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January 2018

# Industrial Products & Solutions

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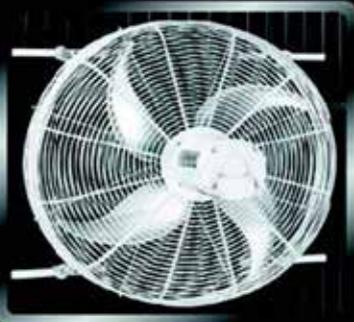
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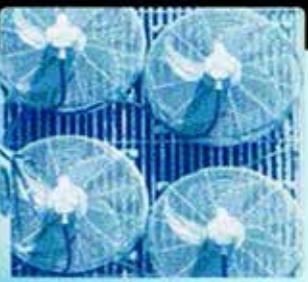
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Today's Industrial Products & Solutions™ is published ten times a year on a monthly basis by CJS Media, 951 1<sup>st</sup> Ave. W. Alabaster, AL 35007 USA. Today's Industrial Products & Solutions™ is distributed free to qualified subscribers. Non-qualified subscription rates are \$57.00 per year in the U.S. and Canada and \$84.00 per year for foreign subscribers (surface mail). U.S. Postage paid at Birmingham, Alabama and additional mailing offices.

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# Strategies to Strengthen Subassembly Sourcing



*Selecting subassembly manufacturers with specific capabilities can speed turnaround, improve product performance and functionality, and increase an OEM's bottom line.*

With electrical and electronic components and features like touch screens, flex circuits, keypads and membrane switches becoming more technologically advanced, OEMs are becoming increasingly dependent on sourcing subassemblies to expert third-party suppliers.

At the same time, subassemblies are critical to the OEM's finished product and must be sourced carefully to achieve consistent quality, timely turnaround and competitive pricing. In many cases, contracting with suppliers that offer access to global manufacturing facilities and in-house engineering support can be instrumental to the success of an OEM.

One of the most significant challenges is locating reliable suppliers that can meet these qualifications with pricing that can improve profitability. Some of the more successful OEMs point to a few uncomplicated strategies that help strengthen subassembly sourcing, achieving faster turnaround, ensuring product quality and functionality, and increasing added profitability.

## **1. Access to Global Resources**

Selecting a domestic subassembly supplier with global manufacturing resources can provide OEMs with significant economic advantages – provided the manufacturing processes are well managed by the supplier.

For example, many OEMs that contract directly with offshore suppliers experience communication difficulties that can lead to errors with subassembly materials or dimensions, avoidable logistical difficulties, or even cost miscalculations.

However, some OEM suppliers have no problem in providing high quality products through relationships with offshore fabricators that work seamlessly with the domestic supplier's engineering and management team.

"We have found that offshore fabricators can be effective partners in manufacturing for North American subassembly suppliers, provided the proper communications and management controls are in place," says Hector Macias, director of Northpoint Technologies, El Paso, Texas.

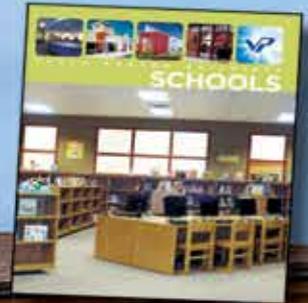
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Macias adds that such fabrication partnerships can also be financially beneficial to OEM customers by providing saving on costs and eliminating the need for capital investments.

Northpoint Technologies is a manufacturer of components and subassemblies used in electronic and electric devices used in the medical, automotive, defense, telecommunications, industrial and consumer markets. The company's expertise includes silicon and membrane switches, flexible PCBs and assemblies, touchscreens and wire harnesses.

When Justin Blush was in search of a silicon membrane for a microscope control switch, he found Northpoint Technology. Blush, lead technician at Prescott's Inc., a remanufacturer of surgical microscope, says his company's own molding and machine shop was unable to fabricate the membrane, which was incorporated into a switch that enabled a model of microscope to zoom in and out on a subject.

Northpoint advised Blush that the membrane would be designed at its headquarters in El Paso, but would be fabricated at a plant in Asia.

"I was happy just to have a supplier and expected the fabrication and shipping process to take at least six-to-eight weeks, as with our traditional suppliers," Blush explains. "I was amazed to learn that the membrane required only a two-week turnaround, and at a fraction of the price I expected."

## 2. Faster, Functional Prototypes

The timely delivery of prototypes and quick turnaround of revisions are vital to expediting the manufacturing process. When subassembly suppliers with offshore manufacturing facilities can produce prototypes in-house with quick turnaround times, the process is much more efficient.

Due to those factors, prototyping is one of the functions that successful suppliers seldom outsource. Macias considers prototyping a critical step in product development. These are produced via aluminum or "soft" molds, and are of such quality that they are usually considered to be product samples or the equivalent of first article production pieces.

"The prototypes we require are real, functional samples that we send to customers to inspect and test," says Terry Swick, president and co-founder, Swick-White Inc. (Davisburg, MI), a manufacturer of electric enclosures, control panels, membrane switches and graphic overlays. "Assuming they meet specifications, they can install them as finished subassemblies in products and ship them out to customers - with confidence."

At other times OEMs will have requirements that are outside of the usual request. Suppliers who have the in-house capabilities produce complex items domestically can satisfy the extra demand by producing additional functional prototypes that have been approved for production.

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For example, Stoehr says that on occasion, he made such a request. "I said, 'We're doing a prototype run of 10 control panels, so can you provide 10 sample keypads?' And they were able to do that with no delays."

### 3. Look for Volume Flexibility

Whether subassemblies or piece parts are fabricated domestically or overseas, minimum volume requirements can force OEMs to purchase more parts than they require. However, a few subassembly suppliers are moving away from volume requirements to better serve the OEM.

When Steve Stoehr, Engineering Manager at GS Global Resources (GSGR) was sourcing a keypad as part of switch and control panels installed on some heavy-duty equipment such as agricultural machinery or fire trucks, he expected to make a sizable volume commitment to the keypad manufacturer.

Based in Mukwonago, WI, GSGR develops and implements a broad range of electronic and hydraulic control systems for various OEMs.

"Most of our suppliers want high-volume orders, just like other industries," explains Stoehr. "Five or six years ago we found Northpoint Technologies, which has been very good about taking on even low volume projects. That's a real plus for us and our customers."

### 4. Adding Significant Value

Finally, many OEMs are finding suppliers that provide significant value-added services, with offerings ranging from engineering assistance to recommendations for streamlining the manufacturing process.

In some cases, graphic design assistance, such as special icons or other symbols on keypads and other controls, can provide important safety or security features.

In another example, GSGR's Stoehr found that subassembly suppliers could bring important value added through the kitting of loose piece parts. He arranged with Northpoint to have special kits, containing 20 loose keypad buttons, to be packaged in order to expedite assembly on the production line.

"Getting great value-added services through a single source is important to GSGR," Stoehr says. "It is not only more convenient, but when you couple that with consistent quality, quick turnaround and competitive prices, it helps us provide better service to our customers, as well."

