Quality By Vision

SEAM 360

For Food, Beverage and Oil filters

Introduction to SEAM360 non-destructive seam inspection

Introduction SEAM360

The SEAM 360 is for automatic and non-destructive measurement of both seam thickness and seam length on each 0.7 mm of seam perimeter within 8 - 10 seconds (Ø62mm).

- SEAM360 is:
  - Only suitable for round cans with maximum outside seam diameter of max 156mm.
  - For aerosol cans you can only measure the "bottom" seam!
  - Measures simultaneously 2 seam parameters (seam thickness + seam height) on each 0.7 mm
  - Compared to measuring all seam parameters to only 2x or 3x points of seam perimeter with a destructive seam inspection system/method.

- SEAM360 non-destructive seam inspection allows you:
  - To reduce costs in combination with now 100% information about measured seam quality!
  - To perform frequent & fast seam inspection close to line (1x, 2x or more per 2 hours), similar to usual "visual inspection" (which could now be replaced by SEAM360).
  - Detailed seam "status" on each 0.7 mm of seam perimeter, versus only 2x or 3x (cut) points with a conventional destructive seam inspection.
  - "Early" detection of possible "seam problems" plus exact indication of location on seam, where you detected these possible "seam problems".
  - Investigate such "seam problems" with your destructive seam inspection on exactly the right spot of the seam perimeter.
  - Detect "Seam problems" as seam bumps/compound, broken chucks, seam gap, overlap changes, false seams & seamer head trend changes.

- In general, "seam problems" do occur only on a small stretch (1-2cm) of the seam perimeter:
  - Easily detected by SEAM360, but surely not so by destructive inspection methods, which only measure on randomly selected 2x or 3x points of the seam perimeter.

- SEAM360 does not replace your standard destructive seam inspection practice, needed for:
  - In-depth investigation of "detected seam problems" by SEAM360.
  - Verifying correct set-up of seamer during change-over.
  - Last but not least to comply to "industry prescribed" destructive seam inspection procedures (1x, 2x or 4x per 8-hour shift)".

- In combination with SEAMetal 6, it's possible to automatically import values* of seam thickness and seam length.
  - Values are more accurate and are tamperproof
  - GR&R rate of almost 100%
  - Faster than measurement with external gauges or micro meter
  - No more manual looking for highest and lowest value (FDA requirement)

    * imported values are the lowest, highest and average value of seam thickness and seam height

For example: one SEAM360 user reduced its standard destructive seam inspection procedures from 2x/shift to 1x/6 days and further to only when detecting possible "seam problems".

For more info & short demo movie, see: *https://industrialphysics.com/product/seam360-non-destructive-seam-inspection-for-beverage-cans/*

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Specifications

- Optical unit with auto centring and stepper motor.
- Resolution 5 microns.
- 2x graphs per can for both seam thickness and seam length,
- Showing SEAM360 Report after pre-selected series of measurements.
- For both parameters the following values are shown on graphs and in report:
    - Average value
    - Maximum value
    - Minimum value
    - Range
    - Standard deviation.
- Sample rate: every 0.7mm of the perimeter
- For round can diameter ranges of 30mm (48–78) and 110mm (48-158).
- Calibration gauge with calibration certificate from Quality by Vision.
- SEAM360 software for Windows 10 including SPC software (QbyV).
- Excluding PC, mouse, keyboard, monitor and printer; to be supplied by client.

Requirements:

- Compressed air at minimum of 6 Bar.
- Electricity: 230V 50Hz.
- Minimum specs for PC for proposed QbyV system:
    - Intel i5, 3,3 GHz CPU,
    - HDD / SSD 500GB,
    - RAM 4GB
    - at least 2x free USB 2 port besides ports for mouse, keyboard, printer and other
    - Windows 10
    - monitor, keyboard and mouse
- Table of 120 x 70 (L x W)

SEAM360 configurations:

- For round 2-piece and 3-piece beverage & food cans (max Ø156 mm), oil filters and aerosol bottom.
    - For round oil filters with some extra features and slightly different specs; upon request.

