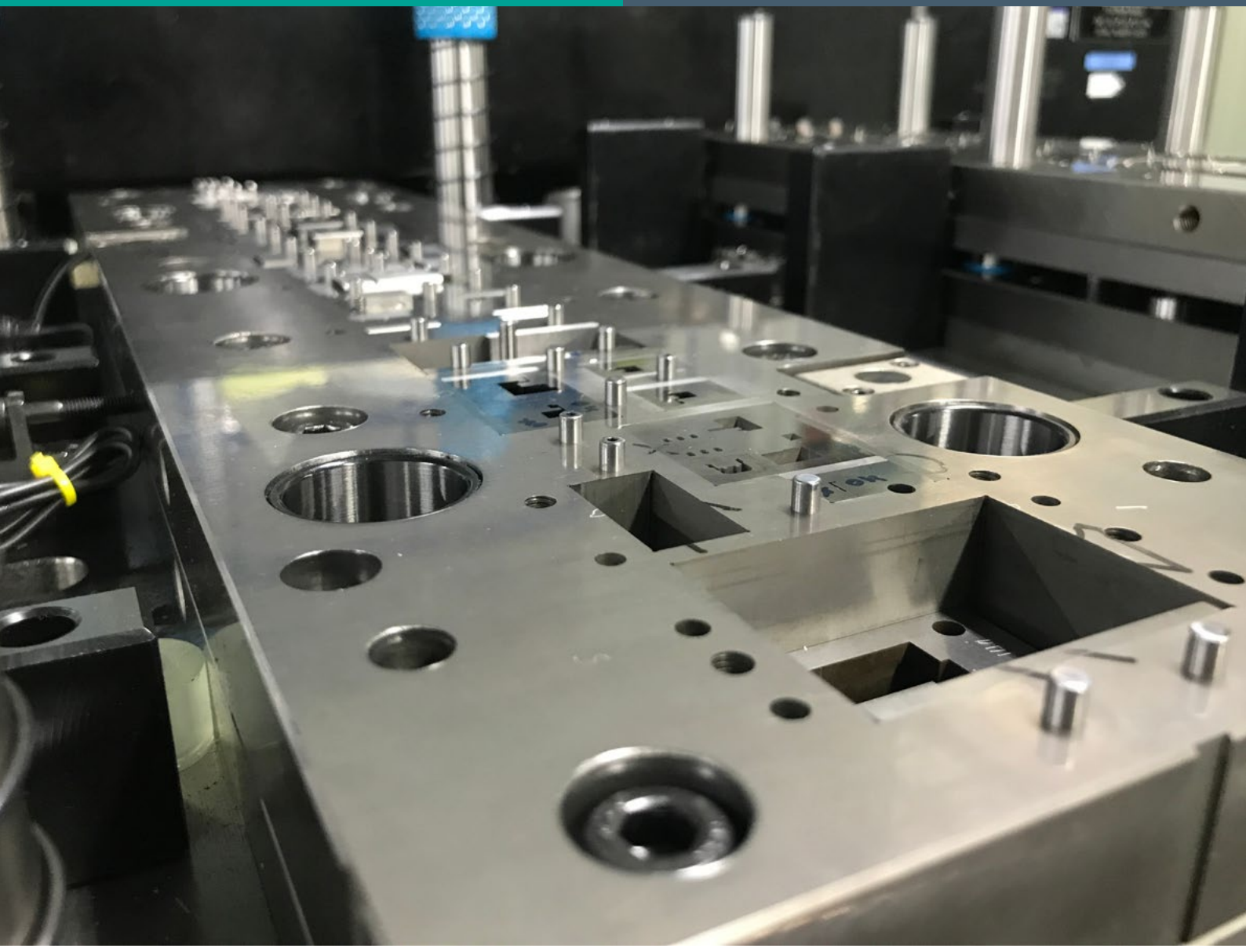
Verifying Small Part Ejection in Stamping Presses

R305 Retroreflective Area Sensor Verifies Die Clearance Before Each Downstroke

At a Glance

- Compact retroreflective area sensors scan the press ejection area
- Reliable detection of parts as small as 2 mm
- Excellent resistance to oil and lubricants
- High-power light source penetrates contamination, providing longer machine run times
- High-performance, economical alternative to light curtain scanning

