**seeing what matters**

Machined Part Inspection

CHALLENGES IN MACHINED PART INSPECTION

- Typically there are many different types of complex shapes

- Varying surface properties depending on machining tool quality and varying properties of the blank material need to be tolerated

- Some defects only show under a very particular combination of illumination, camera and surface orientation

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 to create its reference model
3- Proceed with testing

With ViDi Suite, the automated visual inspection of complex machined parts is now extremely simple.
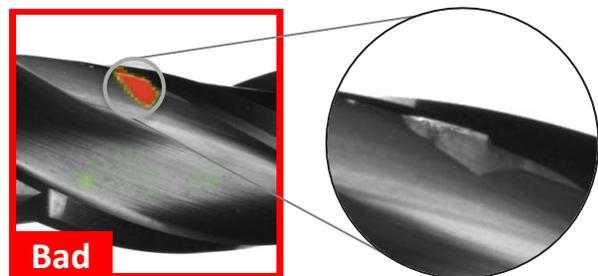
The software algorithm trains itself on a set of known good samples which are recorded while being rotated to create its reference model.

Good

Bad

Once this training phase is completed, the inspection is ready to proceed. Defective areas on the surface of the machined part can be reliably identified and reported. With the flexibility of ViDi Suite, the machined part can be rotated in front of the camera to perform the inspection without the need for precise synchronization between image acquisition and rotation.

ViDi red

SOLID CARBIDES

This first example shows cutting tools which are machined and coated. We provide our ViDi red tool with a representative set of good samples to train on the appearance of the cylindrical parts while rotating.

After the training phase is completed, the inspection process reliably identifies defects like the ones shown to the right.
Top: outbreak at the cutting edge
Bottom: small outbreak at the tip

Bad

Bad
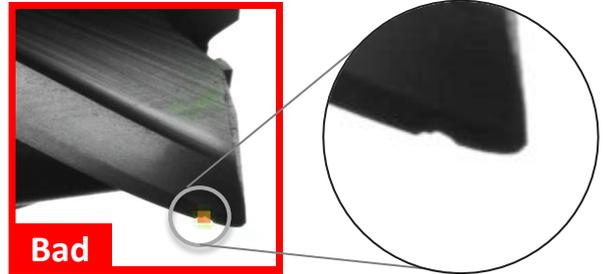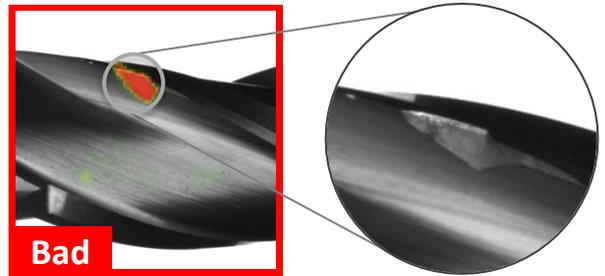
MEDICAL SCREWS

In a second example, ViDi red learns a complete medical-screw model. Again, the screw is rotated around the vertical axis when recording. This model is based on a collection of randomly selected good samples. It incorporates acceptable variations of the surface texture as well as the complex tip with its self-drilling undercuts.

During the inspection phase, the ViDi red tool reports defects anywhere on the surface like scratches, dents or stains.

Bad
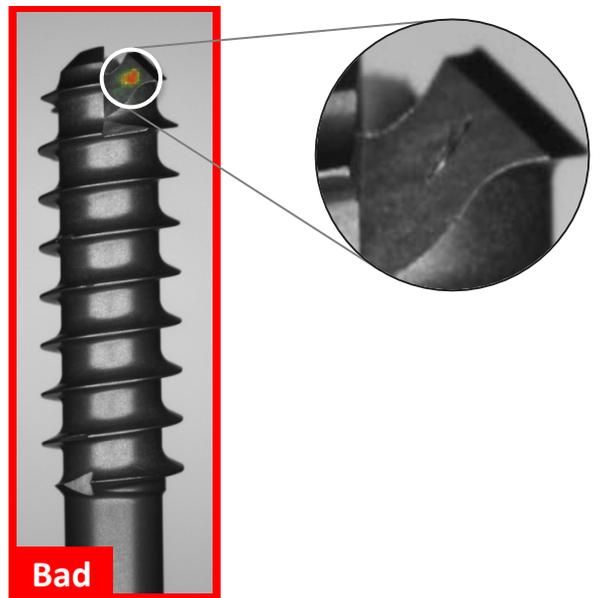
RESULTS & PERFORMANCE

Powerful Detection: Different types of defects were detected thanks to the rotation of the object in front of the camera.
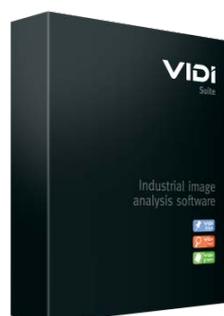
Self-Learning: The machined parts inspection was conducted without any complex defect library, but instead relied on a human-like approach - learn and apply – supplemented with an improved testing consistency and repeatability.

Quick & Easy: In both cases, learning from known good samples was achieved in less than 20 minutes.

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

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