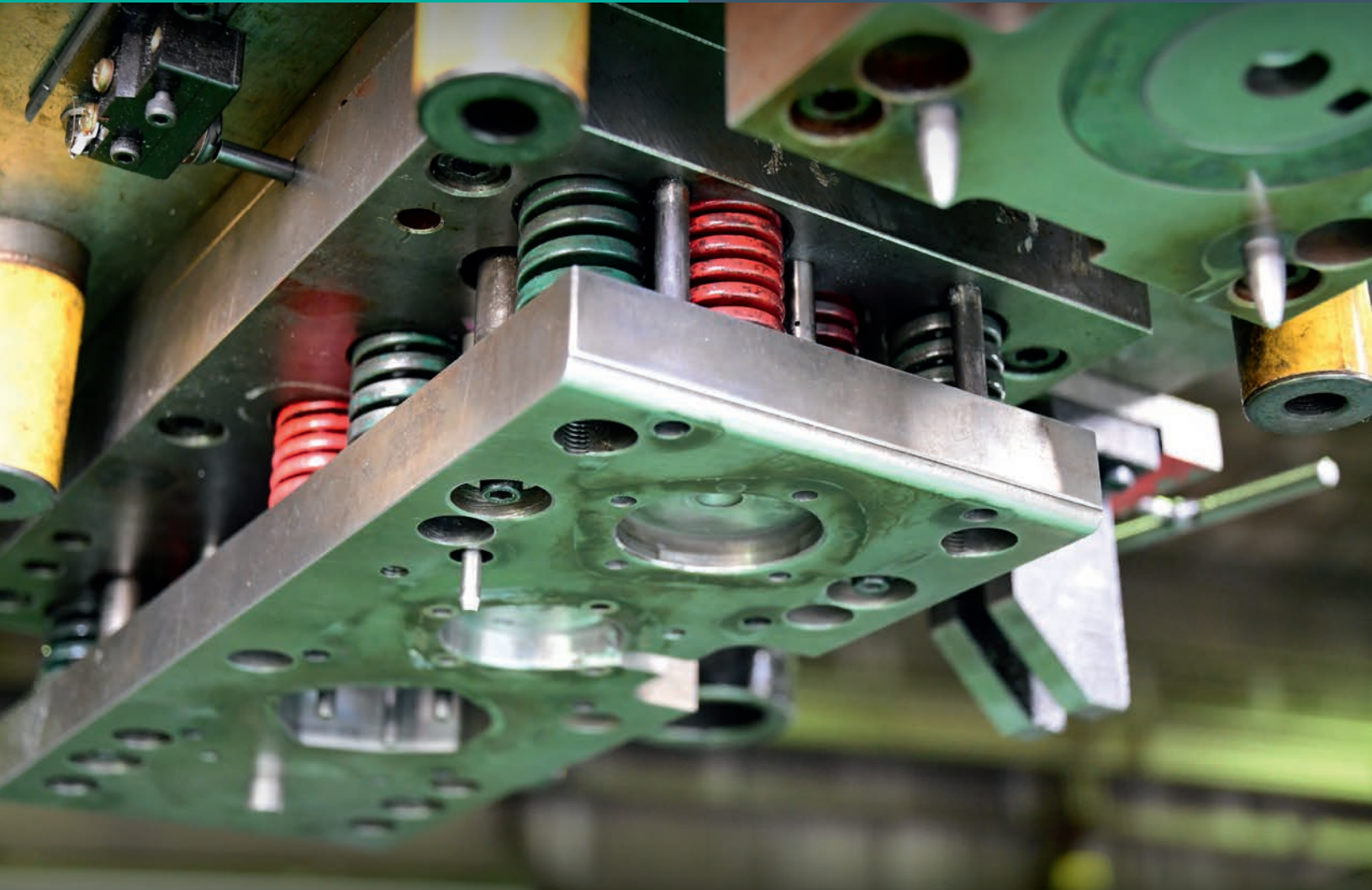


# Detecting Broken Punch Tooling in Press Dies

The VOS2000 2-D Vision Sensor  
Ensures Part Quality

## At a Glance

- Combinable vision tools enable several inspection tasks to detect broken tooling
- High resolution and focal length are ideal for inspecting damaged punches
- Integrated LED lighting ensures optimal punch hole scanning



