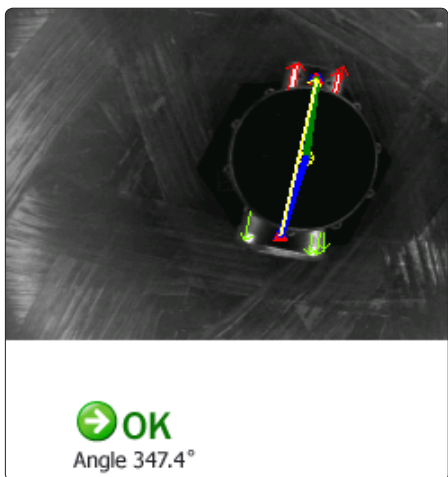


## SCORPION 5 ROBOT VISION - PRODUCT DATA

**R**obot vision is one of Scorpion's focus areas. Scorpion gives the robot the ability to pick products with high precision.

**F**lexible automation means robots, automation and vision working together. This reduces cost and increases the flexibility and possibility to produce several product variants in one production line at the same time - 24 hours a day - with profits. The vision system's ability to locate and identify objects are critical elements in making these systems.

**S**corpion has been used in robot vision and inspection system for many years. Scorpion has a complete toolbox of robust and reliable image processing tools needed for robot vision, gauging and assembly verification. Included are high accuracy and sub-pixel object location with PolygonMatch technology making it a perfect companion to World Class Imaging Components.



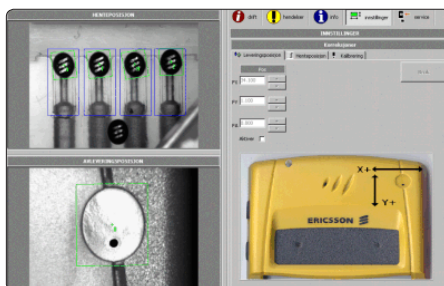
*Finding the angle and position of a valve.*

### FLEXIBLE AND EASY INTERFACING TO STANDARD ROBOTS

With Scorpion it is easy to implement reliable communication with robots from any vendor. Scorpion has been used with robots from ABB, Motoman, Kuka, Fanuc, Kawasaki, Sony and Rexroth Bosch. over serial and tcp/ip ports.

### PICK & PLACE SYSTEMS

One very successful high-precision Scorpion robot vision system was the Pick & Place system for Ericsson's logo to be mounted on a mobile telephone. The system was purchased by Mikron's factory outside Oslo, Norway.



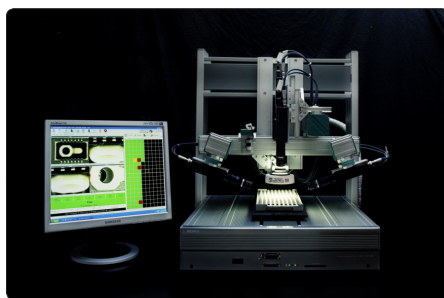
*Pick & Place logo application*

### SUPPORTING SONY DESKTOP ROBOTS

Sony Scorpion Robot Inspection - 100 % Inspection - Zero Defects in Automotive

Sony Desktop Robot's winning combination of superior performance and compact size is redefining the meaning of production. The image shows Scorpion inspecting a tray of 180 pressure sensors in six minutes - helping the customer to zero defects and to cut the cost of the alternative manual inspection with a microscope. The robot is equipped with four high quality high performance Sony XCD-710CR digital color cameras.

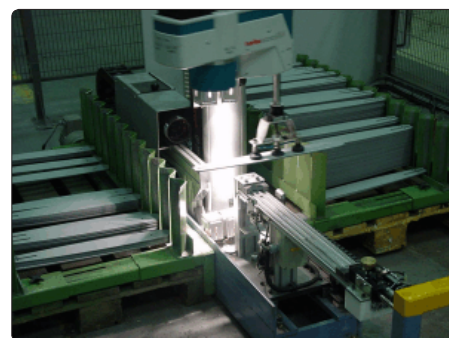
The Cast Pro II covers 350 x 350 mm with a precision of 0.02 mm - available in 2,3 and 4 axis version. The smaller Robokid covers an area of 250 x 210 mm.



