

The logo for VIDI, featuring the word "VIDI" in a bold, white, sans-serif font. The letters are contained within a dark grey rectangular box that has a white dashed border, resembling a piece of fabric with a hemmed edge. The background of the entire slide is a fine, grey, woven fabric texture.

**VIDI**



Textile control ... seeing what matters!

# Challenges in textile inspection

## Complexity

The fabric pattern can be highly complex, and position variants can preclude the use of simple methods based on spatial frequency analysis.

## Natural variability

Visual appearance varies drastically due to the stretchable nature of the fabric and other variations such as yarn thickness.

## Countless forms and types

Defects in textiles come in countless forms and types and explicitly searching for all defects is not an option.



Garment



Aerospace



Protection



Sport & Leisure



Construction



Healthcare



Automotive

## As simple as 1-2-3



1. Collect images of "known good parts"



2. Let ViDi Suite train on those samples and create bits reference model



3. Proceed with testing and start detecting anomalies



ViDi blue is used to **find and localize single or multiple features** within an image. Be it strongly deformed characters on uneven fabric (OCR) or a pattern used for correct assembly; the blue tool can localize and identify complex features and objects by learning from annotated images.



ViDi red is used to **detect anomalies and aesthetic defects**. Be it weaving, knitting or braiding problems, incomplete or improper stitching or even printing alignment errors; the red tool can identify all of these and many more problems simply by learning the normal appearance of an object including its significant but tolerable variations.

ViDi red is also used to **segment specific regions such as defects or other areas of interest**. Be it a specific foreign material on a medical fabric or the cutting zone on lace; the red tool can identify all of these regions of interest simply by learning the varying appearance of the targeted zone.



ViDi green is used to **classify an object or a complete scene**. Be it the identification of printed pattern families, the wear-and-tear rates on textile samples or the separation of acceptable or unacceptable defects; the green tool learns to separate different classes based on a collection of labeled images.



## **ViDi Suite allows the automatic inspection of complex fabrics**

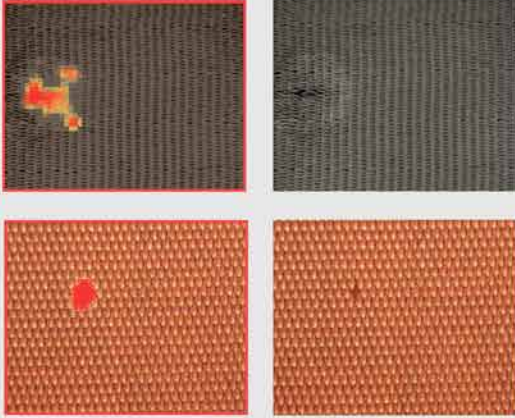
No tedious software development is required. The software algorithm trains itself on a set of known good samples to create its reference model. Once this training phase is completed, the inspection is ready to go. Defective areas on the fabric can quickly be identified and reported while tolerating large but irrelevant variations in its appearance. Best of all, there is no need for extensive defect libraries.

### **ViDi Suite is the first Deep Learning based image analysis solution dedicated to the machine vision market.**

This novel approach combines the human performance and flexibility in visual inspection with the reliability and consistency of a computerized system. It finally offers a way to precisely and repetitively inspect all sorts of natural and man-made textiles.

