



LINEUP VISION AT



At Kongsberg Automotive Åmotfors *line up tables* are fundamental when operators positions the cloth to ensure that wires are guided with sufficient margin in cut-off areas.

The *line up* table is a 1500x1200mm backlit surface onto which a transparent template with guidelines is attached. The operator places the product on the surface and uses the template guidelines to align the product.

In line up tables equipped with *line up vision* correct placement of wires and adhesives and silicon paper is checked when the operator presses a pedal. When everything is ok the product is locked in place with pneumatics. The operator now applies the user-adhesives using the template guidelines. When completed, the pedal is pressed again and the product is released if all checks are passed.

Multiple products are inspected on all line up vision tables. *Product variants* support the configuration of totally different products.

“ScorpionVision has proven itself to be the right choice for our demanding quality requirements and time to market demands”

- Mikael Jansson,
Production Manager Sinus

“Line up vision virtually eliminates operator mistakes.”

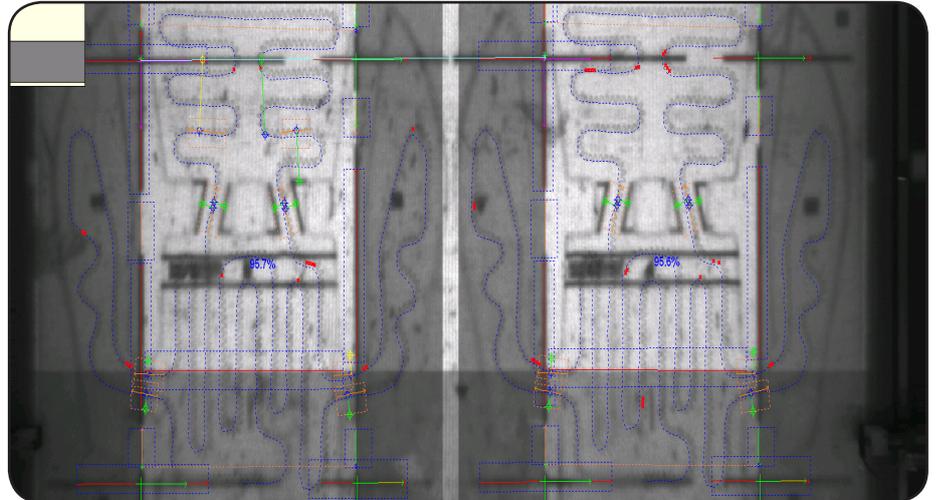
- Tom Ervik,
Senior process developer

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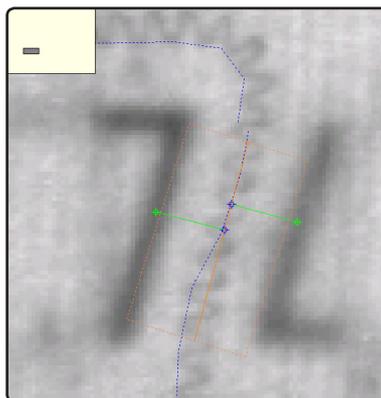
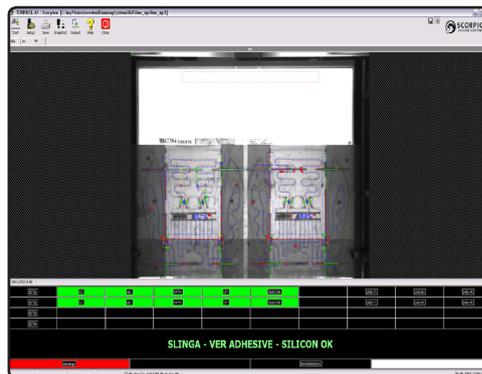


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WHY IT WORKS

Finding Sinus wires appearing as diffuse silhouettes (light is attenuated and dispersed through the fabric) requires world class edge detection. The *LineFinder™* and *PolygonMatch™* tools in ScorpionVision are unmatched in ability to find line segments in very low contrast images.



LineUp vision techniques:

- template modified for vision
- lens calibration
- image resampling
- edge detection - template
- multiple reference systems
- edge detection - adhesives
- edge detection / control pts
- wire inspection - *PolygonMatch™*
- user interaction - IO
- user interaction - graphics
- user interaction - panels
- user interaction barcode
- product variants

Control points:

2 points are placed on the edge where cutting will be performed.

2 points defines the length and direction of a LineFinder.

The system finds the line and computes the distances to the control points. Easy and flexible.

SPECIFICATION OVERVIEW

PARAMETER	
Resolution	1000 µm
Processing time	<2000ms pr product
Number of product variants	Unlimited (configurable)

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PolygonMatch™ is a trademark of Tordivel AS.