SEAM360 operation

- To start using SEAM360, operator takes pre-selected number of sample cans from the line.
- Operator selects corresponding standard, places 1st sample can upside down on SEAM360 measurement table, selects “measure” to start measurement & repeats this for other cans.
- After each can measurement below screen with 2x graphs (horizontal & circular) will appear on screen for both seam thickness (top side) and seam length (bottom side).
- If both graphs are OK, operator continues to measure the following sample can; if not fully OK, he can mark the place where the defect appears in the graph and check the can with a destructive inspection system.
- After finishing measurement series, a SEAM360 measurement report appears for evaluation, filing, back-up and/or (later) evaluation whether or not any further action.
- Also, the graphs of each measurement are stored in the database.
- With the new ***SEAMetal 6*** seam thickness and seam height values can be imported into report of the SEAMetal 6 destructive measurement. But only when the SEAMetal measurement is done directly after the SEAM360 measurement.

The 3 different versions of the SEAM360:

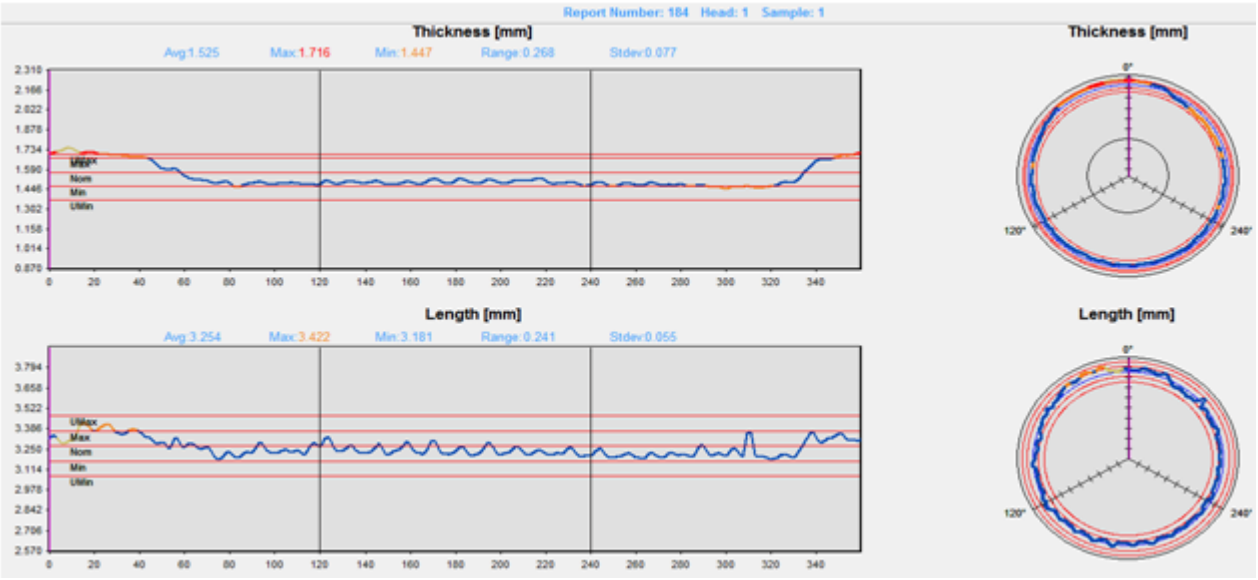
Food cans up to 156 mm

Beverage

Oil filters

Below info copied from PDF file "*SEAM360-sample graphs&report&SPC-8xbevcans-1xposition*"