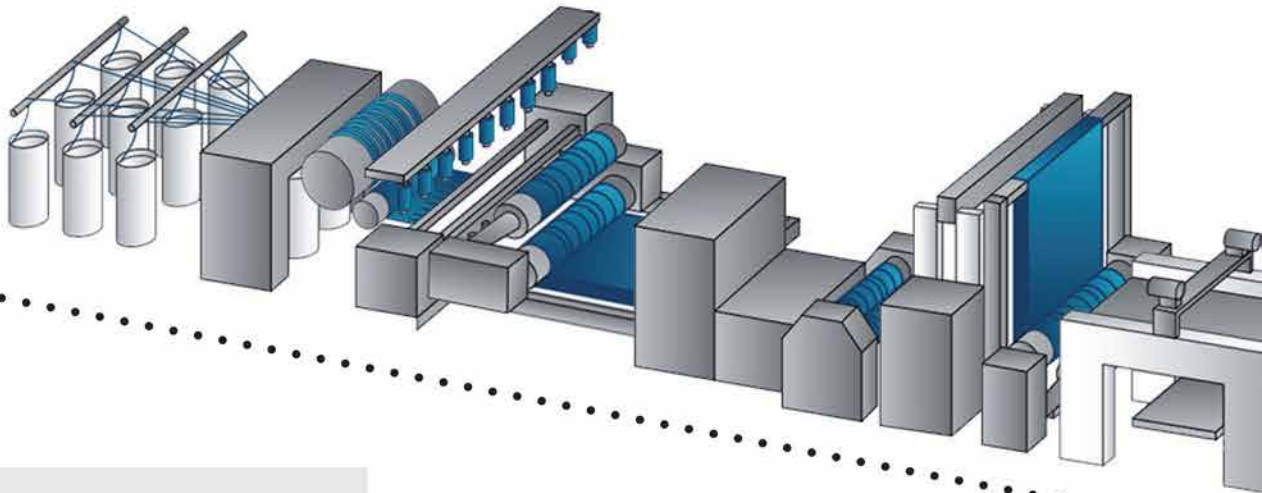
### **ViDi Suite radically differs from traditional Machine Vision solutions since it is:**

|               |   |
|---------------|---|
| Self-learning | No software development required  |
| Human-like    | Outperforms the best quality inspectors                                   |
| Powerful      | Solves hard to tackle or even impossible to program inspection challenges |



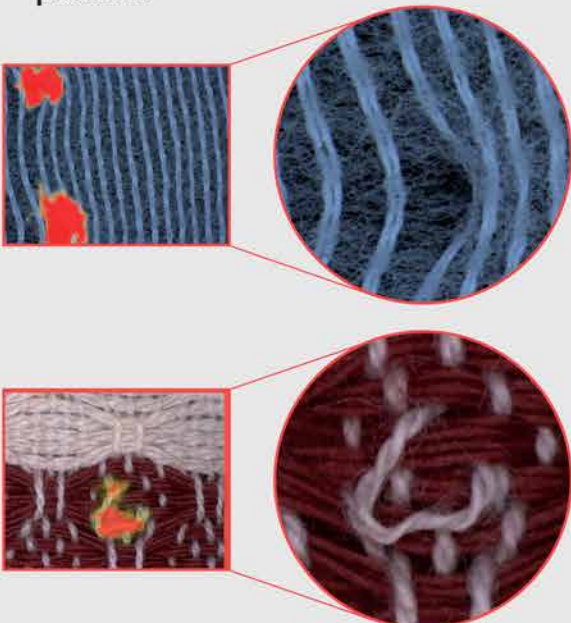
## Weaving

ViDi Suite distinguishes unacceptable defects on **seat belt** and **tire fabric** while tolerating naturally occurring variations.



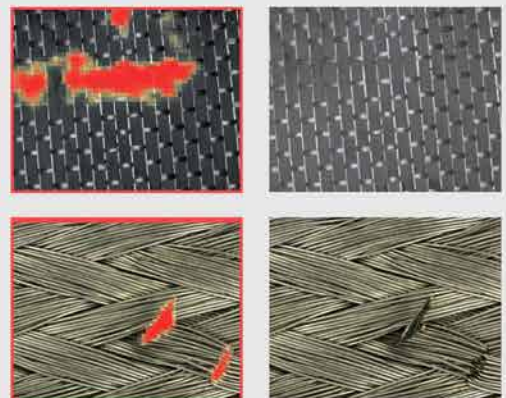
## Knitting

ViDi Suite identifies a broken needle in **thick yarn** as well as knitting loops in warps and wefts despite the **complex pattern**.



