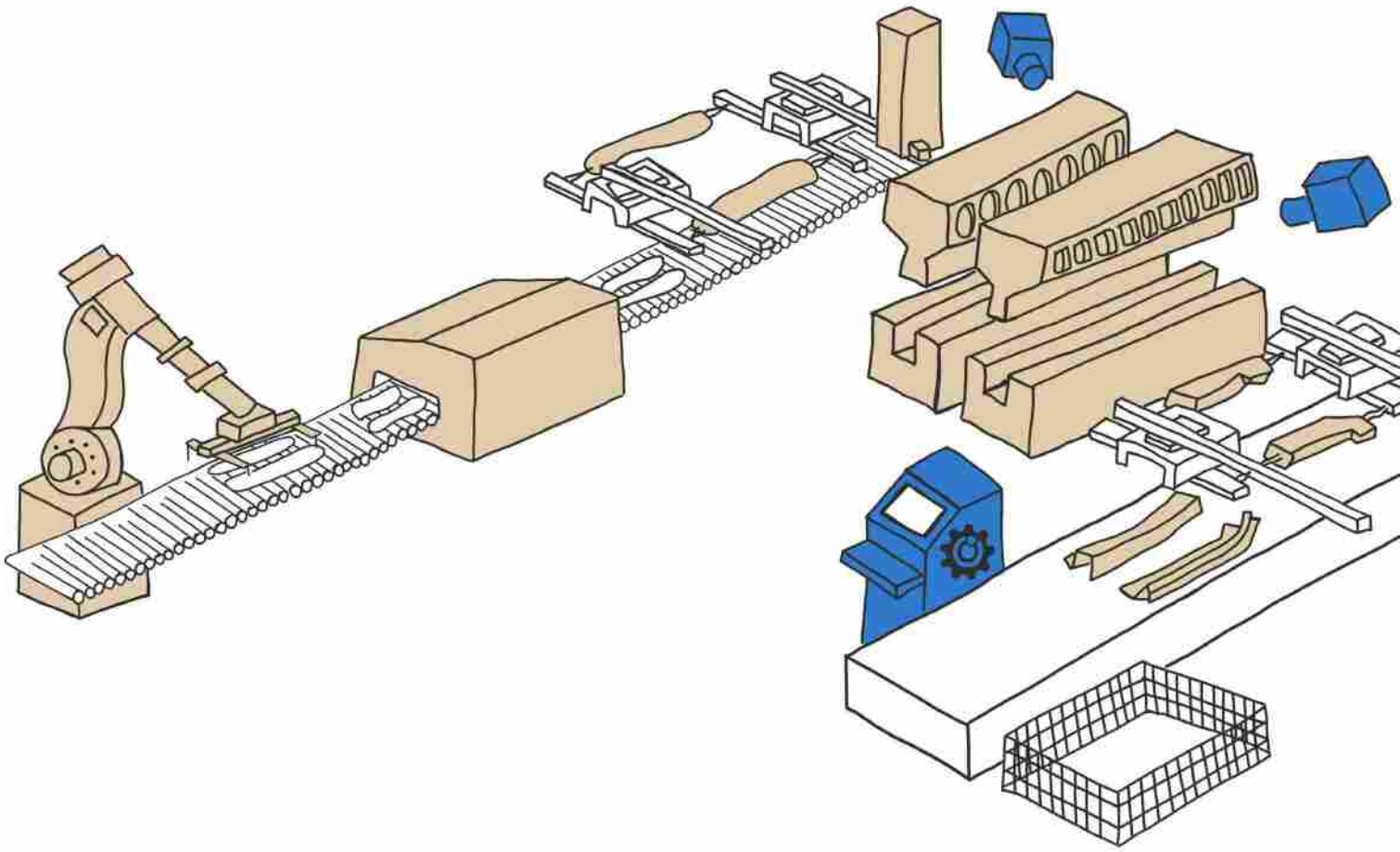
HOT

Heat
Over
Thermography

#01



Vision Online

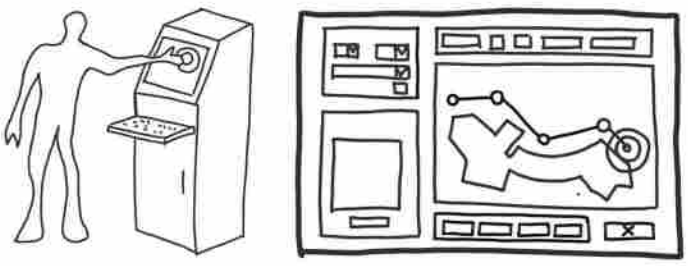
Added Value Machine Vision

User interface

The graphic user interface was designed to provide **maximum power** combined with **simple operation.**

- Touch Panel, no need for programming PC or any other peripheral devices.
- Creation of new recipes and references.
- Graphic editor for control tools.
- Administrator and user access levels.
- Works with one press if molds operated separately.
- Access to data history and help documents.

