

APPLICATION NOTE

Welding seam inspection



CHALLENGES IN WELDING SEAM INSPECTION

- Welding seams exhibit a large variety of shapes and features which can hardly be described by classical means
- Normal and expected variations in the welding process and material need to be tolerated
- The highly reflective and irregular metallic surface renders as a complex texture in the image

VIDI SUITE

Deep learning based industrial image analysis software for automated inspection and classification

Human-like: Outperforms the best quality inspectors

Self-Learning: No software development required

Powerful: Tackles the impossible to program inspection challenges

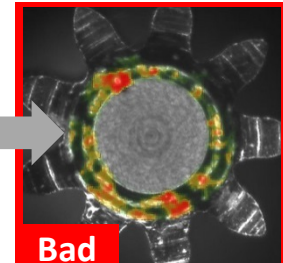
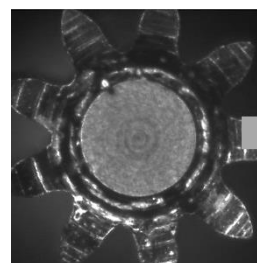
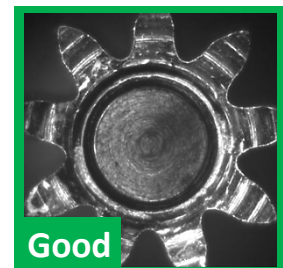
HOW DOES IT WORK?

It is as simple as 1-2-3:

- 1- Collect images of "known good parts"
- 2- Let ViDi Suite train on those samples and create its reference model
- 3- Proceed with testing

With ViDi Suite, the automated optical inspection of welding seams is now extremely simple.

The software algorithm trains itself on a set of known good samples which are presented in front of the camera and creates its reference model.



With its powerful statistical algorithm, ViDi Suite can train on a large amount of images representing all the process and image variations.

Once this training phase is completed, the inspection is ready to go. Defective welding seams can be reliably identified and reported.

COG WHEELS LASER WELDING

This example shows laser welded cog wheels. We provide our ViDi red tool with a representative set of good samples to train on the appearance of the acceptable welded part.

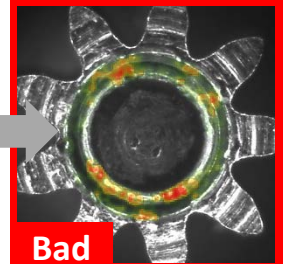
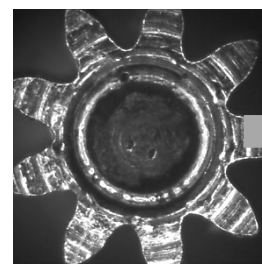
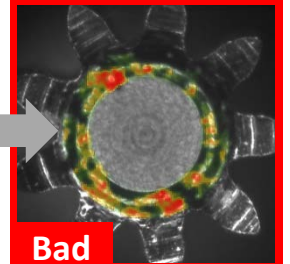
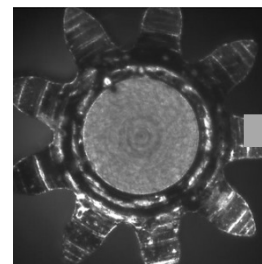
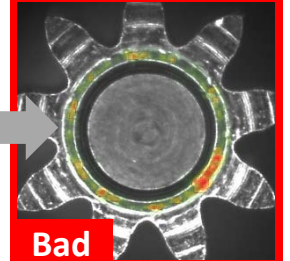
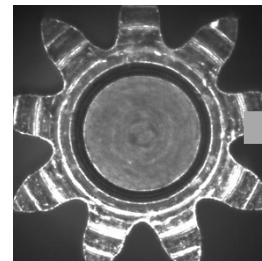


After the training phase is completed, the inspection process reliably identifies defects like the ones shown to the right.

Top: Missing welding

Middle: Overpowered welding

Bottom: Underpowered welding with holes in the welding seam.



INTEGRATION

Due to its self-learning abilities, ViDi Suite can be deployed quickly and easily on new applications without the need for any specific development

RESULTS & PERFORMANCES

Powerful Detection: Different types of defects can reliably be detected even when located on a highly reflective and irregular metallic surface.

Self-Learning: The welding seam inspection was conducted without any complex defect library but instead relied on a human-like approach - learn and apply – supplemented with an improved testing consistency and repeatability.

Quick & Easy: Learning from the known good samples was achieved in less than 20 minutes.

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