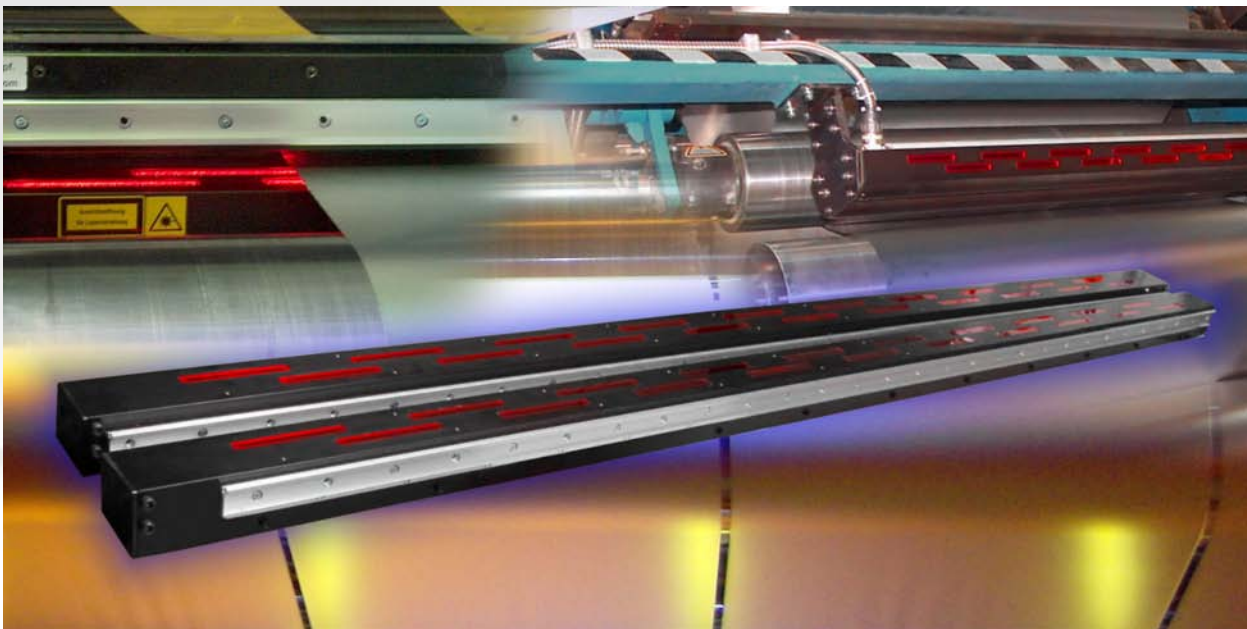**struck innovative systeme**

www.struck.de

ALUMINIUM FOIL INSPECTION IN SEPARATORS & SLITTERS

PHD Online Pin Hole Detector

FEATURES

- Online Pinhole Detection & Measurement in Aluminium Foil
- Installation in Separator / Slitter / Rewinder Machines
- 100% Coverage of Web Surface
- Provides Pinhole Data over Full Coil Length
- Measures Hole Sizes <15µm Diameter
- Width up to 2200mm, Speed up to 1400m/min
- Sophisticated Software Tools for Coil Analysis
- Comprehensive Data Archive & Coil Reports

PHD - Objectives

The special barrier property of aluminium foil is sustainably being spoiled by the occurrence of pinholes and perforations in the foil. Especially in the case of foil for dairy, pharmaceutical and food packaging applications even a few undetected pinholes often lead to considerable subsequent damage. The objective of PHD is to 100% inspect the foil for pinhole defects at the separating, slitting or rewinding process. For each coil the system provides a comprehensive analysis with size and density classification, pinhole counts and positions.
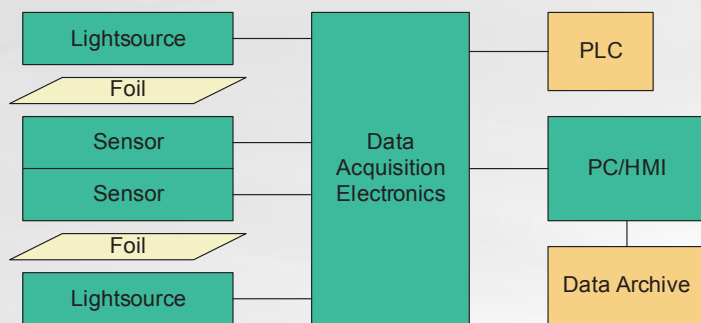
Basic System Structure

