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# RegScan Launches New WIKI Feature with Content Partner ERM

RegScan Inc., in conjunction with our content partner Environmental Resources Management (ERM), is pleased to announce the launch of the new RegScan WIKI feature – easy-to-follow articles that provide clear analysis on the newest and most important environmental regulations. Authored by subject matter experts from one of the largest consultancies in the world, RegScan WIKI articles explain key requirements in plain language.

The WIKI feature, which is integrated directly into the RegScanOne user interface, was officially unveiled at the inaugural RegScan Regulatory Conference in Washington D.C., an exclusive event where regulatory experts, government officials, and executives from Fortune 1000 companies came together to discuss the most pressing regulatory and climate change issues facing the world today.

“With the help of our exclusive content partner ERM, we are now able to offer this unique feature to our users,” said Ned Ertel, RegScan President and C.E.O. “The regulatory landscape is only going to get more complicated – especially in light of the Paris Accord – so we are pleased to do our part to help simplify the process.”

The WIKI feature is connected with the My WatchList™ Alert System, so subscribers are notified of any changes to the underlying regulations. Contact information and bios for all authors are included, so readers are encouraged to follow up with the authors.

#### *About RegScan:*

*With a dedicated staff of experts in four U.S. states and Washington D.C., and an ever-growing network of in-country resources, RegScan can always be counted on as a trusted resource for up-to-date regulatory information from every corner of the globe. Do your research and get your alerts through the RegScan One system, or have your content exported via web services to any online environmental management system.*

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*With more than 160 offices in over 40 countries, ERM is a leading global provider of environmental, health, safety, risk, social consulting and sustainability services. Key sectors served are Oil & Gas, Mining, Power, Manufacturing, and the Chemical and Pharmaceutical industries. Over the past five years they have worked for more than half of the Global Fortune 500, helping them understand and manage the sustainability challenges that the world is increasingly facing.*

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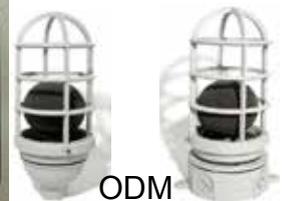
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# Hengstler Redefines the Digital Single Cable Solution for Servo Motors



When Hengstler GmbH first introduced the Single Cable Solution at SPS IPC Drives 2015 in Nuremberg, they set new standards for efficiency, safety and performance. By offering a true Single Cable Solution with high performance, Hengstler meets the latest requirements of today's motor feedback systems.

An examination of what are the respective requirements of machinery manufacturers, machine users and end customers, reveals a clear trend. The focus is on maximum machine reliability, availability and also cost reduction at the same while securing investment to some degree by the use of future-oriented technologies. Machine and system manufacturers increasingly strive for cost and space reductions and implementation simplicity, with no compromises on performance. With its Single Cable Solution, Hengstler has provided a fitting response to the needs of the market.

From the machine manufacturer's point of view, maximum machine reliability and availability is absolutely mandatory and a real competitive advantage. Safety has to be primordial when considering the aspects of man/machine interaction, but not at the price of having to stop the machine. The single cable solution with its ACURO@link interface is designed to ensure a high level of functional safety in servo motor control systems. The data protocol of the electrical interface meets the requirements of SIL3 according to IEC 61508 and Cat. 3 PLe EN\_ IOS 13849, while the ACURO@AD37 encoder itself, and the IP core in the control, can meet all requirements from non-SIL to SIL3 depending on the application scenario. Because of the safety function that can be implemented in the drive, the machine can keep running thanks to the single cable solution, even if someone is directly in the potentially hazardous zone. A mandatory prerequisite to enable maximum machine reliability and availability.