Sample screen image after each can (seam) measurement



Sample SEAM360 report for 8x beverage cans each measured on only one side

Seam 360 report

********** Test **********

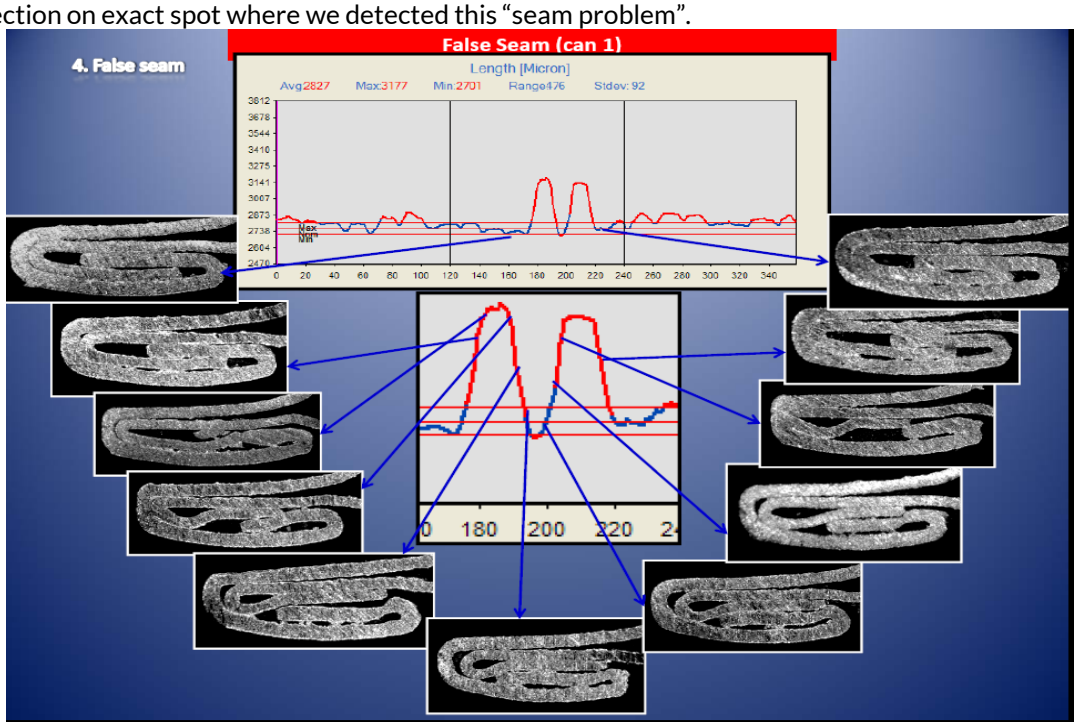
Product HERTOG **Shift** N/A
Line 7 **Operator** Jamie Barnett
Customer INBEV
Order REF: T. VERSCHURE

********** Quality By Vision **********

Report: 8
Date: 24/03/2012 10:15:07
Job Name: 202
Heads 8 **Sections:** 1

	Head	Sample	Thick. Avg [mm]	Thick. Max [mm]	Thick. Min [mm]	Thick. Rng [mm]	Thick. Stdev [mm]	Length Avg [mm]	Length. Max [mm]	Length. Min [mm]	Length. Rng [mm]	Length Stdev [mm]
Min			1.12	1.12	1.12			2.40	2.40	2.40		
Nom			1.17	1.17	1.17			2.55	2.55	2.55		20.00
Max			1.22	1.22	1.22			2.70	2.70	2.70		
Last calibration date:			23/03/2012					07/04/2008				
	1	1	1.161	1.214	1.122	0.091	0.021	2.53	2.598	2.416	0.182	0.049
	2	1	1.159	*1.227*	1.127	0.10	0.02	2.494	2.618	2.41	0.208	0.062
	3	1	1.179	1.214	1.139	0.075	0.018	2.498	2.607	2.419	0.188	0.049
	4	1	1.163	1.194	1.137	0.057	0.015	2.459	2.551	*2.387*	0.164	0.047
	5	1	1.179	*1.238*	1.129	0.108	0.029	2.484	2.539	2.405	0.135	0.035
	6	1	1.182	*1.291*	1.147	0.144	0.029	2.461	2.573	*2.369*	0.203	0.056
	7	1	1.162	1.186	1.136	0.05	0.013	2.513	2.582	2.434	0.148	0.047
	8	1	1.167	1.182	1.148	0.035	0.01	2.562	2.648	2.471	0.176	0.047
Report summary		Avg	1.169	1.218	1.136	0.083	0.019	2.50	2.59	2.414	0.176	0.049
		Stddev	0.0094	0.0353	0.0093	0.0355	0.0069	0.0347	0.0358	0.0305	0.0255	0.0078
		Max	1.182	1.291	1.148	0.144	0.029	2.562	2.648	2.471	0.208	0.062
		Min	1.159	1.182	1.122	0.035	0.01	2.459	2.539	2.369	0.135	0.035
		Range	0.023	0.109	0.026	0.109	0.019	0.103	0.109	0.102	0.073	0.027