PHD - Components

The PHD system is typically built up of:
1. Upper/lower light cross bars
2. Center sensor cross bars
3. Electronics cabinet
4. Computer / HMI
5. Data archive

The light bars send out intense laser lines across the foil. The light is well focussed and homogenously shaped in order to achieve optimum measurement and counting results. The sensor bar receives the light passing through the pinholes and transmit the signals to the electronics cabinet. The analog information is digitized, preprocessed and transferred to a computer. The computer provides sophisticated data visualisation and analysis as well as connection to a remote data archive.

The system synchronizes with the machine PLC to:
• automatically start and stop the measurement
• operate speed independent
• handle order and coil data

PHD - Technical Data

|	
Light:	Laser diodes, visible red
Sensors:	Photo diode chips
Distance to foil:	Light bar 20mm, sensor bar 5mm (other distances on request)
Pinhole size:	<15µm diameter (<10µm optional)
Diameter classes:	typ. 5, software configurable e.g. 15-50µm, 50-100µm 100-200µm, 200-400µm, >400µm
Intensity classes:	typ. 10, software configurable (pinholes per m²)
Defect classes:	Single holes, roll holes, Pinhole cluster
Speed:	up to 1400m/min
Cross web resolution:	80mm
Down web resolution:	<1mm
Calibration:	Automatic, servo driven unit

Sensor Cross Bars in Operating Position

Sensor Cross Bars in Foil threading Position

PHD - Software Features

- Online travel map with color coded (pinhole/m²) density plot
- Counting results summaries

Sophisticated foil analysis tools (cross and down web profiles, zooming, selective size classes, trends)