Easy graphic creation and edition of references



visualization of relevant data and images for each cycle

Communication with the press

Real-time communication is provided over PROFINET.
Data from the press and the furnace are registered for every cycle:

- Cycle time
- Time in air
- Cooling time
- Press force
- Cushion force
- Water temperature and flow
- Furnace temperature
- Remaining time
- O2 and CO2 values

Data structure and saving

Complete data for every cycle is registered in a SQL Server Database and replicated in the plant server. Adaptions to different data base structures are possible.

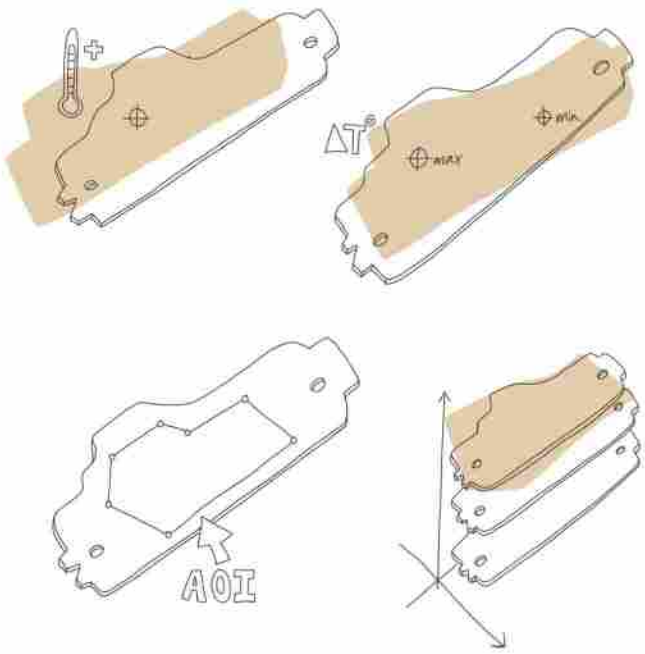
Desktop application

Production data is available over a desktop application,
connected to the data server, which permits:

- Access to the images of each production.
- Access to the thermografic data of each cycle of the production selected.
- Filtering and requests in the DB.
- Export of information to Excel for statistical treatment.

Options

- Higher resolution thermographic cameras.
- Additional thermographic camera at the furnace exit.
- Additional thermographic camera for finished parts at unload conveyor.
- Thermographic cameras with different wave lenghts according to precision requirements for hot parts.
- Position correction for robots for blank loading at the destacker.
- **CQI-9** module for **Heat Treat System Assessment.**



Required controls for Thermographic inspection and analysis.

"**In-Feeding**" image acquisition of blank and finished parts temperature data for statistical analysis

Thermographic control module:

HOT offers an **"in-Feeding"** inspection that permits data acquisition and control just in the moment the blank is positioned in the mold and previous to the stamping process itself. It also allows part control just when the part is expulsed from the mold.

The main advantages of using a thermographic system inline are:

- Blank temperature data exactly from the moment of pressing.
- Temperature distribution of the resulting part.
- Maximum and medium temperatures of the blank or finished part, hot-spots or regions of interest.
- Registration and putting into relation of press data and inspection values.

Control tools:

- Hot Spots
- Max, median and percentage temperatures
- Poligon-formed Areas of Interest
- AOI and part tracking

Technical Specifications:

- Image capture in the thermal infrared spectrum.
- Correction of emissivity according to material: Usibor, Boron or Ductibor.
- Defineable AOI for compound blanks: TWB, TRB or Patchwork.
- Calibration of equipment in special operation range of 50 to 900ºC.
- +/- 5% error margin on measurement values.
- IP67 protection class for all relevant components.
- Protective housing against physical shock and collisions.
- Fast and easy edition and creation of new references.
- Allows addition of distinct points like Hot Spots.
- Configurable control areas, regions of interest, for max and min temperature controls.
- Modification of tolerances and temperatures.
- Offline history for verifying changes and new references.

Monochrome camera control module:

Machine vision systems that assure perfect blank position in the mold are essential and a standard for all companies that use hot stamping technology.

Blank and centering pin inspection guarantees correct position during hot-forming process.

The main benefits are:

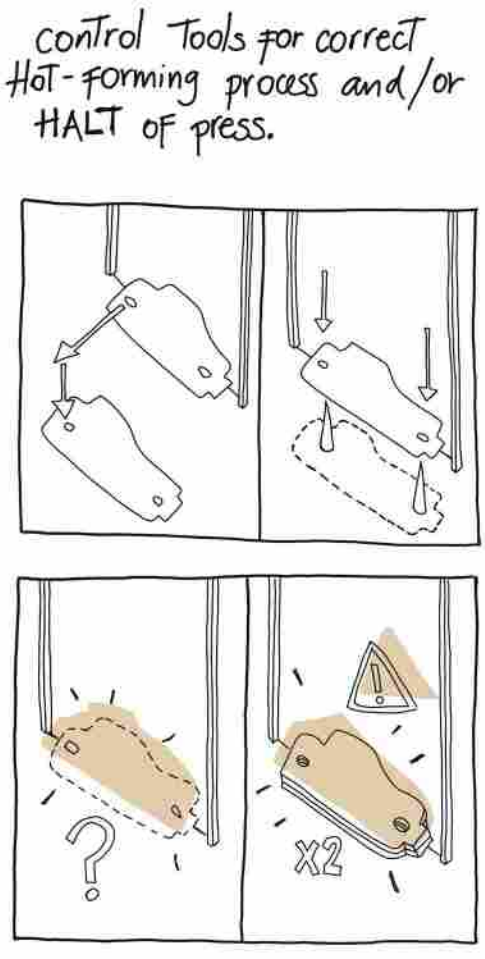
- Assuring a **high quality product.** Press only closes with blank in correct position.
- Improves line availability and productivity.
- Detection of broken centering pins.
- Eliminates 100% of human visual control tasks.