Below info copied from PDF file "*Critical Defects Detection By SEAM360*" for the cases of “false seam” and “overlap too small”. Each copy shows the detected “jumps in 1x or 2x graphs, which indicate location of a “seam problem” with seam images resulting from measuring the “problem seam” with destructive seam inspection on exact spot where we detected this “seam problem”.



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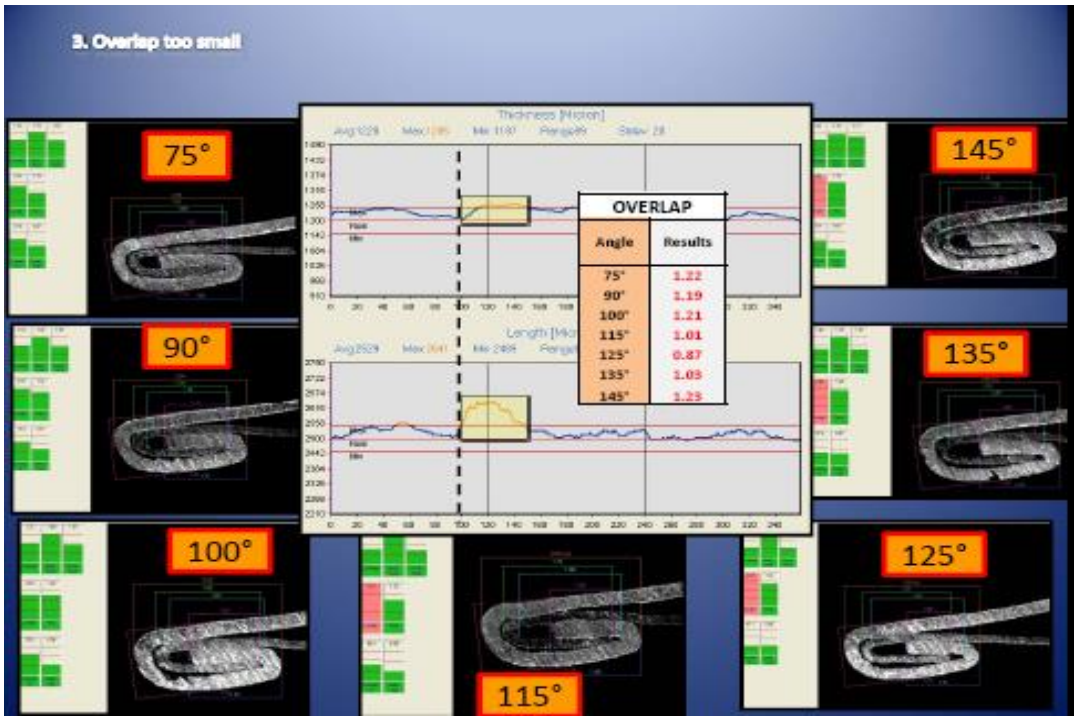

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