

New Die Protection Sensors

These sensors from SensoPart are directly compatible with Wintriss SmartPAC or DiPro1500 systems equipped with a DSI sensor interface. They are also compatible with other die protection systems.



SensoPart FG series infrared optical windows for detecting air ejected parts

This rugged self contained compact sensor can be placed extremely close to the ejection point to allow detection as early in the press stroke as possible. Three sizes are available: 40mm x 80mm – 80mm x 80 mm – 120 mm x 80 mm. The minimum object size detectable is .8mm, 1mm, and 1.5 mm respective to window size.

- Operating voltage is 10-30 vdc
- Signal output – pnp with adjustment for length of output
- Termination – M83 pin
- Protection standard – IP65

SensoPart FSEG 1A 32 light grid

Compact and rugged light curtain is ideal for detecting air ejected parts on power presses. Transmitter/receiver pair can be separated from 150 mm to



- 850 mm.
- Curtain height 100mm, 150mm, and 300mm
- Object sensitivity: 4 or 7mm
- Operating voltage is 24 vdc
- Signal output – pnp

- Termination – M12 4 pin transmitter, M12 5 pin receiver
- Protection standard – IP65

Affordable Vision System

The FA 45 object recognition sensor, first member of a new line of vision sensors from SensoPart, unites efficient image processing with simple handling and a favorable price.

Automation with classical image processing systems or all-purpose vision sensors is not everyone's cup of tea: the price too high, the handling too complicated. On the other hand, simple standard sensors are not suited for increasingly complex automation tasks. The consequence: automation



potential is wasted. The FA 45 from SensoPart now develops this potential. It is a custom-designed preconfigured

stand-alone vision sensor - the first truly industrial vision sensor with a very simple handling.

The first member of SensoPart's FA45 line is a sensor for the detection of objects. It compares objects and parts on the basis of patterns and contours (independent of their position), by analyzing differences in contours, contrasts and grey values within a defined area. Up to 32 objects and features can be checked and consequentially connected, thus enabling even complex detection tasks. A sorting function allows the detection and identification of various parts in any order and mix.

Thanks to these features, the FA45 object detection sensor may be used for a multitude of applications and branches. Examples are the presence verification of labels or marks, the check for completeness of mounting parts, the emptiness verification when

packaging parts, the feed position check of parts in vibratory conveyors, the print and label inspection on components, packaging and bottles or the detection of the position (X-/Y coordinates) of mounting parts, labels or marks, and many more.

In addition, the FA45 line includes a vision sensor for the recognition of colours and a code reader for DataMatix codes and the most important bar codes.

Simple handling, robust use

With the sensor's user interface which was specially developed for the FA45 line, startup can also be effected by users with no expert knowledge in only a few, intuitive steps. For configuration, the FA45 is temporarily connected to a PC or a notebook via the integrated Ethernet interface.

The SensoPart developers have attached great importance to an optimum suitability of the hardware for industrial applications: The FA45 has an integrated lens that is adjustable directly at the sensor, integrated LEDs

The FA 45 is the first truly industrial vision sensor with a very simple handling.

(white light or IR), a standard M12 connector and a compact aluminum casing (IP65/67). Thus the sensor may be used in nearly all industrial environments without requiring constructional modifications or additional components. For special requirements there is a comprehensive range of accessories, as e.g. external illuminations, a corner mirror, a protective case, etc.

Cost Justification for a Press Automation Control System

Press Automation Control Systems (PACs) significantly impact pressroom productivity. These systems provide multiple benefits:

- Significant reduction in die damage
- Increased press uptime
- Reduction in direct labor
- Improved part quality
- Less machine maintenance
- Longer tool life
- Faster setup time
- Potentially increased press speed.
- Improved plant safety
- Eliminate manual data collection and provide a realistic view of plant efficiency.

The impact of these benefits is generally obvious to the manufacturing staff but require quantification for the financial decision makers.

Payback on this type of system is generally expressed in weeks – not years!

Getting a grasp on current costs is an important first step.

Reduction in die damage

Costs associated with die damage are generally available in a broad form; namely, costs associated with the tool room and/or orders issued to outside tooling houses for repairs. What you really want for an accurate cost justification are the tooling repair costs associated with those machines and tools that you intend to apply press automation to. These will normally be the coil fed presses/tools as it's less common to apply automation and/or die protection to secondary operation.

Assuming the damage cost information is available it's prudent to estimate a reasonable high percentage, but not all, repair costs can be eliminated. Tooling damage directly related to double hits – part ejection failure, misfeeds, dropped or mislocated parts during transfer, air cylinders/cam failure, and slugging can generally be detected and prevented. Tooling damage related to setup error generally will not be eliminated.