*For information contact: Northpoint Technologies, Inc.; 13321 Tobacco Rd., El Paso, TX*

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# LiFi Ready for its Moment in the Spotlight

*Mainstream adoption of LiFi wireless optical data transmission is now possible with LED light bars that replace the most widely utilized light source in the world – fluorescent tubes*

The promise of LiFi (light fidelity), which utilizes the very LED lights that illuminate a work space to transmit more secure, high speed, wireless data at rates that can go well beyond those possible with Wi-Fi, has now advanced to the point of introducing a new form of mainstream implementation.

This new development results from the introduction of the first LED “light bar” fixtures equipped with the required transmission technology and designed to replace the most ubiquitous form of lighting in commercial and industrial facilities: fluorescent tubes.

With an estimated 3-4 billion installed fluorescent tubes throughout the world, the integration of built-in LiFi transmission technology in new and retrofit LED light bars is now moving LiFi beyond the pilot stage to full-scale implementation in offices, schools, warehouses and other facilities.

“LiFi is not a concept, it is really here,” says Harald Haas, co-founder and Chief Science Officer of pureLiFi, a company that is spearheading the development of the technology. “If people want to engage, they can purchase the products right now.”

## What is LiFi?

LiFi is a high-speed, secure, fully networked wireless communication technology similar to Wi-Fi. However, LiFi utilizes the entire light spectrum where Wi-Fi utilizes radio frequencies (RF).

To do this, the LED light fixtures used in many energy-conscious homes and offices are outfitted with a module that controls the light for optical data transmission. The high speed light pulses are invisible to the naked eye, yet can be used to transmit data at extremely high speeds to a receiving device located in a laptop, computer tower, cell phone or other smart device.

In the future, LiFi will be embedded into the mobile devices we use every day, as well as play a key role in machine-to-machine communication and the Internet of Things (IoT).

The utilization of visible light provides a host of intriguing benefits that far outpace what is currently possible with the radio frequency waves used by Wi-Fi and cellular networks.

When compared to the overloaded full

RF spectrum, the light spectrum is 1,000 times larger and is currently unregulated with no licensing fees.

In lab conditions the technology is already capable of 10 Gbps speeds, and with the available bandwidth potential, data transmission speeds up to 100 times faster will be possible in the near future as the technology advances.

## LED Lighting Manufacturers Push LiFi Forward

According to Haas, who is considered the “father of LiFi” and has been working in the field for the past 15 years, the implementation of the technology into lighting fixtures has necessitated a close partnership with LED light manufacturers.

“The lighting manufacturers are very important to move LiFi forward,” says Haas. “They know how to design lights and fixtures and we know what needs to be done to create high speed data networks out of light and add communication capability to it.”

Until recently, most of these fixtures were small lamps or recessed can lights. Now, one of its partners, Linmore LED, is

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introducing the first LiFi enabled LED light bars designed to replace fluorescent tube lighting. For those that want to experience the technology in action, the company is demonstrating a complete, functional LiFi system using the new linear LED light bars at its facility in Fresno, Calif.

With the technology, data speeds have been clocked at 43 Megabits-per-second (Mbps) up and down.

“Linmore LED is the first company in the world to bring this technology not only into new light bar fixtures, but also be able to retrofit linear fluorescent fixtures that employ the LiFi technology,” says Haas.

Linmore LED originally built its reputation in the retrofit market, utilizes its own proprietary designs involving optics, thermal dissipation and a number of other techniques to ensure its LED products perform in the top 1% in

energy efficient in the industry.

According to Paul Chamberlain, CEO of Linmore LED, the partnership with pure-LiFi was a good fit due to the modular nature of the company’s LED light bars. The product’s design allowed for the integration of the LiFi modules in the ideal position on the light bar, without affecting critical aspects such as lighting distribution, thermal dissipation or overall performance.

Retrofit fixtures, even those that are not LiFi enabled, are in great demand as many facilities seek to drive down energy costs by as much as 70-80% by converting to LED technology. This trend is also being driven by the increased operating life of LEDs and concerns about the toxic mercury utilized within fluorescent lamps that complicates disposal.

This provides a very real scenario where building owners and facility managers can adopt LiFi technology while dramatically decreasing lighting-related energy costs at the same time.

“Businesses want to leverage an LED upgrade and get more than just lighting, says Paul Chamberlain, CEO of Linmore LED. “Utilizing an existing part of a building’s infrastructure – lighting – opens up endless possibilities for many other technologies to have a deployment backbone. Internet of Things (IoT), RFID, product and people movement systems, facility maintenance, and a host of other technologies are taken to the next level with LiFi available throughout a facility.”

**Security Benefits**

Among the expected early adopters of the technology are those that seek greater security of data transmission than is possible with Wi-Fi. For this reason, initial markets expected to adopt LiFi technology include federal government and defense, banking, financial institutions and hospitals.

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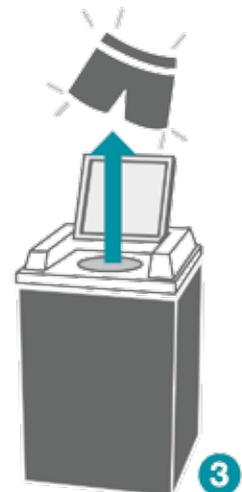
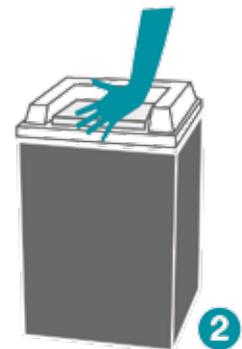
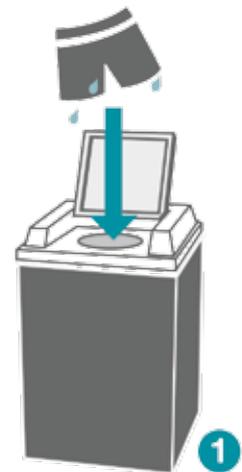
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LiFi is a far more secure form of data transmission than Wi-Fi because a receiving device must be directly within the cone of light to receive a broadcasted signal. Visible light, including near-infrared wavelengths, cannot penetrate opaque objects such as walls, which means that the wireless signal is constrained to within a strictly defined area of illumination.

Wi-Fi, on the other hand, utilizes radio waves that are widely broadcast even outside a building where it can be easily intercepted for malicious purposes.

In a man-in-the-middle attack the attacker must be able to intercept all relevant messages passing between the two victims and inject new ones. This is straightforward in many circumstances; for example, an attacker within reception range of an unencrypted wireless access point (Wi-Fi) can insert himself as a man-in-the-middle.

Because visible light is easily containable within a space, it could eliminate classic man-in-the-middle attacks where

eavesdroppers located outside an area are able to intercept communications from radio waves emanating outside building.

In addition, traditional encryption and authentication protocols used for Wi-Fi provide an additional layer of security for the LiFi network.

The ability to direct or shape light into defined areas of illumination allows precise partitioning of any environment.

File access is permitted only if a device is connected to the LiFi network. Once a user connects to the LiFi network, they can download and modify certain files. It is also impossible for a nearby employee to intercept information sent to the server/network by another employee, since the uplink communication is on a different frequency from the downlink.

Further increasing security, every device that can connect to the network can be localized and tracked using the technology. The same LiFi module enables

“communication on the move” by tracking the transmission source electronically, with no moving parts.