Safety however is only one part of the equation of safety, efficiency and performance. An operating temperature of up to +115°C, an operating speed of up to 12,000 rpm and a low mounting depth of 28mm make the AD37 the most compact absolute multi-turn encoder in its class. In the SIL3 configuration, the high performance encoder known as AD37E sets new standards. Its extra efficiency and performance give a decisive competitive advantage to the drive system. The AD37 series make this possible with its

high accuracy and resolution. An "electronic datasheet" in the encoder stores specific encoder data, which can be read out at any time. In the encoder itself, the motor and drive data are stored in an internal OEM memory. This is primarily of interest for end users, but also for machine manufacturers. Using this data, solutions for preventive maintenance, minimum down-time and significantly increased productivity can be implemented. The electronic product identification provides motor characteristics, its product code and serial number which make it possible to adjust automatically to each motor's parameters. Diagnostic and monitoring functions provide important information on the operating status of the machine. This is a significant contribution to implementing Industry 4.0 scenarios and translates into security of investment for the customers who buy the machines, because the Single Cable Solution fulfils all the requirements for supporting future technologies in the best way.

Particularly in today's market, motor manufacturers are focussing on designing motors that are smaller than ever before and with higher performance. Energy, space and resource savings are given the highest priority. By enabling motor output and motor feedback signals to pass through a single cable, efficiency is significantly increased. Especially in large systems, the gain in space becomes notable and considerable weight is saved in the motors. There are other important advantages that are gained from faster installation and lower cost of material for system cabling.

With the Single Cable Solution, Hengstler offers a well-balanced overall concept and a product portfolio that continues to be expanded now and in the future. Customers are convinced that the digital approach with a true Single Cable Solution is the right choice. The advantages in terms of investment security, cost and performance are evident.

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### Educational Resources

#### *Webinars*

RegScan understands that staying in compliance is critical. But it doesn't have to be complicated. That is why we host webinars several times throughout the

year that help our clients tackle ever-evolving problems in the EHS industry. Prior topics covered included regulatory overviews, the Changing Role of the EHS Manager, and ISO 14001:2015. Such topics specifically address the newest industry standards while banishing compliance confusion, provide necessary tools to manage today's EHS challenges and reduce time and money spent on compliance activities.

### Tutorials

RegScan also produces a number of helpful videos for our users. They answer most commonly asked questions on using the RegScan One interface. You may wish to visit our Informational & Tutorial Videos Page prior to submitting a ticket to see if your question can be answered with the assistance of one of these videos.

### Conference

And now RegScan has gone beyond the computer screen to bring partners and clients their first ever Inaugural Regulatory Conference. Government officials, regulatory experts and executives from Fortune 1000 companies will gather on Capitol Hill in Washington D.C. on May 24th-25th, and be among the first to learn what the Environmental Protection Agency has planned for 2017 and beyond. And with RegScan, sometimes it is all fun and games. We're taking everyone out to the ballgame with box seats for the Washington Nationals as they host the National League Champion New York Mets.

## Tracking Regulatory Change

### Strikethrough

Strikethrough allows you to effortlessly see the amendment history of a regulation by comparing the current regulation with an earlier or future version. Changes are easily identified by color-coding. Anything that has been added will appear in green, while anything that has been deleted will appear in red.

### My WatchList

My WatchList is a custom regulatory change management tool that allows you to monitor change at various levels of detail. It gives you quick access to only the information you need, while providing a clear record of what you have and haven't reviewed. My WatchList is the easiest way for a Web Services user to build a custom regulatory register, which RegScan will automatically export to your online environmental management system.

### LookOut Email Alert

By defining specific keywords or phrases, LookOut allows you receive daily Email alerts on State or Federal regulatory changes.

### RegScan Customer Support

As part of our ongoing commitment to improve the RegScan user experience, we use a ticketing system for customer support inquiries. This allows us to streamline requests and better serve you. Available 24/7, the ticketing system

allows you to immediately report an issue and track the support team's response to it. Every support request is assigned a unique ticket number. For your reference, we provide complete archives and history of all your support requests. A valid email address is required to submit a ticket.

