configure a system with the utmost reliability and long term, trouble free life.

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**PRECISION** -- [Hougen Manufacturing's](#) large magnetic drills, which are used to drill holes in I-beams, have stringent requirements, and CPI's [J4 Series Limit Switches](#) were up to the challenge.

**First**, these drills are used outdoors, where there are various contaminants, including metal chips, and Hougen needed a switch that could hold up in these rough surroundings. (This is where our patented ball carrier design was key.)

**Second**, Hougen required precise, repeatable travel parameters to ensure that the drills were always properly seated before operation. This reliability of the J4 guarantees that the holes are drilled at the desired location and angle and that the drill remains secure until the work is completed.

**Third**, the switch needed to be ultra-durable and reliable.





Since the J4 is pretty much hammer-proof, Hougen's engineers knew they had found their solution -- a limit switch that could offer high performance in all of the areas they needed. We were fortunate enough to get together with Hougen at the [2007 Waste Expo](#) in Atlanta, Georgia, and our business relationship has become very beneficial for both of our companies.

Let's get together and discover how CPI can solve your challenging switching problems. Give us a call (+1 973 887-9400) or [drop us a line](#), and we'll help you configure a system with the utmost reliability and long term, trouble free life.

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**RELIABILITY** -- Everything on a fire truck simply has to work -- right down to the switches that control the compartment lights when the doors open (our first application on fire trucks.) The very nature of emergency work demands absolute reliability because the consequences can be life or death. Besides continuing to function within the most demanding environment imaginable, CPI's [E1 Series Limit Switches](#) provide switching capability that eliminates the need for compartment light relays (certainly a more efficient way to operate), as well as rear step down indication (the step needs to be folded up before motoring) and outrigger position indication for larger ladder trucks. When the firefighters know exactly what's happening with their equipment, their job is faster, more efficient, and safer for both the equipment and people.



These applications are what led [Seagrave Fire Apparatus](#) and [Rosenbauer America](#) to utilize CPI's switches in their fire trucks. Rosenbauer America is an enterprise consisting of **Central States**, **General Safety**, and **Rosenbauer International**, companies with a combined history of more than 200 years in the fire apparatus field.

Of course, the [E1 Series](#) isn't just for fire truck doors. If you have a safety or environmental challenge and need a reliable switch, give us a call or drop a line. We pride ourselves on being able to solve your most difficult engineering problems, so be sure to contact us (+1 973 887-9400) or [drop us a line](#), whenever you have a puzzle that requires that perfect piece.

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## ConExpo -- Las Vegas

[Con Expo-CON/AGG](#) is the place to be March 11-15 of next year. All in one location, you'll have 2.2 million+ square feet of exhibits -- more than 2,000 exhibitors -- showing you all of the latest construction equipment and technology. There will be competitions such as the first ever International Driver Mixer Championship and a student construction challenge, as well as live safety demonstrations. You can also participate in more than 120 education sessions, conferences, and certification programs. It's an opportunity to stay on the cutting edge and learn what you need to grow and improve your business.



Of course, CPI will be there with a wide array of new product releases in store, and we're especially excited about the debut of our [SL720](#). Be sure to come by our display at space # **14713**, and check out our product samples. And don't forget to bring your challenging component applications. We'll be ready to take them on!

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## CV Show -- UK

April 15-17, we'll be at the [Commercial Vehicle Show](#) in Birmingham, UK. This is our first time exhibiting at this particular show, which is a huge road transport event with 90,000 square meters of exhibitors. If this is your business, you need to attend the CV show to meet the manufacturers and importers who will be launching their new products. There's no other show quite like this one.



As for us, we'll be featuring our dump body detect switches, IP68 switch panels, new switch panel configurations, and a large variety of thermal and limit switch problem solvers. Please join us at **Booth 8-070** to find out how our new products can improve your productivity and raise your safety statistics.

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With every issue of SensAbility we bring you industry-related news, product announcements and real-world applications that have brought **Precision, Efficiency, Reliability and Safety** to our customers. We've archived each issue of SensAbility on our website, [www.cpi-nj.com](http://www.cpi-nj.com). You can go [right to the archive page here](#).

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## CPI Spotlight

### **Jimmy Muon - an employee CPI can count on**

Jimmy Muon has been a mainstay of CPI's Tool Room for the past 15 years. He's quick to say that while he sometimes designs tools, he mostly repairs and builds tools that CPI uses. Jimmy's supervisor, Nick DeSalvia, is less modest about Jimmy's abilities. He says that Jimmy is "intuitive" about what a product needs to function better. "He can look at a tool, even one that's been in use for many years, and come up with a way to make it better. No job is too big or too small for Jimmy. He's a team player who goes out of his way to get things done."

Obviously, Jimmy's enthusiasm for his job and his loyalty to CPI shows. "I like CPI a lot," he says. "I don't want to move -- no way... I love the people there. I like my skill and what I do."



Things weren't always such smooth sailing for Jimmy, though. Thirty-two years ago, he was a soldier in Vietnam who came to this country after the war at the young age of 21. He arrived on our shores with no idea of what to do and not a word of English. A priest sponsored him, and a Hungarian couple in New Jersey became his godparents. As a result, he was able to go to school and learn to speak English. At first, he worked at various jobs to get by while he was in school. Then he worked in production for 15 years when someone noticed that he was a talented machinist. Before he knew it, he was moved to a department where he learned to be a tool and die maker. Then, the opportunity came to join CPI's team, and he has been with the company ever since.

Jimmy and his wife of 27 years have two children -- a grown son who works as an electrical engineer and a 10-year old daughter. The family loves to travel to new places, but they also are part of a summer timeshare in Virginia Beach. He and his wife hope to take a cruise to a tropical place sometime in the future -- maybe the Bahamas. In his spare time, Jimmy continues to work with his hands. He loves to do construction work on his own home or for friends. Nick recently introduced Jimmy to mountain biking, so Jimmy now has a new hobby that he's tried only once but looks

forward to doing again.

Jimmy expects to work for CPI for the rest of his life. He constantly strives to improve his skills, and he considers it part of his job to help maintain a pleasant working atmosphere in the Tool Room. If the other workers are happy, he's happy.

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## Closing Thoughts

### **CPI is Happy to be Behind the Scenes**

Perhaps we should say "within" the scenes. CPI's switches are embedded technologies. If you use machinery that contains a CPI temperature sensor, for example, you won't see our switch from the outside of the equipment. It's embedded inside and becomes an integral part of the machine's operation. We don't mind being hidden because our components play a critical role in making sure your equipment performs optimally and precisely, remains reliable, continues to operate no matter what, and, most importantly, keeps the machinery and the operators safe. What do you need "behind the scenes" to make your equipment more precise, reliable, and safe?

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## What Do You Think?

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