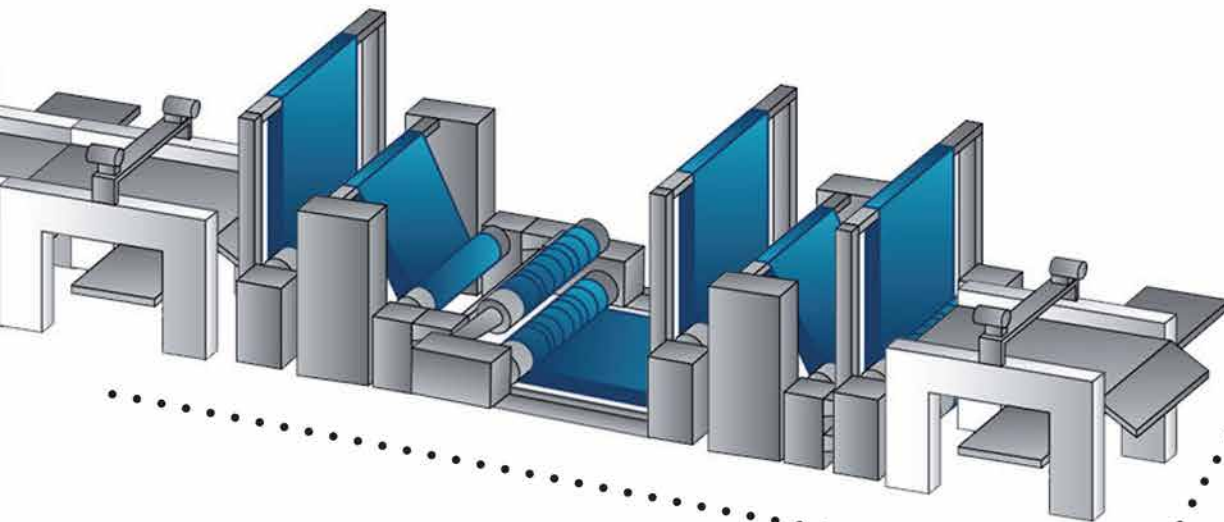
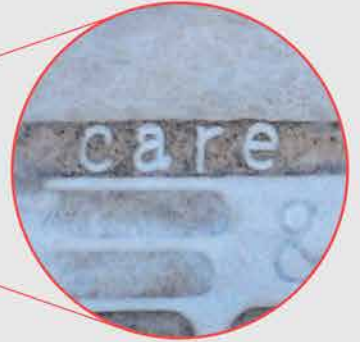
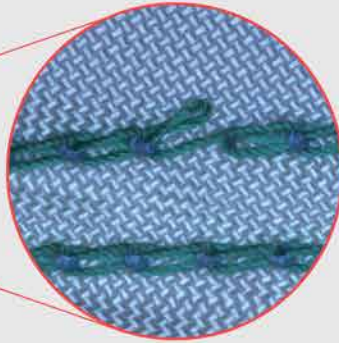
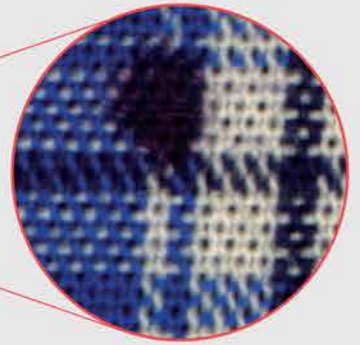
## Braiding

ViDi Suite is able to find various types of defects such as gaps or misalignments despite the reflectivity of the **carbon fibre fabric**. The second example below shows the detection of a broken wire on a **braided metal sleeve**.



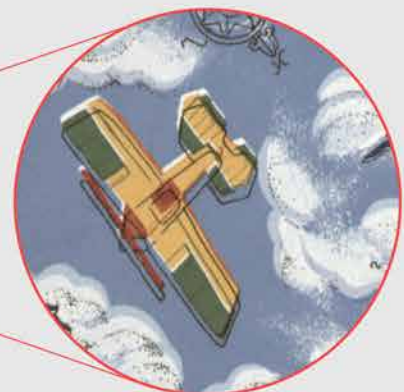
## Finishing

ViDi Suite can detect anomalies like soil or ink spots on **garments** as well as defects in highly critical stitching such as on **airbags**. It also excels at verifying embossed characters on **medical fabrics**.



## Printing

ViDi Suite allows the inspection of **printed webs**. It is able to identify problems in printing quality such as misalignment of different color channels (black outline versus filling) while the motifs can be highly complex.



ERROR



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