### Schedule a Demonstration

The RegScan team will gladly demonstrate any of our products or services for free. Our online demonstration sessions can accommodate up to 25 people, and we will schedule a meeting whenever it's convenient for you. During these interactive demonstrations, our experienced staff will go through whatever products or services interest you. You'll also have the opportunity to ask questions, and discuss licensing options that are tailored to your needs. If you decide to purchase, we can take of your training and support needs too. We frequently update our library of training videos, and we'll be happy to arrange online or in-person training sessions. Furthermore, our in-house technical support team is always available on weekdays (except for holidays) between 8 a.m. and 8 p.m. Eastern time, and online 24/7.

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## Reinventing the Spring-Loaded Probe Pin

*By reinventing and fully automating the manufacturing process, spring probe pins can now deliver high performance at price of a stamped contact for high density, fine pitch applications*

For decades the spring-loaded probe aka pogo-style pin has delivered excellent mechanical and electrical performance in a highly compliant contact. However, this often came at a high cost given that each pin is constructed of 3-4 discrete parts manufactured and assembled in a laborious, less-than-fully-automated process.

The cost could be so exorbitant, in fact, that when significant volumes of pins are required, many opted to utilize less compliant, lower performance alternative contact technologies to reduce costs.

This approach is becoming less viable, however, with the increasing miniaturization of integrated circuits, electronic components and devices that pack more circuitry into smaller footprints.

A single test socket for reliability and burn-in testing, for example, can require hundreds and even thousands of spring-loaded probe pins in a fine pitch configuration. The same applies to board-to-board compression connectors. When factoring in multiples of test sockets as well as production-level quantities of connectors, pin quantities can literally run into the millions.

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### Traditional Pogo-style Pins

Enter, or perhaps re-enter, the spring probe. With a new approach to pin design and a complete re-invention of the manufacturing process, miniaturized spring probes as small as .2mm are now available that provide a high temperature, current and bandwidth performance pin at the price of a stamped contact.

Although designed and manufactured in subtly different ways, the pogo-style pin is typically constructed of a pin, two plungers and a spring encapsulated in a metal shell.

This style of pin is highly compliant, which means it is designed to compress or “comply” during insertion. This is critical when attempting to maintain a good connection despite potentially uneven surfaces, vary-

ing heights, errors in parallelism and flatness, or pivoting or rotating elements.

Although compliancy can be achieved by other techniques, such as bends, buckles, or cantilever-style contacts, additional space between pins is required during compression. Spring-loaded pins operate in a purely vertical fashion, so the maximum space occupied at any time is defined by its diameter. This allows for placement of spring-loaded pins in fine pitch distances as low as .2mm.

The trend toward more compact, high density electronics design – defined as the number of pins in a small area or the distance between pin centers – is already impacting several markets.

One market that regularly utilizes fine pitch spring probes is for electronics reliability testing, including burn-in, HTOL, HAST, THB and other testing protocols. To conduct this type of testing, sockets are manufactured to provide an intermediate (temporary) connection through an array of pins between the printed circuit board (PCB) and the components or multi-chip modules being tested. The PCB is then connected to a computer or other device for data capture and analysis to determine pass or fail.

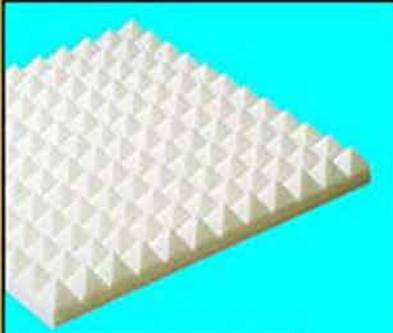
The other market is compression-style board-to-board connectors used in electronics for telecom, automation, medical, aerospace, and military applications. These specialty connectors utilize spring probe technology to create a one-sided connector that is mounted against pads on the PCB. The benefits of spring-loaded connections include the elimination of receptacles to reduce costs, space savings, “one-touch” attachment and removal, and high durability.

Whether creating a temporary connection, such as for testing, or as a permanent board-to-board interconnection, the common denominator is more pins, less real estate.