- Visualisation of pinhole cluster details and roll holes
- Flexible system configuration of size classes, density classes, section length, cluster specification etc.
- Customized printer protocol and coil acceptance criteria
- Comprehensive coil attribute selection (order no, gauge, date etc.) to efficiently access archived coil data (full raw data set or summary data)
- Software can be installed in remote PCs to run visualisation and analysis from office
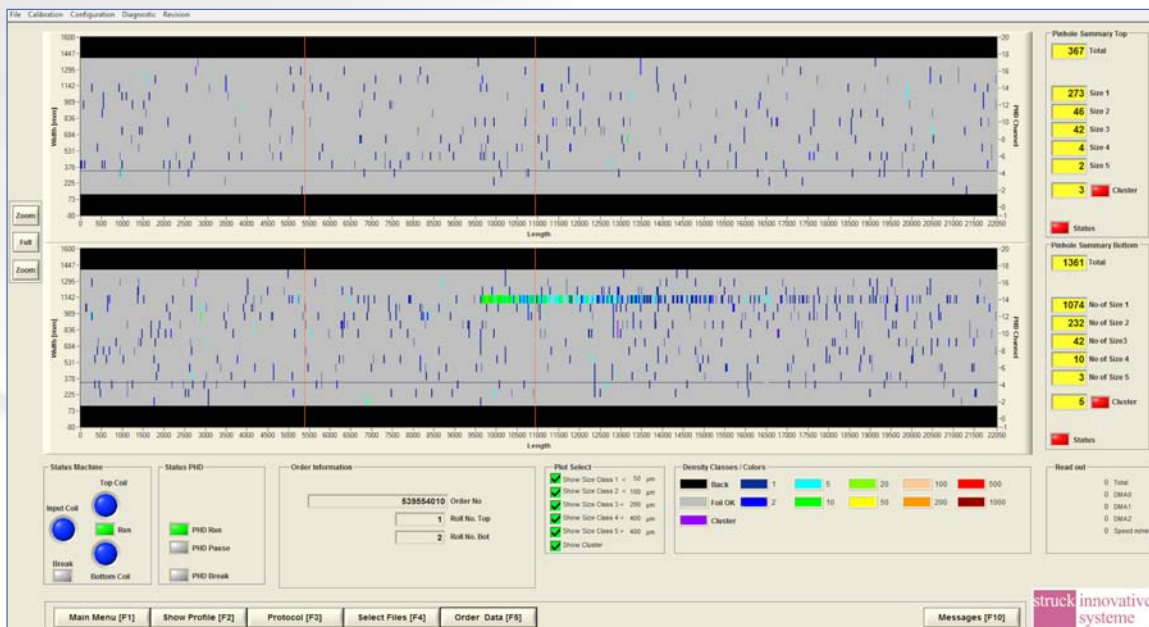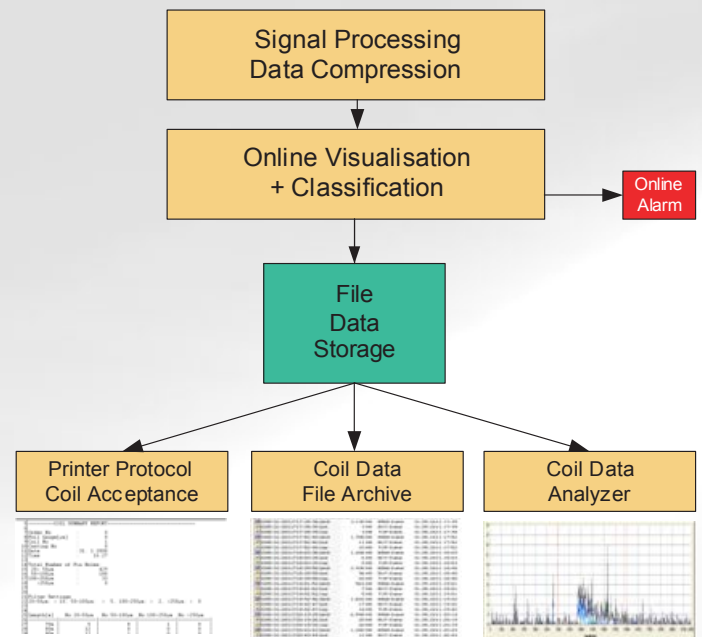
Operator Panel with Online Density Plot (pinholes/sqm), all Size Classes Enabled
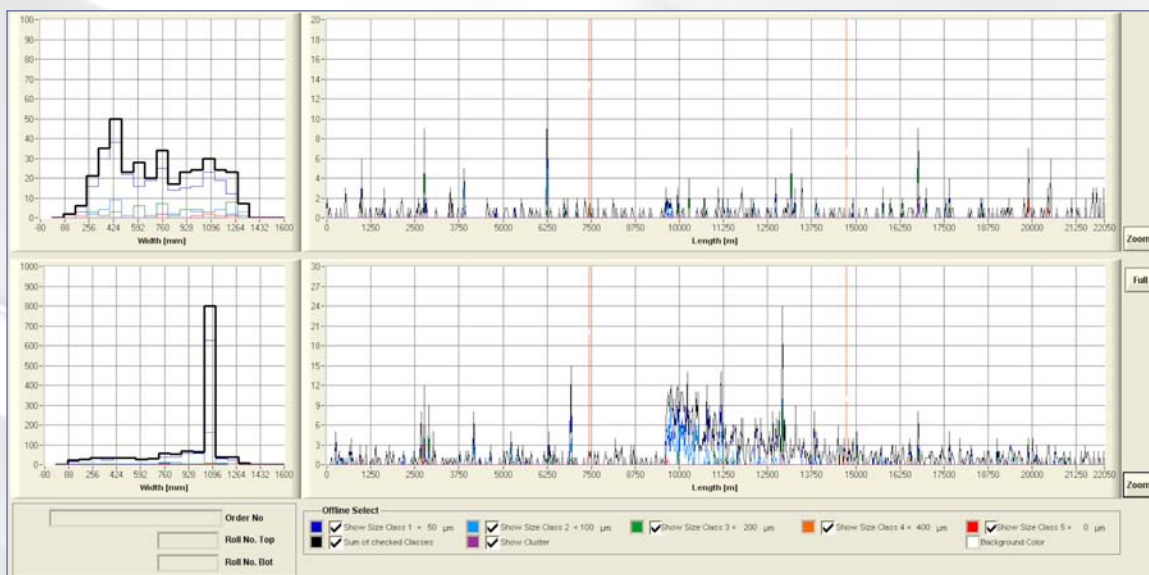
Example of Down Web and Cross Web Pinhole Distribution, all Size Classes Enabled
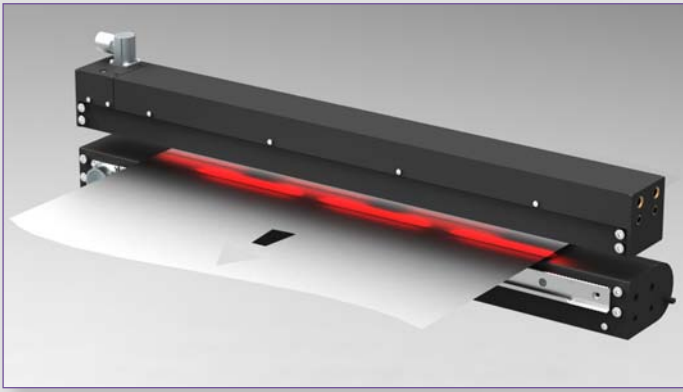
Example of Arrangement for Single Sheet Inspection.
Cross bars are adapted to web width.