Control tools:

- Blank presence
- Centering pins presence
- Blank position
- Double blank format

Technical Specifications:

- Image acquisition with IR filters on high-sensitivity monochrome cameras.
- Two cameras for each mold offers optimal field of view while keeps press movement area clear and does not penalize press cycle time.
- Not affected by changes of ambient lighting conditions.
- IP67 protection class for all relevant components.
- Protection housings against mechanical impact.
- Fast and easy edition and creation of new recipes and references.
- Automatic recipe selection by communication with the press PLC.
- Addition of new controls, modifiable thresholds and tolerances.
- Offline change-log for verification of changes and new configurations.



I 4.0 ready !

Introduction

HOT machine vision system is a basic tool for **hot forming processes**, because it:

Guarantees the product properties and the production process stability.

Improves quality as it assures correct contact between blank and mold.

Raises productivity of serially produced references.

HOT unifies in one system all inspection processes that hot forming requires

Solution Hot (Heat Over Thermography)

HOT provides all the necessary components for the deployment in production lines:

Only one control station with a touch screen and graphic user interface for all relevant components.

Position control of blanks in the mold.

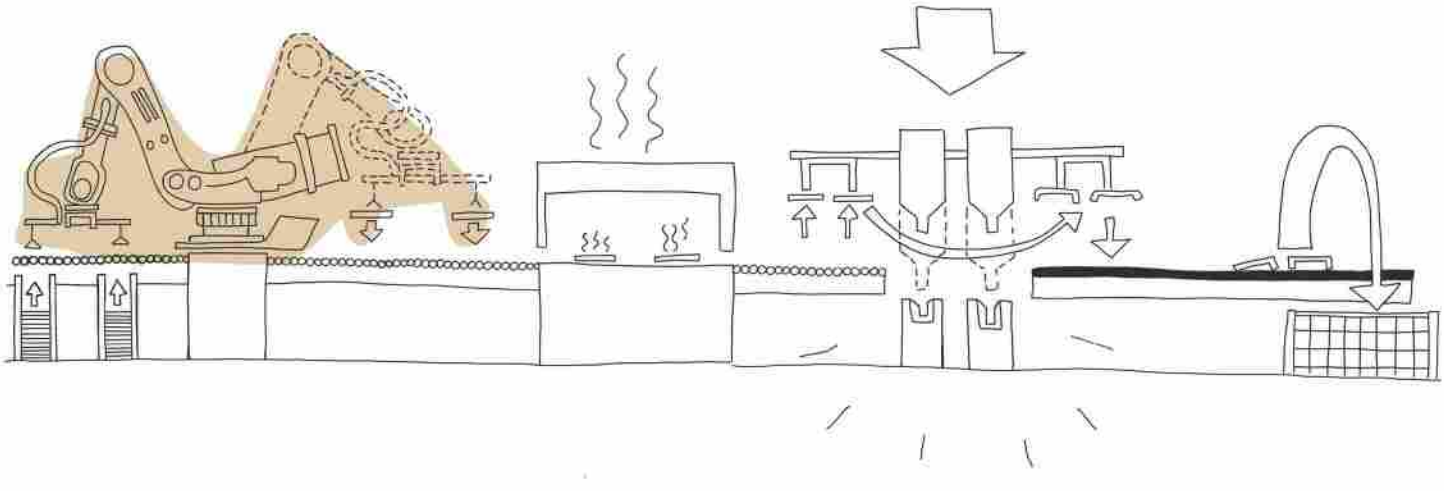
Thermographic acquisition system for **control of blank and pressed part.**

Image and data registration in data base.

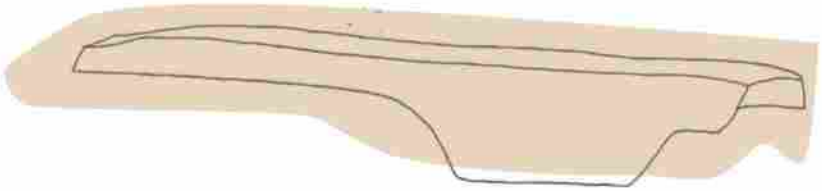
Data communication interface to plant server and remote data management application.

100% modular, adapts to Small, Medium, XL or Custom hot forming presses.

Aim: Quality control and productivity improvements for HOT forming presses



More information at:
www.visiononline.es/hot



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