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want the same 2,000 pins in a one-half inch square and the only way to do that is to reduce the pitch of the device,” says Ila Pal, Chief Operations Officer of Ironwood Electronics, a manufacturer of high speed sockets and adaptors for characterization, burn-in, and production testing.

“We were utilizing spring probe pins on a 1mm pitch design and more recently at .5mm,” explains Pal. “Then, last year, there were requests to shrink the pitch to .4mm. Now, we are moving even further down to .35mm”

Germany-based test socket manufacturer EP Ants GmbH, is experiencing the same market trend. According to Rick Taylor, president and co-founder, 70-80% of the test sockets his company manufactures today are for high density applications.

According to Taylor, another market driver is price. Higher density means a higher volume of pins per test socket. Multiply that by the number of sockets required for parallel or serial testing at a single facility and customers expect companies such as EP Ants to deliver the best possible price without sacrificing performance.

“As everything gets smaller and the density gets tighter, pin counts are increasing,” says Taylor. “At the same time, our customers expect to reduce their costs. So we challenge ourselves to find ways to manufacture our sockets at an achievable price whenever possible.”

So when Taylor heard about a spring-probe called the H-Pin that could deliver high performance at a significantly lower price, he was immediately intrigued.

### The H-Pin

The H-Pin is a stamped spring probe that delivers the mechanical, electrical and thermal performance of a pogo-style spring probe. The highly compliant pin has a working range up to 1mm with a flat spring rate and can be utilized up to 15GHz with -1.0dB loss, carry up to 4 amps of current and withstand temperatures up to 200°C.

Although there are a few design tweaks, the real departure is in the manner in which complete pin assemblies are manufactured using a high volume BeCu stamping process and a 100% automated, high speed assembly and inspection process that can produce up to 400 pins per minute.

Available in various lengths and pitch sizes as low as .2mm, the product is the brainchild of Plastronics, a global provider of test sockets for semicon-

ductor reliability testing. For more than 40 years, the company has used spring-loaded probe pins to create finished sockets for burn-in, humidity, failure analysis and other test requirements.

Depending on quantities, the spring-loaded probe pins can cost 30-50% less. With thousands of



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pins potentially in a single test socket or board-to-board connector, the savings can be significant.

According to Taylor, simply reducing the cost meant little without consistent pin quality. To ensure this was the case, EP Ants conducted extensive testing of the H-pin, which included inviting customers to also test the product and provide additional feedback.

“As a test socket manufacturer, we have to rely on the quality of the pins we get from our spring probe supplier,” says Taylor. “The H-pins have a very reliable quality level which is extremely important to us and our customers.”

#### Meeting High Performance Demands

For spring-loaded probes pins, high performance characteristics are defined by the ability to withstand high temperatures required for burn-in and other tests, ability to handle increasing amounts of current over increasingly smaller pins, and the ability to handle high frequencies.

According to Taylor, they do not rely on a single pin manufacturer. However, his company uses the H-pins for high temperature burn-in, tri-temp and HAST testing where the spring-probe is regularly subjected to temperatures well in excess of 200°C.

“The H-Pin works well when exposed to the high temperatures we use for burn-in or tri-temp testing,” says Taylor. The tests are typically conducted at up to 240°C



and, despite cooling the back side, the spring pins still experiences a fair amount of temperature. “We have worked with these pins above 200 degrees and we did not have a problem where other pins have failed.”

The ability of the pins to withstand higher levels of current, despite shrinking in size, is also an increasing concern – particularly with the prevalence of higher power output lithium batteries.

“These semiconductor packages and chips have power management features that need to be tested as well,” says Taylor. “The H-pins can take a lot of current.”

For high performance applications, there can be concerns about the construction of traditional spring-loaded probe pins and how its design can affect the quality of the connection under compression, the potential for unreliable test results requires all finished pins be tested and binned according to performance results. A very costly process step.