## The Application

When stamping a sheet or blank, the punch tooling can break. See Fig. 1. Such breaks are often difficult to detect directly, as the punch is either buried deep in the die with no clear view, or it immediately retracts above the stripper plate after the downstroke. Scanning the finished part is the best method to ensure that a structurally sound tool has formed the intended punch holes. Vision sensors distinguish between good and bad parts by comparing the freshly stamped part to a stored "master" image. See Fig. 2

## The Goal

To ensure a workpiece containing multiple punch holes is properly punched, variables such as the blank dimensions, punch hole diameter, accuracy requirements, and sensing distance will determine the best scanning solution.

## The Solution

The VOS2000 2-D vision sensor from Pepperl+Fuchs with a resolution of 1280 x 960 pixels and a focal length of 8 mm is the ideal solution for this inspection task. The combinable vision tools of this sensor enable feature detection, completeness checking, mechanical focus adjustment, and object position checking which are critical for detecting broken punch tooling. The integrated LED lighting of the VOS2000 2-D vision sensor is critical for camera-based evaluation and ensures optimum punch hole scanning under the most challenging conditions.

## The Benefits

With the VOS2000 2-D vision sensor, damaged punches can be quickly detected and the press stopped before improper stamped parts are mixed with good parts.

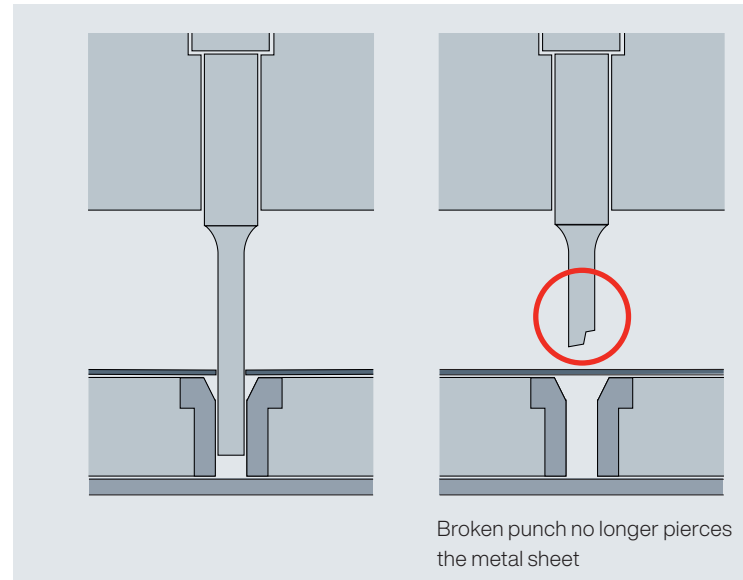


Fig. 1

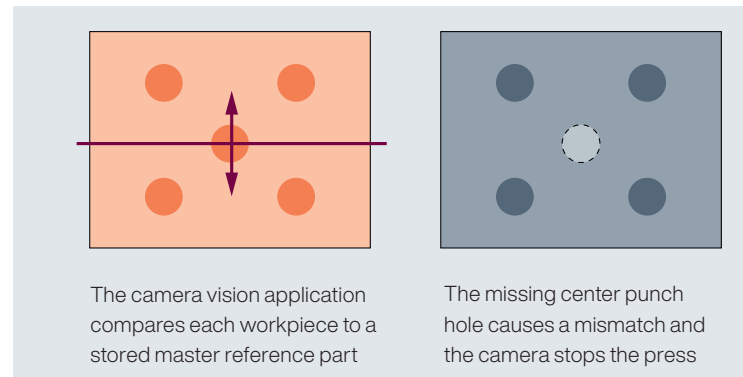


Fig. 2

## Technical Features

- Wide range of detection tools for flexible inspection tasks
- Combinable vision tools for feature detection, completeness checking, code reading, text recognition, and object position checking
- 32 Jobs on-board can be saved
- Integrated illumination
- Mechanical focus adjustment allows camera to be mounted in various positions
- Easy integration with flexible programmable data output