PHD - Benefits

- Identifies finest pinholes in aluminium foil at separating / slitting / unwinding
- 100% coverage of the foil surface
- Achieves objective foil quality ratings
- Supports automated quality control procedures
- Monitoring of casting/rolling processes
- Generates coil data base (reports)
- Comprehensive analysis of archived data records
- Excellent price-performance ratio

It's like unwinding entire coils over your light table

Related Products

RMD Roll Mark Detector System
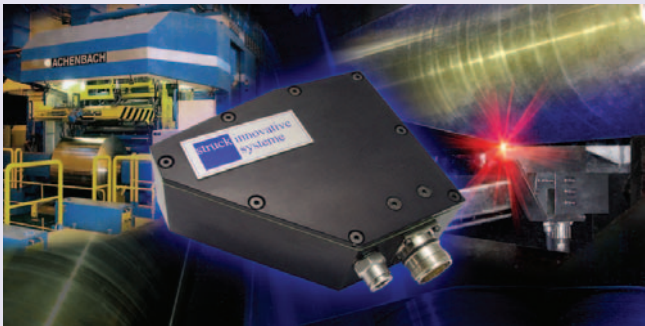
HIGHER YIELD, LESS SCRAP

Features
- Optical Surface Inspection
- System Installation in Foil Mills
- Detects & Classifies Periodical Work Roll Marks & Holes
- Surface Defect Size < 200µm
- Up to 2000m/min Rolling Speed
- Up to 2200mm Foil Width
- Adaptable to Various Foil Mill Makers & Models
- Permits Immediate Operator Reaction to Prevent Reject Coils

PIA Pin Hole Analyzer
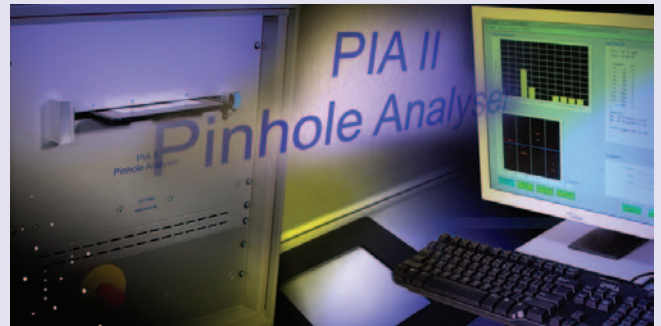
FAST & OBJECTIVE SAMPLE CHECK

Features
- Analyzes Aluminium Foil Samples
- Measures and Classifies Pin Hole Occurrence within a Surface Area of 100 x 100mm
- Statistical Product Quality Monitoring in Rolling and Converter Plants
- Supports Operators Visual Light Table Inspection by Objective Measurement of Pin Hole Counts,
- Diameter Distribution down to 5µm

GL ISO 9001
GL Systems Certification