According to Ironwood Electronics’ Ila Pal, the H-Pin solves this problem by utilizing a leaf spring between the two plungers along with external compression spring that allows the pin to maintain a good connection and pass signal throughout its movement.

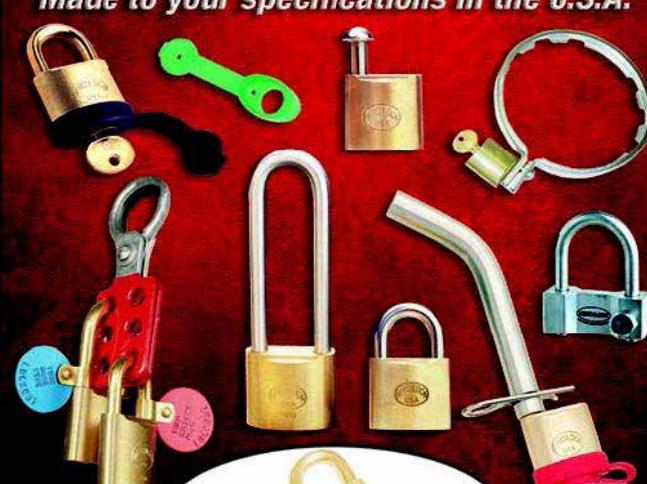
Furthermore, the performance of the pin as measured by its contact resistance is also a benefit in high frequency testing. Whereas standard spring-loaded probe pins can experience wide variations in contact resistance, potentially leading to false failures, the variation in the H-Pin is minimal and well within accepted levels.

“For the H-Pins, the variation is very minimal,” says Pal. “So, testing is very precise, because we can add a cut-off factor for pass and fail, without having to worry about false failures.”

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Before



After

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Schaffner introduces their transformer rewind service which is typically faster and more economical than purchasing a new transformer. Whether performed on-site or in-factory, Schaffner rewinds are often a desirable solution for tight budgets, tight schedules and tight spaces. In-factory refurbishment includes the installation of new coils for the existing transformer plus the associated disassembly and reassembly. When compared to purchasing a new coil and core, this option routinely yields savings of 30%. If failed transformers removal requires expensive rigging, demolition or other extreme costs, then on-site rewinding may be a viable solution. Schaffner's experienced technicians will assess any manufacturer's dry-type transformer to 35 kV and provide a detailed proposal prior to performing a warranted rebuild.

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When performing on-site rewinds, technicians can also provide a power quality site survey to determine whether additional actions or protections are needed to ensure that the new or rebuilt transformer will meet its intended life cycle. Harmonics are often the culprit because they cause detrimental effects such as overheating of transformers, power cables, motor and drives. Harmonics cause higher transformer voltage and insulation stress, resulting in increased heating, reduced life, and higher copper and iron losses due to hysteresis and eddy currents. Harmonics can also produce higher temperature rise in the electrical network and associated equipment, resulting in losses and shortened service life.

Schaffner technicians can also recommend and size Active Harmonic Filters, such as ECOSine® series, which automatically inject a current to correct the sine wave and mitigate harmonics before they can cause any damage to the electrical system, while maintaining the life span and efficient operation of transformers. Active Filters are available from 50 amps to 400 amps, housed in a NEMA 1 or NEMA 3R enclosure. Higher current ratings, 480vac, 690vac and application engineered systems are available to meet specific user needs.

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All Verti-Lift lift and tilt tables feature easily accessible internal power units, heavy duty cylinders, hand or foot controls, heavy duty tubular frames, heavy duty hydraulic cylinders, and lifetime lubricated kingpin bearings to ensure a long service life with no maintenance. Optional accessories which can be added to suit particular requirements include accordion skirts, oversized platform, platform with beveled edges, pit mounted, portability package, PLC controlled, foot pedal control, high cycle, and external power supply. Also available in pneumatic designs; custom sizes available upon request.

Video demonstrations of Verti-Lift products can be seen on YouTube (search Verti Lift). They are made in the USA and available from Material Handling Distributors nationwide.

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