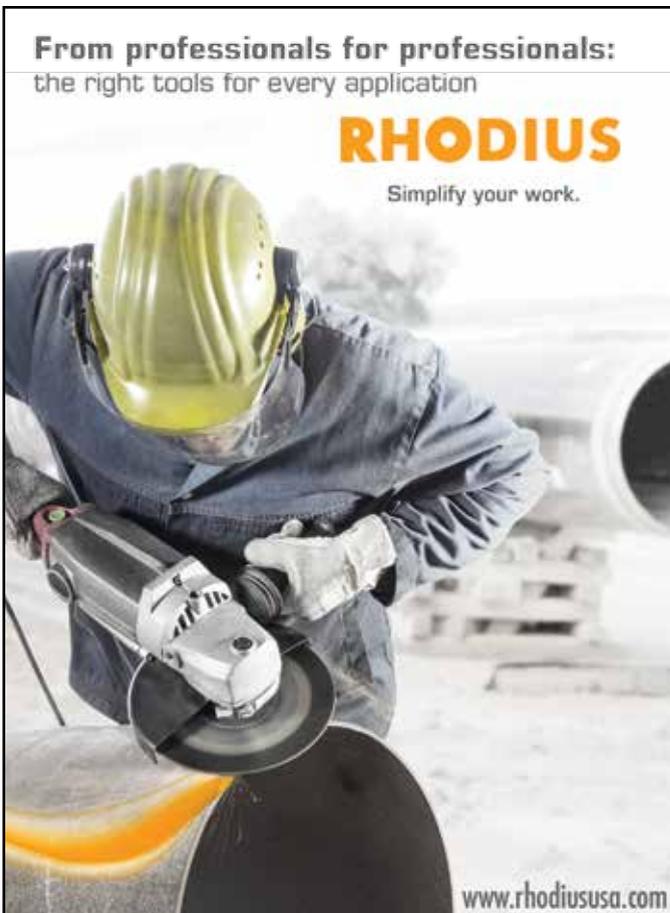
“You can walk through a building, into different [light] zones and it will keep you connected the entire time as you move along in the building,” says Haas.

### The Future

Now that one of the final barriers to full-scale implementation has been overcome with the introduction of LiFi enabled LED light bars, the technology is expected to continue to advance under an “aggressive strategy of miniaturization and lower costs,” says Haas.

Although current technology requires use of a dongle, much like early Wi-Fi, Haas says the major mobile device manufacturers are already expecting to adopt the technology within the next 3-5 years.

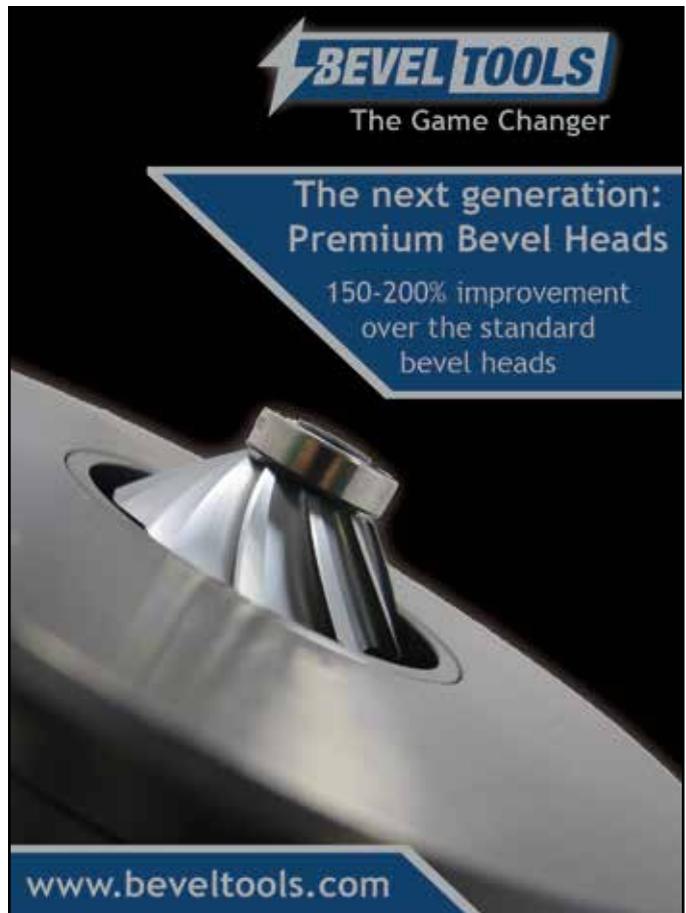
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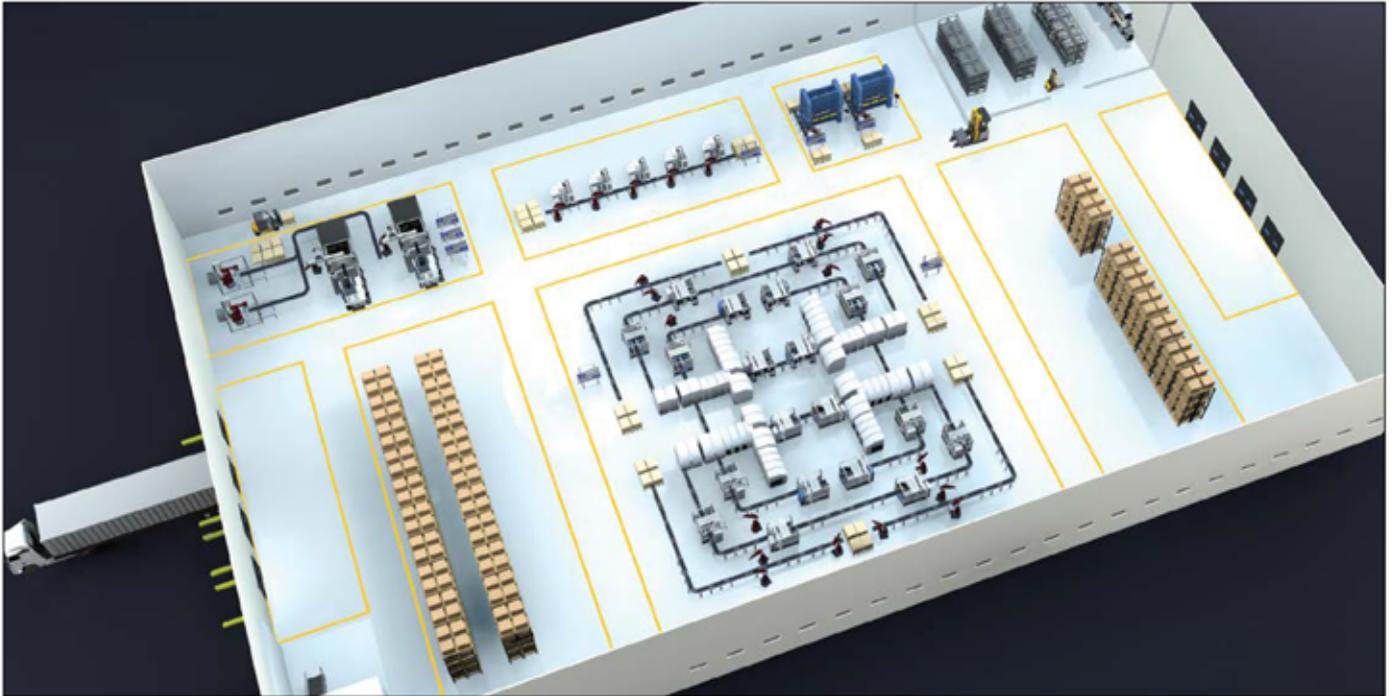
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# TRACEABILITY IN MANUFACTURING

Gain instant visibility with RFID and barcode technology

## White Paper



Competition in today's market has become fiercer than ever. Getting the product to market faster while preserving or increasing quality and decreasing the cost to do it has always been the goal of the successful producer. The market has become more global than ever, government regulations and reporting requirements have increased, and the consumer has become more cost and quality-conscious than ever. These changes, in addition to the current economic climate around the world, have never made achieving those goals more difficult.

