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A Note From CPI

Dear subscriber,

Welcome to Issue #1 of SensAbility – the free electronic newsletter from Control Products, Inc., featuring news and ideas related to waterproof, thermal, and limit switches as well as position sensing technology for hydraulic and pneumatic cylinders.

We created SensAbility to share valuable information, insight, and recommended links on a broad range of topics including industry trends, new technologies, and specific applications. We hope you will look forward to this newsletter and consider it an important resource for your business.

Thank you for your time and interest.

Sincerely,

Mac Stuhler
Vice President
Control Products, Inc.

Feature Articles

SL Sensors and Smart Cylinders – Precise Position Sensing Under Pressure

Need accurate, repeatable, and virtually indestructible position sensing securely contained inside a hydraulic or pneumatic cylinder? CPI has it. Introducing SL Series Sensors and Smart Cylinders.

SL Series Sensors are internally mounted linear sensors that can be used in both hydraulic and pneumatic cylinders (telescoping and standard action) to sense piston position. These sensors utilize a patented technology that couples the translation of the cylinder to a non-contacting sensor element.

The installation method allows cylinder designs to remain virtually unchanged, and the sensor is easily integrated into a high-volume cylinder production environment. SL sensors have numerous advantages over rod-type sensors, including:

- No end-of-stroke dead zone
- Temperature has no effect on sensor repeatability
- Impervious to physical and environmental damage since the sensor resides completely and safely inside the cylinder
- No structure loss due to core drilling the rod
- One configuration can be used for any stroke length
- Virtually immune to shock, vibration, and physical impact
- CPI Smart Cylinders are indistinguishable from standard cylinders other than an M12 style connector on the endcap

Until the introduction of Control Products' SL Series, internal position sensing in telescoping cylinders was impossible. The unique design of the SL sensor establishes accurate position up to 72" extension.

CPI's own **SL500 Smart Cylinders** are the world's only telescoping cylinders complete with an SL position sensor already built in. Smart Cylinders are ideal for mobile equipment and harsh-environment applications where rod-type sensors cannot survive. The SL sensor housed within a Smart Cylinder is virtually indestructible, withstanding up to 50g shock and 5g vibration.

SL500 Smart Cylinders are manufactured in 1" to 30" bores, with low, medium, and high pressure seals and up to 80" maximum stroke. Complete with shielded cables and signal conditioning, these are the cylinders you need for precise control when the going gets tough.

For more information about [SL Sensors](#) and [Smart Cylinders](#), please click the link.

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CBPSS Shelter – A New Life-Saving Weapon in the War on Terrorism

The Chemically and Biologically Protected Shelter System (CBPSS) is the latest in safety technology for the US Military. With the increased awareness of the threat of weapons of mass destruction, these shelters have become an important part of our military arsenal. And CPI is proud to be playing a part.

The CBPSS is a highly mobile, contamination-free, environmentally-controlled work area for troops deployed in medical units; enabling them to provide medical treatment in a chemically and/or biologically contaminated area.

CPI provides three application-specific thermal switches for the CBPSS in critical overheat functions:

1) A dual-temperature AD Series switch monitors the hydraulic system, providing a warning at one temperature and then system shutdown if the temperature continues to rise to a second threshold.

2) An X1 Series switch is used to detect over-temperature in the air pressure generator that inflates the shelter and maintains the shelter's positive pressure.

3) A surface-mount AD switch with screw terminals is used to detect a heater overheat condition.

Read more about the [CBPSS](#). (PDF format. Requires Adobe Acrobat Reader.)

Find out how Control Products can assure Precision, Efficiency, Reliability, and Safety for your business. Drop us an e-mail: FEEDBACK@CPI-NJ.COM. We'll be happy to work with you.

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Shortage of Skilled Construction Equipment Operators Gives Rise to Robots

No, this is not another *Terminator* sequel. It is, however, a reality in Japan, where a lingering recession, labor shortage, and a general reluctance of Japanese youngsters to join the construction workforce has persuaded construction firms to go the way of the robot.

Mobile, four- and eight-legged robots (aka "smart machines") are now working long but tireless hours at construction sites, with amazing dexterity and a flexibility that no wheeled machines can match. Crew members of the automated kind perform welding, drilling, spraying, concrete finishing, backhoe operations, and even the assembly of steel building frames.

Smart machines are new fertile ground for position sensing technology, as each and every move they make must be precise, repeatable, and reliable; but controllable with simple

pushbutton operation.

While machine automation is widely used in the world of mass production, we are only just beginning to bring this technology to the construction equipment industry. The potential benefits are numerous, including increased productivity, safer working conditions, and reduced operator skill requirements. Plus, with skilled operator shortages becoming more widespread, the need to deploy advanced control to construction equipment is rapidly becoming a priority for leading equipment manufacturers.

Read the [full article](#).

To learn more about how Control Products can help you incorporate precise, efficient, reliable, and safe robotic applications, just send us an e-mail: FEEDBACK@CPI-NJ.COM

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Hose Clamp Mount Thermal Switches – The Quick, Clamp-On Solution for Harsh Environments

For a fast, reliable, and economical way to apply temperature limits in demanding industrial applications such as freeze detection, process temperature control, and over-temperature protection, CPI's Snap-Stat® AD173 clamp-mount thermal switches can be easily mounted to sense the temperature of pipes, hoses, and virtually any enclosure. Clamps are rugged stainless steel and switches are environmentally sealed and virtually immune to shock and vibration. Several switches may be positioned anywhere on the clamp, providing multiple setpoints from 0°F to 350°F.