*Scorpion Vision Software®, Sony Cast pro II robot and Sony firewire cameras working together.*

### ROBOT VISION INSPECTION

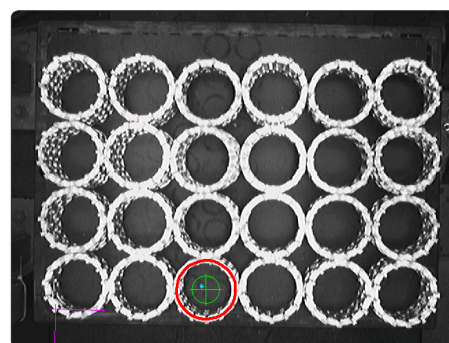
At Electrolux Motor in Sarpsborg, Norway, Scorpion is working together with a Rexroth Bosch Scara Robot. The system is verifying the gap of a chainsaw sword with a precision of 0.01 mm. More than 400 measurements are performed on each sword. Each year 1.3 million sword are automatically inspected. One cycle consists of the following operations : Pick Sword, Present side one to Scorpion, Present side two to Scorpion, Sort swords: Defects are placed on left hand side - Accepted swords are placed on the right hand side of the robot.



*Verifying gaps on chainsaw sword.*

### Picking products from a pallet is easy

Below you see Scorpion picking rings from a pallet. The green cross indicates the center of the ring. The rings are randomly placed on the pallet and the center of the ring is located within a couple of millimeters. The solution is made with Scorpion Standard and a VGA Firewire camera.



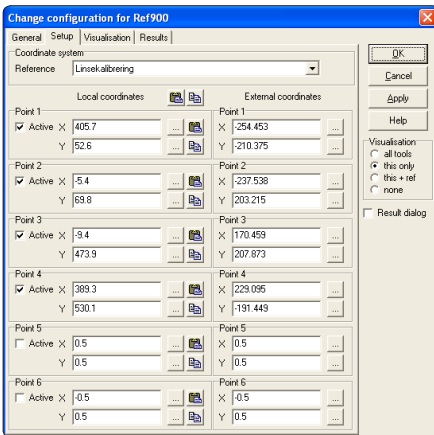
*Picking rings from a pallet.*



## FEATURES

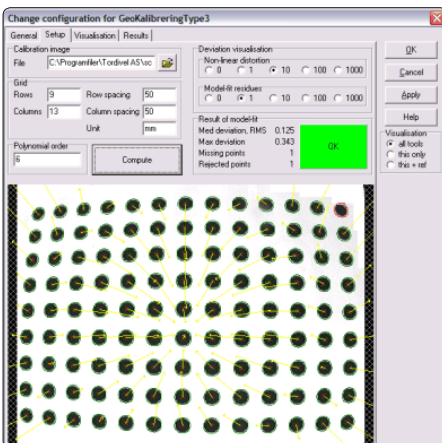
### EASY TO USE SIX POINT ROBOT CALIBRATION

Scorpion uses an advanced six point calibration to enable the system always to work in robot coordinates and to detect calibration errors before testing with robot. Multiple coordinates system are supported.



### COMBINING NTH ORDER LENS CALIBRATION TO IMPROVE ACCURACY

Combining four point calibration with 5th order lens calibration improves the precision to a sub-pixel level even with a wide angle lens. Below a typical lens-calibration is shown.



*All calibration is performed without any programming.*

### FIELD PROVEN AND RELIABLE IMAGE PROCESSING

Scorpion Image Processing is robust, reliable fast and flexible in a non-programming point & click environment with more than 80 powerful vision tools.

### FIREWIRE IMAGING ENSURES SUPERIOR IMAGE QUALITY

Using the high-quality firewire camera XCD-V50(CR) from Sony, the image quality is ensured even when mounting the camera on the robot. The camera is available in two versions: monochrome and color. With analog signal transmission, it can be difficult to shield the cable to ensure image quality. Cable length up to 20 meters is supported with standard firewire components.

In complex applications where two or more cameras are needed, these can easily be added to the digital firewire bus at low cost. The Sony firewire cameras XCD-710 and SX-900 are supported when high resolution and high quality is required.



*Sony XCD-V50 VGA Firewire Camera*

### USER INTERFACE

Scorpion has a feature rich, functional and configurable Man Machine Interface with image display, data input pages, web pages, ActiveX containment, .Net support, result panels, image history list, real time trends, logging, event log and quality alarms.

### APPLICATION SPECIFIC CONFIGURATION INTERFACE

Data Input and custom Graphical User Interface make it fast and easy to implement application specific configuration tailored to each application.

### OPTIMAL OBJECT LOCATION WITH POLYGONMATCH™ TECHNOLOGY

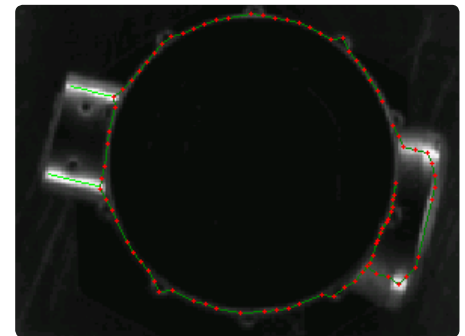
PolygonMatch™ is an optimal way to locate objects with subpixel accuracy. Multiple polygons define the shape or model of the object. When using the model the same shapes are extracted from the images and fitted to the original model with the highest possible accuracy.