This white paper will explain how a traceability program, Radio Frequency Identification (RFID) and barcode technology combined with application software, provides direct visibility into the manufacturing process. In addition, it will identify the implementation areas where these two technologies have had the greatest impact and why it is important to develop a traceability program immediately.

## Timing is Everything

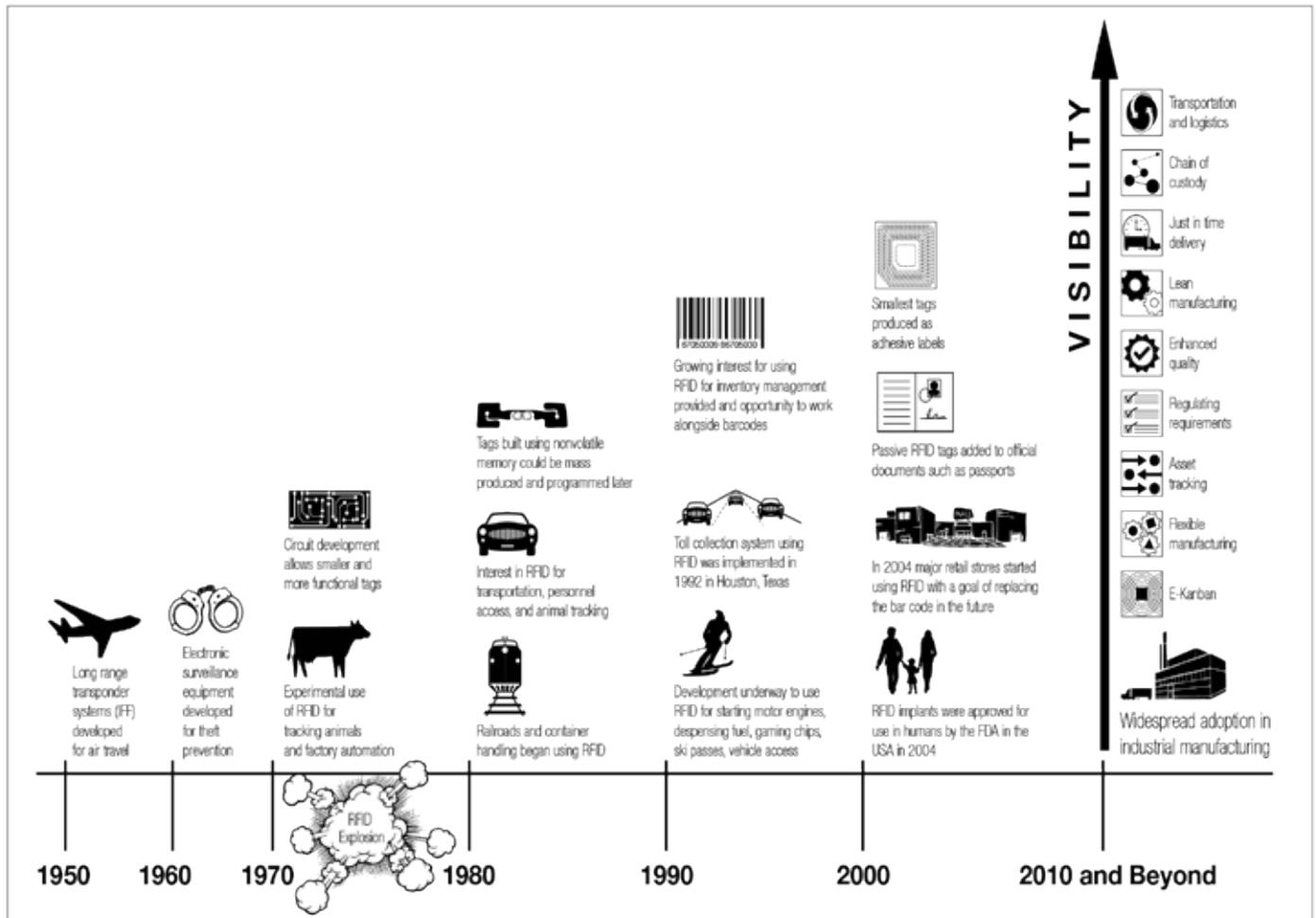
Proper timing in business is a key element to success. There have been countless products and services throughout history that have failed to make it to market on time. The recent success of the tablet device is a very good example. Tablets existed in the market with minimal interest more than a decade prior to the current boom. Consumers were demanding a more mobile way to process information while requiring a similar user experience to desktop or laptop devices. While some of the early versions failed to strike a chord with consumers, those units laid the foundation for future technology.

RFID and barcode applications have had a very similar market experience to the tablet. The early tracking technology was not an immediate hit. Promises from retailers regarding price and capabilities created a muddled view of the technology resulting in delayed adoption. However, the current conditions of the market and the current needs of manufacturers have magnified the demand for reliable and cost effective traceability systems. As the number of applications increased, so too did the technology. Fortunately, the improvement of technology includes more user-friendly interfaces and a wider variety of options depending on the environment. RFID and barcode technology has expanded at a rapid rate all over the globe. Adoption of a traceability program in manufacturing, whether in asset tracking, plant-based material flow, production control, material flow, or all of the above, is a must for operating with true business intelligence.

## The Path Has Been Cleared

Automatic identification, both RFID and barcode, has been in commercial use since the early 1970's. The earliest barcodes were used to identify products in a retail environment, while RFID was used to prevent theft, control access, and identify livestock. While those methods are still being applied today, many more applications have since evolved. The technology has become more refined and the data more reliable resulting in increased quality and leaner processes. Private and public corporations, small-medium size businesses, and governments around the globe have concluded that RFID and barcode technology

Figure 1: History of RFID



are capable of providing the needed vision into their process. These diverse organizations, by revenue and application, have proven that the benefits of RFID are quantifiable. Furthermore, current research data indicates that demand is high for implementing traceability programs.