To learn more about quickly and easily applying temperature limits, e-mail us at FEEDBACK@CPI-NJ.COM

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Operator Presence Switches Prevent Accidents, Save Lives

It's true that accidents happen. But it's also true that many can be prevented. With heavy construction equipment like back hoe loaders and excavators, there is a real need for Operator Presence switches. Operator Presence switches sense the presence of the equipment operator, generally by sensing the operator's weight on a seat and even sensing the seat position. If there is an operator seated the machine will run. If the switch does not sense the presence of an operator, the machine will not move and all functions are locked.

The following links illustrate accidents which would have been prevented by an operator presence switch.

For this first scenario, an operator presence switch installed on the seat would have prevented the machine from moving when the clamp was inadvertently placed on the pedal:

http://www.jicosh.gr.jp/english/cases/sacl/saigai01e_14.htm

For this next situation, as soon as the operator got off the seat, the switch would have disabled all possible motion by the machine. Even though the operator's coat caught the control, with the operator out of the seat the machine would not have responded:

http://www.jicosh.gr.jp/english/cases/sacl/saigai01e_05.htm

Here, a presence switch on the protective plate would have not allowed any machine action with the plate missing. No plate, no movement:

http://www.jicosh.gr.jp/english/cases/sacl/saigai01e_01.htm

In this final scenario, either an operator presence switch or a neutral safety switch would have prevented the accident. An operator presence switch would not have allowed the machine to start since the operator was standing by the side of the seat and not sitting in it. A neutral safety switch would not have allowed the machine to start unless the transmission was in neutral:

http://www.jicosh.gr.jp/english/cases/sacl/saigai01e_03.htm

NOTE: Applications involving safety require reliable components, as failure can be catastrophic. The harsh environment inherent in construction equipment applications, combined with the requirement for high reliability, makes a strong case for using CPI Waterproof switches. E1 and J3 Series limit switches provide a wide variety of sealed switch solutions, typically used in operator presence applications. CPI's J4 is the world's only ball switch with our patented ball carrier, which provides an impervious actuator design. It's so reliable that the

new Hummers incorporate J4 Series switches. They are tested and approved in situations that would totally compromise other switch designs.

For a closer look at the [E1](#), [J3](#), and [J4](#) switches and the versatile E1 Series mounting brackets, click the links.

We'd like to talk with you about your safety applications. Drop us an e-mail outlining the challenges you are facing, and we'll work with you to find a Reliable solution. FEEDBACK@CPI-NJ.COM

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Applying Thermal Switches – Application Parameters

Thermal switch technology has been established in many industries for a number of years. In these high-tech times, there is still a place for electromechanical devices, since they are self-contained, reliable, and cost-effective.

However, correlating precise production calibration with field conditions is not always a matter of applying a simple formula. The rate of temperature change varies per application and generally is not constant. Erratic flow rates, differences in heat transfer properties of media, and wide ranging ambient conditions are realities which favor a planned trial-and-error method.

Parameters required to specify a thermal switch are:

Thermal Parameters

- Set point
- Tolerance
- Differential
- Max/min head overshoot/undershoot
- Repeatability

Electrical Parameters*

- Current
 - Voltage
 - Type of load
 - Endurance required, mechanical, electromechanical
- *along with contact life, consider the effect on set point of heat generated by the load

Environmental Factors

- Corrosives

- Shock, vibration
- Probe pressure

Mechanical Constraints

- Terminations
- Mounting (surface mount, probe, bulkhead)
- Probe length

Mac Stuhler, Vice President of Control Products, Inc., has written an informative article detailing thermal switch parameters and how best to implement them. Click here for the [full article](#). (PDF format. Requires Adobe Acrobat Reader.)

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CPI Spotlight

Nick DeSalvia



We'd like to introduce you to a key member of our management team. He's Nick DeSalvia, and it's Nick's job to make sure our customers get the product they need, the quality they want, and the delivery on time.

Nick wears a lot of hats at CPI, but then again he's been there, done that. He joined CPI in 1984 as a supervisor in the electronics department. Four years later he was promoted to product line production supervisor in the thermal switch department, overseeing a critical labor-intensive assembly area. A few years later Nick moved up to production management for all products. Nick has been our production manager for the past 12 years. Also, his extensive product knowledge makes Nick the "go-to guy" for CPI sales reps.

Nick was a key player when Control Products achieved ISO 9000 registration. His knowledge of all aspects of the operation helped us to easily and efficiently achieve this important goal.

When Nick is not orchestrating production at CPI, you might find him motorcycling or mountain biking somewhere in Sussex County, NJ with his grown children.

What does all this mean to our customers? It means complete customer satisfaction. Nick's charter is twofold – productivity and on-time delivery. And he does his job very well. Of course, Nick is quick to point out that the reason he can do his job so well is because he is surrounded by great people that excel at

what they do, and together they make it happen.

We're proud to have Nick DeSalvia on the CPI team.

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What Do You Think?

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