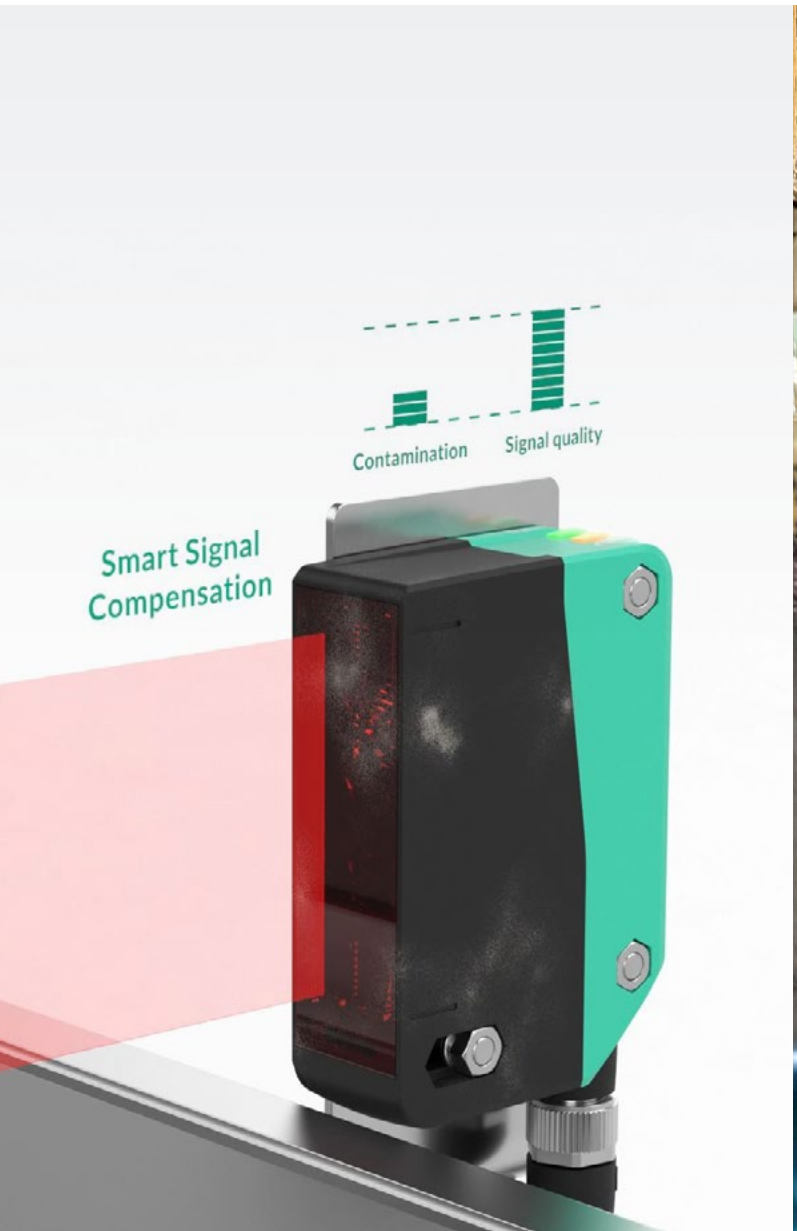


The Application

In high-speed metal-forming operations, stamping presses can produce hundreds of parts per minute. Ensuring proper ejection of workpieces and scrap before each downstroke is critical to preventing die damage, reducing downtime and increasing equipment effectiveness.

The Goal

Retroreflective and thru-beam photoelectric sensors have long been used to verify part ejection. However, detecting small components, or thin, flat parts is a challenge for single LED technology. Small parts often do not block sufficient light to trigger detection. Additionally, the presence of cutting fluids, lubricants, or other contaminants can scatter or absorb light, reducing an optical sensor's reliability. The goal is to address these limitations and ensure reliable ejection verification, even for the smallest parts in environments where oil or other process fluids are present.





The Solution

The R305 retroreflective area sensor effectively addresses the toughest press room sensing challenges. Its Smart Signal Compensation automatically adjusts for lens or reflector contamination. High-resolution scanning detects ejected parts as small as 2 mm and delivers an ultra-fast 1 ms response time. Built to withstand harsh manufacturing conditions, the R305 offers flexible mounting and alignment and performs reliably across a wide detection range: up to 4 m in standard mode or 2 m in high-resolution mode.

The Benefits

Smart Signal Compensation significantly reduces the frequency of lens and reflector cleaning, minimizing maintenance-related downtime and supporting higher production yields. Accurate detection of even the smallest parts further increases uptime by eliminating the need for quality-related parts sorting. Additionally, Easy Alignment Mode and Auto-Teach simplify installation and reduce setup time, and individual beam blanking allows exclusion of interfering objects in the detection zone, making the sensor adaptable to complex metal-forming applications.

Technical Features

- Fast, 1-ms response time
- 60 mm scan-window height
- Smart Signal Compensation automatically adjusts for oil build-up
- Easy Alignment Mode for quick setup
- Space-saving design fits in tight spaces



For more information, visit: **pepperl-fuchs.com/px-r305**