In a recent study by ABI Research<sup>1</sup> "The market for RFID transponders, readers, software, and services will generate \$70.5 billion from 2012 to the end of 2017. The market was boosted by a growth of \$900 million in 2011 and the market is expected to grow 20% YOY per annum. Government, retail, and transportation and logistics have been identified as the most valuable sectors, accounting for 60% of accumulated revenue over the next five years." The number of applications that utilize RFID technology is growing rapidly. The past and projected growth indicates the technology is meeting the needs of multiple sectors of industry all over the globe. From an inventory control perspective many organizations have similar objectives. The results experienced in the retail sector should be expected in manufacturing as well. "Retail growth is driven by the proven returns that item level tagging can deliver. Stock is less likely to get lost, shop floors better stocked, and the ordering process will get smarter." Producers must also deliver the goods. "Transportation and logistics increasingly make use of the ability to accurately track and trace items and goods at item, pallet, and container level as service providers look to generate more detailed data for themselves and their customers." The test phase of these technologies is long gone. While industrial environments vary greatly, both barcode and RFID has evolved smartly to mesh into any operation.

## Innovate the Way You Automate

Automation in manufacturing has evolved at an amazing pace. This is the result of insight, thought leadership, and calculated risk taking by the leaders in the field. Being able to make informed decisions means basing those decisions on accurate supporting data. The time and resources invested in manually collecting data adds to the risk of making major changes. Entry errors are too common in a manual process and the margin for error in today's business world is slim. Automatic data capture is a mature and ultra-reliable technology that, when utilized correctly, dramatically decreases the risk of making changes and innovates the way decisions are made. Financially, the cost of quality decreases, yielding consumer confidence while also allowing for more margin - ultimately leading to an increase in production due to greater efficiency in the process.

## Minimize the Cost of Failure

A recurring word echoed throughout the manufacturing world is visibility, to see and understand the process from start to finish. A truly efficient process can only be achieved by analyzing reliable data and taking appropriate action. Inspection and reworking are two major components in the cost of quality.

Many times in the manufacturing process there are cases where a component is added to a failed product resulting in lost resources, mainly time and revenue. Through the use of a read/write RFID tag on each work in process (WIP) and a read/write antenna at each work station, a failure can be isolated at the exact point of error. The data is written to the tag via failure code, which is then recognized by the RFID reader, which then prompts the system to divert the product. This prevents the unfinished "bad" product from receiving more work at the next station and greatly decreases the chance of machine failure or destruction by identifying the faulty work in progress and diverting it from the line. Tracking the WIP from the first stage in the build process to the final stage allows an organization to have full confidence that the product being sent to market meets organizational requirements. Furthermore, traceability in the process adds value to the final product by insuring quality and eliminating inefficiencies in the process.

In the following table, (in reference to Feigenbaum's prevention-appraisal-failure (P-A-F Model)<sup>2</sup>, prevention costs refer to all costs incurred in decreasing the frequency of process non-conformance occurrences. Appraisal costs are the costs involved in attempting to detect non-conformance through inspection or testing. Failure costs are further divided into internal and external failure costs. Internal costs occur after appraisal and declarations of product non-conformance and include costs of rework attempts and scrap when rework is no longer possible. External failure costs occur when a non-conforming product is erroneously delivered to the consumer and fails in the field.<sup>3</sup>

Prevention	Appraisal	Internal Failure	External Failure
Design and development of new equipment	Receiving inspection	Scrap	Lost profit/sales
Quality Review	Laboratory inspection and testing	Rework and repair	Loss of goodwill
Maintenance and calibration of production and inspection equipment	In-process inspection (sensors and signals)	Rescheduling due to downtime	Warranty
Supplier quality audits	Final inspections (100% sampling inspections)	Overtime to cover production losses	Product recalls
Quality training (seminars, workshops/lectures)	Field testing (performance tests and status reporting)	Downgrading	Allowances
Quality improvement programs	Inspection and test equipment	Cost of support operations	Complaint adjustment

Figure 3: Prevention-Appraisal-Failure Table



Figure 4: Machine tools can be fitted with RFID tags to track and download offset measurements (from presetter), set-up parameters, usage, and tool life data.

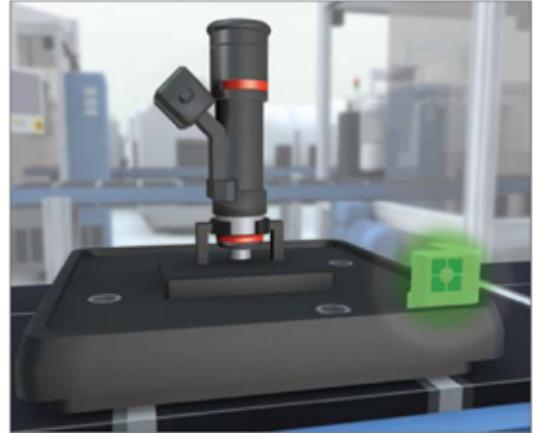


Figure 2: When a build pallet is utilized, RFID tags are permanently mounted to the pallet to enable traceability.

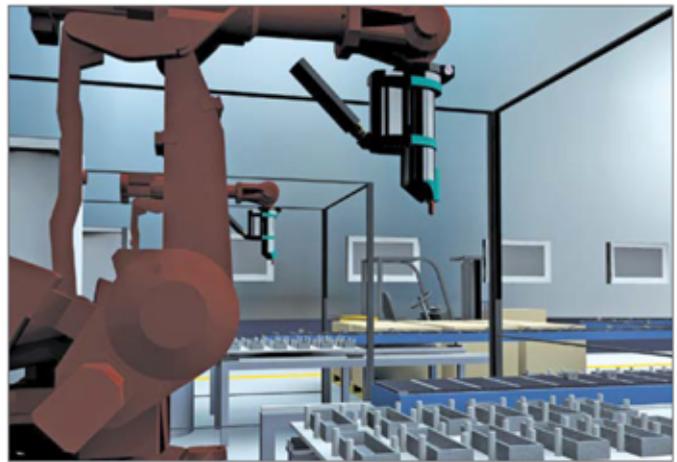


Figure 5: Modular automation sub-systems such as End-of-Arm tooling (EOT) benefit from automated set-up parameters, usage, maintenance, and component matching.

## Protect Assets

Properly functioning tools and machines are required to produce quality products. A machine or tool that fails during high volume production can cost companies millions. Whether the cost comes from repair, replacement, lost sales or all of the above, an organization is capable of preventing these failures through utilizing RFID.

Maintaining a proper maintenance schedule on a machine, mold, or die is essential to prevent errors. Manually recording this information is time consuming and certainly not dependable. By using RFID tags affixed to the machine, the repair technician can sign off on the service and identify who did the repair or service, what was done, when it was done, etc. A template is typically used to make this process even more efficient. This eliminates paper work and allows the technician to focus on the machines.

RFID extends the life of tools and machines while ensuring the safety of the operator. In order to eliminate the possibilities of errors in the transfer of information, data such as offset measurements, set-up parameters, and usage information is stored on the tags

## Locate Assets

Parts and partially finished products are shipped in returnable transport units (RTU's) i.e. bins, totes and pallets, which in some cases represent a major cost to an organization. Many times, finding available RTU's is an issue. By affixing RFID tags to the pallets and bins, finding these in a critical time becomes a simple process. Readers are placed at a chokepoint or gateway in the warehouse and read the tags on the RTU's as they pass. The location information is then automatically recorded into the system. Locating the assets after they have been stored is no longer a process of hunting down the units in every possible storage location. Similarly, hand tools, storage tanks, vessels etc. are tagged and tracked allowing personnel to quickly locate in a time of need. The cost involved with replacing misplaced assets is eliminated and time spent searching for assets is repurposed for more productive activities.