Operations with 5 or more coil fed presses can often save \$25,000

or more per year in tool repair by installing a press automation control system.

Labor saving

The potential is huge! Consider one operator to run two presses, better yet, one operator for 3 or more. Job run lengths, press location, union rules, setup time and other variables affect what can be accomplished. Regardless; it almost always possible to run two presses with a single operator. Annual savings = the fully loaded hourly cost of an operator eliminated x 2080 hours x number of operators eliminated.

Increased uptime

An increase in uptime can be estimated. Die & press damage and its associated repair results in lost production time. If a tool needs to be removed for repair and a tool for the next job is not immediately available the press downtime may be significant. A simple estimate might include 2 hours of downtime for every unplanned tool repair that required the die to be removed from the press.

Reduced press damage

The potential for increasing uptime by reducing the potential for major unplanned press repair is also significant. For example; consider the lost production time due to a broken crankshaft. Most press automation control systems include load monitoring systems which act like a life insurance policy for the press. Overloading caused by setup error, shut height creep, excess material thickness and hardness can be dramatically reduced. This not only increases run time but directly reduces maintenance costs. A reasonable means to quantify this is to take the average of press repair costs over three years and multiply by 50%.

Longer tool life

An increase in tool life is a direct result of reducing the number of die crashes which is accomplished with the die protection part of the press automation control system. In theory a load monitor can be used to optimize grind schedules. Tonnage required to produce a quality part tends to go up

as the tool wears. This is not a linear function. For example: a given die can be removed after 100,000 hits and only require a grind of .005" to be sharp. Running to 120,000 hits may increase grind required to .015". In this case the extra 20,000 hits cost you .010 in grind life. Monitoring the point at which the slope of the tonnage curve changes potentially allows the user to optimize grind schedules; thereby, increasing tooling life. This may prove to be a difficult area to quantify. The increase in tool life will need to be an estimate based on your expectation for the increased life of the tool and its original cost.

Improved part quality

Part quality is easy to quantify when a known, recurrent, and measurable quality problem exists. If you've had to visit a customer site to sort a shipment with rejects you're acutely aware of how the cost of quality problems mounts up. Advanced press automation control systems not only feature die protection but also offer analog sensing for in die measurements. This allows users to implement "in die" quality control systems. Measurements can be made on hole diameter, bend angles, part thickness, etc. When at out of acceptable range condition is detected the system can immediately stop the press. Alternatively the user can require that a certain recurring number of out of range conditions must occur before stopping the operation. A shift register can allow the operation to continue and eject bad parts into a separate container at the end of the tool.

Shorter setup times

Press automation control systems can automatically process a number of setup variables. Parameters such as: shut height, press speed, feed length, feed speed, feed angle, pilot release timing, part blow off timing, tonnage limits, die protection requirements, etc. may be stored to local memory. Once a new tool is entered by the operator these values are directly loaded and executed. This may reduce

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Dorner LPZ Adjustable Angle Conveyor Application Success

Elite Mfg. Technologies purchased three Dorner conveyors to improve their efficiencies through automation.

Elite was spending time manually removing scrap-filled buckets from beneath their equipment. The once-an-hour task was not only tedious, but becoming a safety concern when the



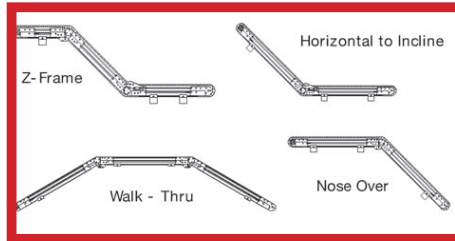
bucket sometimes required two people to help lift the bucket and discard the scrap. To prevent potential injuries and lost productivity, Ramiro Aranda, the plant manager, installed Dorner conveyors to automate the process.

Elite installed two LPZ Series conveyors, which offer two pivot points to adjust the conveyor incline at different angles. This provides flexibility to adjust to different heights, depending on the type of scrap bucket. Additionally, this LPZ Series has a small enough pulley diameter to fit beneath the scrap-metal discharge chute. Other conveyor companies suggested that Elite dig a hole in the concrete underneath the chute, which is 7-inches from the ground; however, Dorner's low profile conveyors easily fit underneath the chute.