Loss prevention is also a benefit of tagging assets within the four walls. Major retailers have saved millions by decreasing "shrinkage" due to theft through the implementation of a visible inventory system. Unfortunately, warehouses and supply rooms tend to be the most unsecured areas within a plant. While simple surveillance cameras can deter thieves, many times the organization doesn't realize an item is missing until the next inventory count is completed. With RFID, access to the room can be controlled and documented and the tags can be used to alert staff when a product is being removed without authority.

Implementing RFID read/write technology into the process ensures the integrity of the data which means it can be analyzed with confidence. This method greatly reduces or eliminates errors and transforms the cost of failure into the benefits of success. The automated approach to managing data has proven successful in decreasing costs and increasing quality and safety.

## Gain Visibility into the Supply Chain

In addition to documenting the process on the manufacturing line, the information gathered through traceability in the supply chain also allows for greater visibility. Accurate data regarding real time inventory counts, inter-plant product flow, and chain of custody is used to drive Just in Time (JIT) delivery and regulatory compliance. Both play a pivotal role in decreasing operating expenses while meeting the demand for faster order turn-around time.

## Demand an Accurate Supply

Real-time inventory levels have quickly become the standard throughout the entire supply chain thanks to barcode and RFID. Accurate, real-time counts are provided by tracking inventory in the warehouse/supply rooms when the product is received and when it ships. Most often applied to the pallet or bin, the RFID tags are encoded with information regarding the contents, i.e. the time, date, and location it was received, etc. In addition to placing an RFID tag on the bin, the contents are labeled with barcodes to complete a truly visible inventory. Higher value products are often tagged with RFID individually (item level tag-



Figure 6: By attaching an RFID tag to molds and dies, set-up parameters, usage, maintenance, and part matching can be tracked and downloaded.

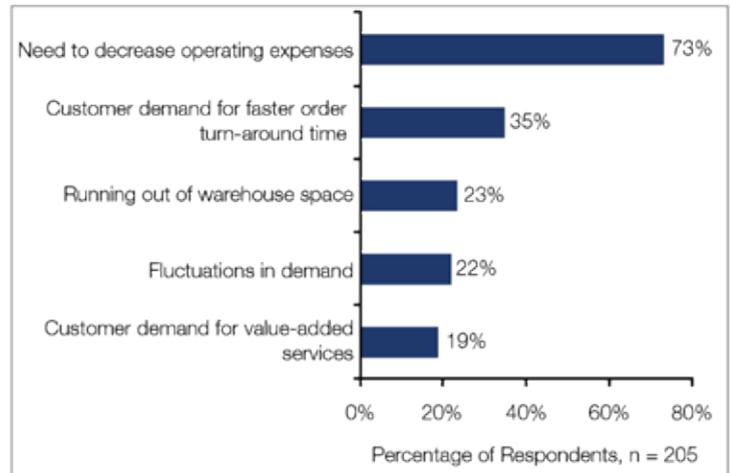


Figure 7: Top Factor Affecting Warehouse Management\*

ging) so they can be quickly located and security is also ensured with real-time monitoring. Fewer manual counts and an expedited picking process create instant cost savings while the increase in visibility allows for strategic allocation of time and materials.

Real-time usage lowers cost by ensuring the proper quantity of parts is on hand for build projects. The automotive industry has traditionally used a Kanban system to replenish parts. This is a manual method used to indicate a notice to re-order parts/components for the build. Proving successful in decreasing carrying cost and stock outs, Kanban has evolved as well. Electronic Kanban (E-Kanban), is now being implemented and has been successful at ensuring a constant flow of material while keeping inventory to a minimum. While E-Kanban has proven effective within the plant, communicating real time data with outside suppliers has made for a healthier supply chain overall. Just in time delivery has become even more effective as real time monitoring with less intervention eliminates the manual cycle. Inter-plant and Intra-plant product flow is another way RFID and barcode technology has revolutionized a process. Tagging the items that flow between plants

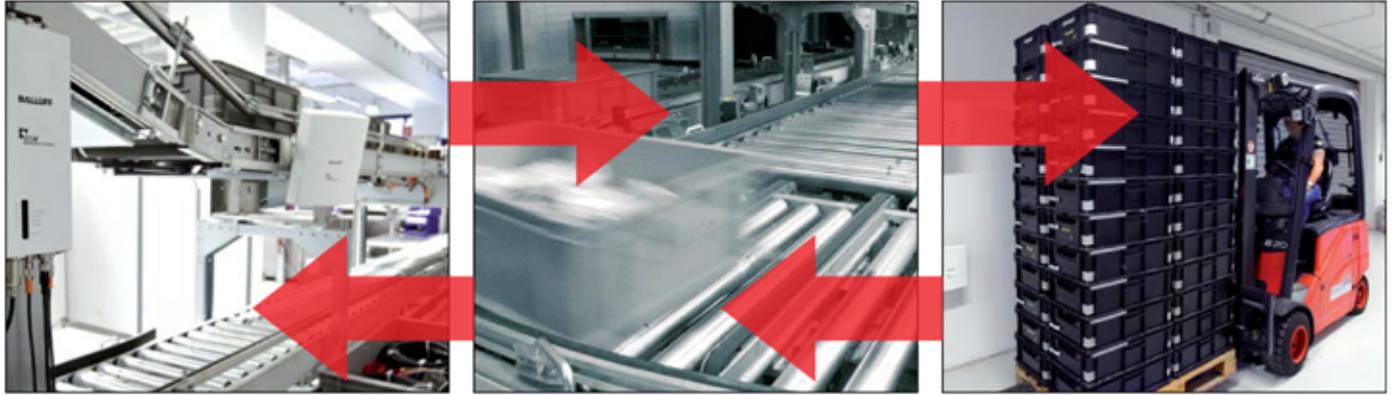


Figure 8: From incoming components to outgoing final products, UHF RFID tags track all movements between manufacturing facilities.

provides a clear channel of communication between different points. As the same part arrives from two different suppliers, differences in quality may exist. Instead of scrapping the entire lot of parts, the defective part can be called out and traced back to its origin. In which case, production can continue uninterrupted.

With an effective traceability program, an organization can strategically stock warehouses to decrease costs in transportation and labor which allows an organization to make better use of time, material, and space.

## Create Accountability

Chain of custody identifies each handler, ensuring individual accountability in the supply chain. Again this can be done by either RFID or barcode, but utilizing the capabilities of RFID allows information to be written to the tag at different points of custody. Liability for damaged, lost or stolen items is quickly determined by pinpointing exactly where and when the incident occurred. In turn, this saves time and money by eliminating the investigation or litigation process. Ultimately, a traceability program ensures accountability down to the exact handler rather than the shipping or receiving point as a whole. The incidence of damaged, mishandled, or misplaced products is greatly reduced.