LPZ Series Specifications:

- Belt widths: 3.75" - 48"
- Lengths: 3' - 99'
- Pulley diameter: 3"
- Load: 1000 lbs. maximum
- Belt Speeds to 600 Ft/min
- Range of angle:
- Flat Belt 0°-35°
- Cleated Belt 25°-60°

- Aluminum frame with dual T-slots
- Features & Benefits:
- Adjustable Angle-Knuckles
- Quick rack & pinion belt tensioning
- Optional V-guided belts - no tracking adjustments
- Belt tension indicator for preventative maintenance
- No painted surfaces
- Two t-slots for easy accessory mounting
- Quick belt change on End & Center Drives
- Maintenance free pneumatic cylinder belt tension on Center Drive models.



Configurations



Avoid Light Assembly Health Problems With Lifts From Southworth

Light assembly work may not require heavy lifting, but in many cases, it does involve awkward positions, reaching, bending, stooping, and other repetitious manual functions that can lead to cumulative trauma disorders.

While a great deal of effort and attention has gone into programs designed to help reduce injuries from even light lifting activities, back injuries and other trauma related to lifting and improper work positioning are still the number one cause of lost

(Light Assembly, Continued)

time and insurance claims.

The right answer to the problem is to eliminate lifting, bending and stretching and lifting-related activities as a regular part of any factory job.

Statistics show approximately 5 million workplace injuries occur in the U.S. every year. Almost one-third

Back injuries and other trauma related to lifting and improper work positioning are still the number one cause of lost time and insurance claims.

of these are back injuries caused by lifting. These injuries result in direct costs ranging from \$20,000 to \$30,000 per claim, plus the indirect costs of lost productivity and increased insurance premiums. For this reason, the elimination of lifting has become important not only from the standpoint of worker consideration, but also as a cost-saving imperative for industry.

Production Resources Incorporated (PRI) can help you reduce or eliminate lifting-related injuries through the use of simple and inexpensive mechanical lifting and positioning equipment.



(Cost Justification, Continued from Page 2)

setup from 5 to 15 minutes depending on the situation. You'll need to add the loaded hourly cost of the setup man + the uptime run rate for the press x the estimated time saved per setup then multiply the # of setups on the press. You may greatly benefit by taking a video of a typical setup to determine how much time is taken on tasks that could be automated with the PAC.

Increased press speed

Obviously machines must be equipped with a variable speed drive or so modified. Frequently we find that speed limitations are imposed on a given job due to the fear of crashing

a die. With the right die protection in place the speed can be increased knowing that press automation control is keeping a watchful eye. An increase of 10% or more in these cases is very realistic.

Improved safety

A press automation control system must be integrated with appropriate point of operation safeguarding devices. Regardless; the PAC functions greatly reduce the need for employees to access the point of operation. Die protection reduces die crashes and the risk of fragmentation injuries. This benefit may be difficult

to quantify but it's accepted by all that safer work places are more productive.

Reduced data collection time and improved accuracy

Connecting your press automation control to a data collection software network will produce several benefits. The PAC knows if a machine is running or stopped, how fast it's running, good parts count, & bad parts count and will report this information to the data collection system in a timely & unbiased fashion. If the machine is down for a reason unknown to the PAC it will generally require an operator to enter a downtime reason. Direct cost saving results from a reduction in labor costs to manually collect, collate, and distribute data. Additional savings are likely to occur as a result of having more accurate and timely data. If you have a person spending 4 hours per day dealing with data collection tasks @ \$20/hour you'll save \$20,000 year.

Software packages vary but the best versions will generally allow you to calculate true "OEE" operating equipment efficiency. This information will allow you to make decisions that maximize the use of your assets. Some of the software tracking systems will allow you to view the machine status from a remote workstation; thereby, saving supervisory time.

PRI can provide you with a custom payback, ROI, and/or present value calculation based on your actual data.

Payback example for 6 automatic presses

Yearly Savings	Y1	Y2	Y3	Y4	Y5	Y6	Y7
Reduced Die Damage	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Labor Savings—3 operators x \$30K/yr	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000
Reduced Press Damage	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Increased Uptime—300 hrs x \$.05 per stroke x 60 spm	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000
Longer Tool Life	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Better Quality—Reduced Scrap	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
Faster Setup—5 min/ setup x 12 setup/day x \$20/hr	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Higher Speeds	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Improved Data Collection	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
Total Savings	\$226,000	\$226,000	\$226,000	\$226,000	\$226,000	\$226,000	\$226,000
<i>Equipment Cost—6 presses</i>	<i>\$102,000</i>						
<i>Installation—6 presses</i>	<i>\$36,000</i>						
<i>Data Collection Software</i>	<i>\$20,000</i>						
<i>Computer & Cabling</i>	<i>\$7,500</i>						
<i>Total Capital Costs</i>	<i>\$165,500</i>						
<i>Payback in Weeks</i>	<i>38.08</i>						
<i>ROI</i>	<i>122%</i>						

FYI

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