## Comply with regulations

Traceability in manufacturing can be a matter of life or death. In the case of Autoliv, the world's largest automotive safety supplier headquartered in Stockholm, Sweden, meeting and exceeding quality standards means saving the lives of drivers around the world. To ensure these quality standards, a traceability program gives Autoliv and its customers the satisfaction of knowing their product will function as stated.<sup>5</sup> *"Through the Autoliv Quality System (AQS) we verify flawless quality by using mistake-proofing methods such as Poka-Yoke, in-line inspections, and cameras and sensors to prevent us from delivering bad products. We also maintain an advanced product traceability system."* As a result of excellence in the manufacturing process the traceability program can also provide documented evidence that the equipment was produced to exact specification. *"Our life-saving products never get a second chance. This is why we can never compromise on quality."*

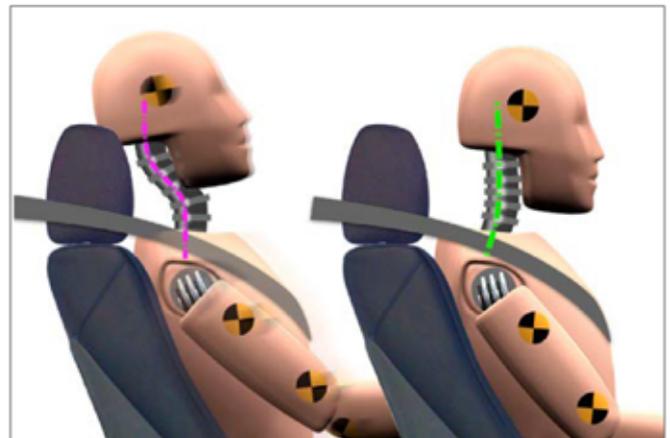


Figure 9: Traceability allows Autoliv to comply with regulations by verifying flawless quality. (Photo courtesy of Autoliv website)<sup>6</sup>



Figure 10: Handheld devices offer great flexibility to capture and transfer data.

## Eliminate the Failure to Communicate

Properly managing all of the data supplied through a traceability program is essential. There are two methods of managing the data and both can be used within the same organization, and many times that is the case. The data is either centralized or decentralized. Centralized data, just as its name suggests, is stored in a centralized location and can be accessed by a number of users from multiple locations. Most ERP systems have modules designed to manage this data. Smaller scale systems are also capable of handling data from multiple sources and processing it in a central location. Inventory management and asset tracking require the data to be centralized so multiple users can have access to the data simultaneously. Barcode technology and read only RFID technology typically utilize a centralized storage and retrieval method. However, advances in mobile device technology have allowed processing and storage to occur locally, or decentralized on the individual hand held units. It is still common practice to transfer the data from the handheld to a centralized location at a later time.

Decentralized data is the more common method used to house data for build, process, and lineage information. Essentially the data is housed on the tag and involves both reading and writing to the tag. It is common in a decentralized system to clear the tags of all data following the completion of a process. These tags can be used many times or can be attached to the product for life. In a non-networked environment, a decentralized data system is ideal for sharing traceability information by interconnecting islands of automation.

## Expect Immediate Results

Traceability by use of RFID and barcodes is an enabling technology which allows the user to see and understand a given process. This visibility provides an organization critical data required to make complex decisions with confidence. An effective traceability program will have an immediate impact on an organization and the benefits of implementation will innovate the way business is conducted. Ultimately, RFID and barcode technology make doing business easier at every level of the supply chain. As a result, the guess work is taken out of the process and valuable time and resources can be invested in the solution not the problem.

As implementation of traceability programs rapidly progress, the standard for excellence in business is rapidly progressing as well. The bar is being raised for on-time delivery, efficient manufacturing, higher quality, and lower cost. Excellence has become the expectation where excellence used to be the exception. Time is of the essence in a market as competitive as the one in which we currently operate. The time is now.

## Demand the Bests

Partnering with a company that has experience and expertise with traceability implementation is an absolute must. Here are 5 questions to ask a potential partner:

1. Do you specialize in and understand the needs of the industrial manufacturing environment?
2. Are your products rugged, flexible, and most of all reliable?
3. Can you provide support before, during, and after implementation including site surveys?
4. Are you capable of customizing a complete solution to fit the needs of my organization?
5. Does your company have at least 20 years of experience in industrial RFID?

## About the Author



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# *New Draw Bar Cover from Rockford Systems Prevents Injuries to Vertical Mill Operators, Helps in OSHA Compliance*

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Vertical mills are essential cutting tools in machine shops used to remove material from the surface of metal workpieces. However, these tools present serious danger when an operator comes into contact with their high-speed rotating draw bars, resulting in injuries and costly OSHA fines.

To bring needed safety to the shop floor, Rockford Systems, LLC., a premier provider of machine safeguarding products and services, has launched a new Milling Machine Draw Bar Cover (part #DBC001) to protect vertical mill workers from rotating shafts seven (7) feet or less from the floor or working platform. It guards the turning draw bar with a non-rotating, smooth, welded-steel enclosure, secured firmly to the mill with a powerful ring magnet and safety anchor chain. Simple to install, the draw bar cover prevents clothing, hair or hands from being grabbed by the moving shaft.

According to Jason Swisher, Rockford Systems Production Manager,

“Our new Draw Bar Cover features high-quality construction with smoothed welding seams and finished edges, designed to protect mill workers from hazardous rotating drawbars. It was engineered with input from machine makers and operators to ensure that it gets the job done right.”

This product can be used on any vertical mill that has up to a 7” extrusion. It compliments the full line of Rockford Systems milling machine guards, shields and controls that protect thousands of workers everyday around the world.

## OSHA COMPLIANCE

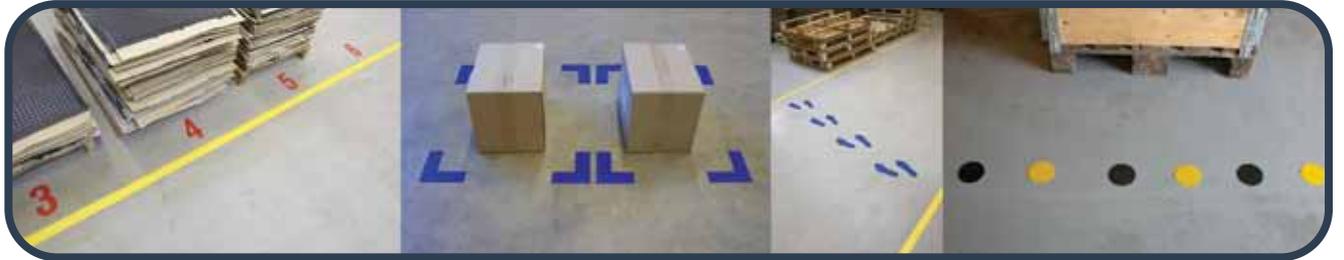
Installation of the Draw Bar Cover helps machine shops comply with the OSHA 1910.219(c)(4)(i) safety standard that states: *“Projecting shaft ends shall present a smooth edge and end and shall not project more than one-half the diameter of the shaft unless guarded by non-rotating caps or safety sleeves.”*

Lack of machine guarding or improperly installed safeguarding equipment was one of the top ten most cited OSHA violations in 2015, resulting in millions of dollars in fines levied against businesses. Injuries, as a result of improperly safeguarded machines, also lead to higher insurance costs, lawsuits, and hospital expenses. Although safety equipment and proper machine controls are required by OSHA, many manufacturers sell machinery without either, leaving the business with the responsibility of safeguarding the machine

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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.

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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.

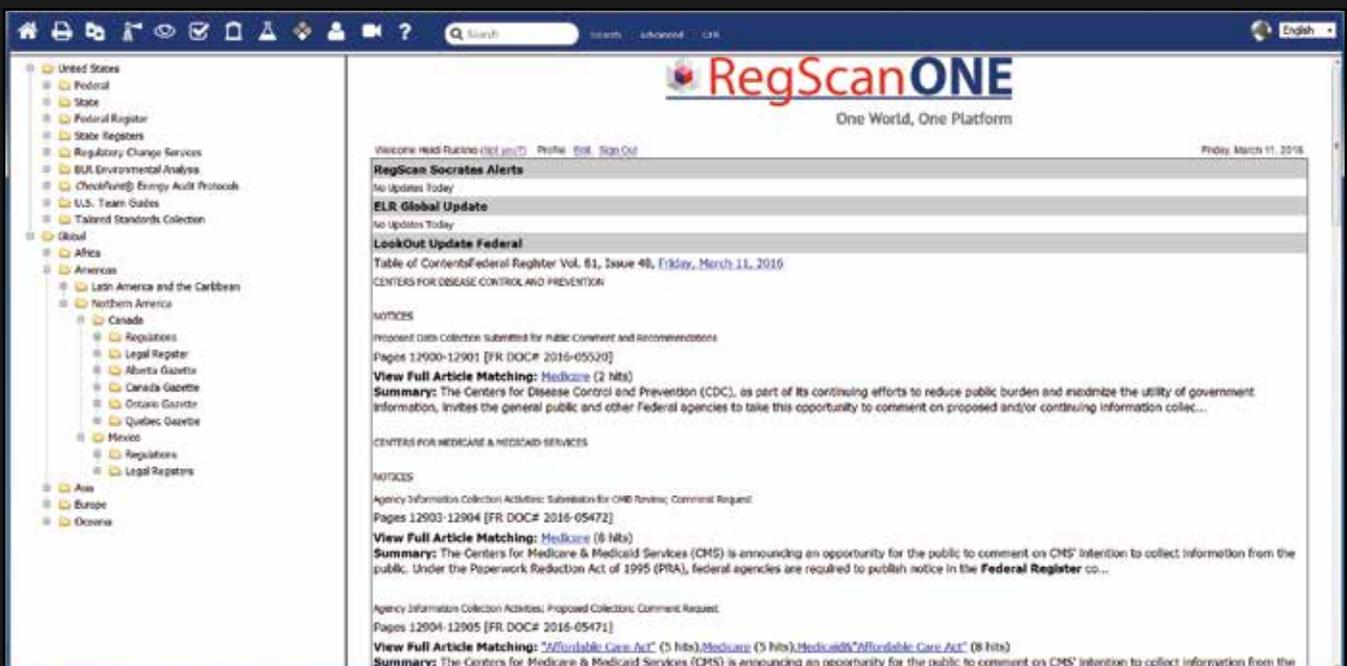
### Schedule a Demonstration

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.

To learn more about RegScan, please call +1 570-323-1010, or Email [info@regscan.com](mailto:info@regscan.com).

Also find us on LinkedIn and follow us on Twitter @RegScanOne!

[www.regscan.com](http://www.regscan.com)



# Snap-On Incorporated Partners with CJS Media For A Worthy Cause

## *Snap-On Incorporated Donates Products to CJS Media for Raffle that Benefits Autism Awareness*

Snap-On Incorporated has partnered with CJS Media to raise awareness for autism. Snap-On Incorporated will be donating tools and other products to CJS Media to raffle off at certain trade shows in 2018. Trade shows will be announced by CJS Media in the coming months. The money from each raffle will be donated to The Autism Society of America.

The Autism Society of America has been improving the lives of all affected by autism since 1965 and envisions a world where individuals and families living with autism are able to maximize their quality of life, are treated with the highest level of dignity and live in a society in which their talents and skills are appreciated and valued.

Snap-on Incorporated is a leading global innovator, manufacturer and marketer of tools, equipment, diagnostics, repair information and systems solutions for professional users performing critical tasks. Products and services include hand and power tools, tool storage, diagnostics software, information and management systems, shop equipment and other solutions for vehicle dealerships and repair centers, as well as for customers in industries, including aviation and aerospace, agriculture, construction, government and military, mining, natural resources, power generation and technical education.

CJS Media produces several magazines related to the construction, electrical, utility and safety industries. CJS Media concentrates on informing readers about what's new, what's better and what's needed to get their jobs done. CJS Media produces digital copies that are emailed to over 80,000 contractors nationwide.



# ENGINEERED, TESTED & CERTIFIED

A Tethered Tool System for Applications Involving Work at Height

## LEAVE IT TO THE EXPERTS

Snap-on provides a drop prevention system like no other.

We'll work with you to determine your drop prevention needs... including the tools, attachment points, lanyards, pouches, and holsters, that combine to create a turnkey solution that enables your workers to do just that...WORK.

## SAVE TIME AND MONEY

Engineered attachment points don't interfere with the functionality of the tools, and are more durable than simple "add-ons" that require frequent maintenance or replacement.

## BEAT THE STATISTICS

About 70% of drops happen during the exchange of the lanyard from one tool to another. The Snap-on Tools@Height system features independent tethering, which means each tool is attached to its own lanyard. Minimizing exchanges reduces the likelihood of drops and increases safety.

## MINIMIZE RISK

Independent tethering also allows the tool to be removed from and returned to its holster or pouch using just one hand. Safety is improved by allowing the user to maintain the critical "three points of contact" when working at height.

## RETAIN CONTROL

Our modular approach means you can configure the tools/holsters based on a user's personal preference, while providing a system that meets your safety standards.

See what the most comprehensive tool drop prevention solution in the industry can do for your team's safety and productivity by contacting:

**John R. Tremblay** | Power Generation & Utility Market Manager  
413-519-3380 | [John.R.Tremblay@snapon.com](mailto:John.R.Tremblay@snapon.com)

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## WHY IS IT OKAY WHEN IT'S ONE OF YOUR WORKERS?

**Don't fall victim to inadequate fall protection.**

Not following industry standards? One fall can have disastrous consequences for your workers, their families and your business. You can't afford to wait to change the way you look at workplace fall protection.



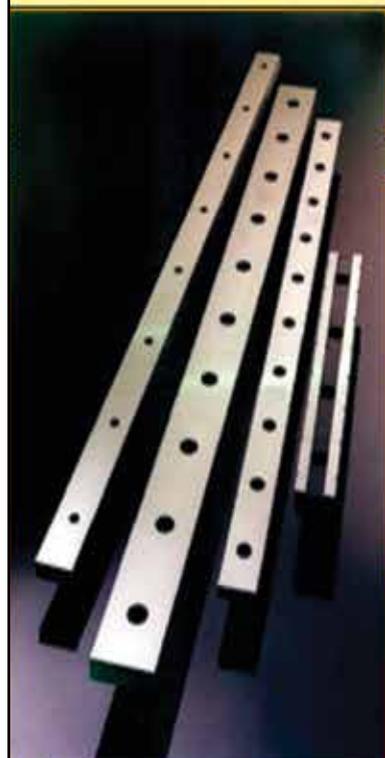
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