### TEMPLATEFINDER3 POWERED WITH POLYGONMATCH TECHNOLOGY LOCATES MULTIPLE OBJECTS

TemplateFinder3 locates multiple objects with sub-pixel accuracy.

It can handle scaling, translation rotation and perspective. Supporting multiple named templates it can easily be configured to handle automatic product changes.

With the interactive Polygon Model Wizard optimal models describing an object ensures robust and accurate object location.



*Optimal model created with Polygon Model Wizard*

### MULTIPLE PRODUCTS ARE EASILY SUPPORTED

Scorpion has special features to handle multiple products within one profile. The External-Dictionary tool automatically switches product configuration when a new product is selected.

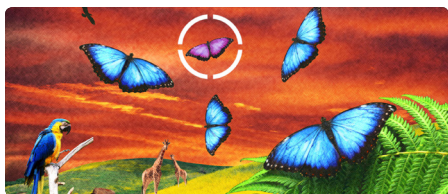
In Scorpion 5 the new Toolbox tool makes it easier to copy and reuse structures and business logic from other products.

### MECHANICS

Profiles are built using standard Montech Profiles.

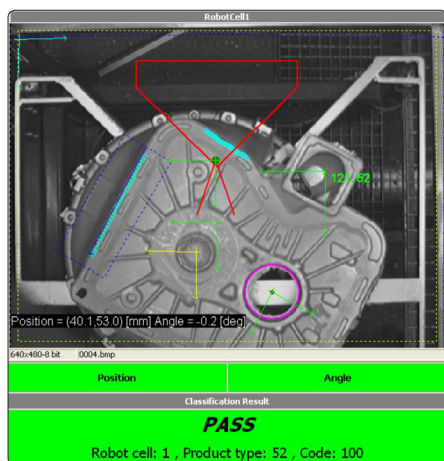
### FLEXIBLE, ROBUST AND POWERFUL RESULT VALIDATION AND BUSINESS LOGIC

Using the built in Python Script language, it is easy to do robust result validation, combine geometric knowledge to ensure robust operation.



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## SCORPION 5 ROBOT VISION STARTER KIT



*Scorpion Robot Vision in the Factory*



*Scorpion Vision Software® combined with Sony SmartCam XCI-SX1 give world class robot vision solutions.*

The Sony approved Scorpion Robot Inspection Starter Kit contains everything you need for bringing your Scorpion Robot Vision project to life. The kit includes a Scorpion Standard Software License combined with the high quality Sony XCD-V50 (CR) camera (VGA resolution) or a Sony SmartCamera XCI-SX1 and a 2 days training course where you learn how to use Scorpion Vision Software®.

A standard and configurable user interface paired with innovative, easy-to-use and robust imaging tools quickly enable you to plan, implement and test complete robot vision systems ready to communicate with robots or PLCs. Scorpion works with robots from ABB,

Motoman, Kawasaki, Fanuc, Kuka, Bosch Rexroth and more.

Standard accessories for the Scorpion Robot Vision Starter Kit are: a 128 Mb USB Memory stick, large robot calibration grid and an optional PCI FireWire adapter.

Also included is a 2 days introduction course for one person. More information about Scorpion training is available on our web site [www.scorpionvision.com](http://www.scorpionvision.com).

To order a Scorpion Robot Vision Starter Kit, attend a training course or get more information, please contact us or any of our representatives on e-mail, by phone or fax.

Product type no	Product	Description
20-053	Sony Scorpion Robot Vision Starter Kit	Including a Scorpion Vision Software Standard License with Sony Scorpion robot vision module and a Sony XCD-V50 camera. 8,5 mm lens, 4,5m cable and Unibrain Fire-I SW pack v3.0. Includes two days training. Also available in color version : 20-053CR
20-057	Sony Scorpion SmartCam Robot Vision Starter Kit	Including a Scorpion Vision Software Standard License with Sony Scorpion Robot Vision Module and a Sony SmartCam XCI-SX1 . 8.5 mm lens, 4,5m cable, 12 volt Pwr Supply Includes two days training.



Scorpion Vision Software® is a registered trademark of Tordivel AS. PolygonMatch™ is a trademark of Tordivel AS. Copyright 2000 - 2006 Tordivel AS.

**I**ndependent - for configuration of vision systems built upon standard PCs and Windows. Interface with plug-ins; dynamic link libraries (DLLs), .Net objects and Active-X. Complete support for DirectX and Firewire Imaging.

**F**lexible - complete range of robust and easy to use vision tools, out of the box rs-232, tcp/ip and opc support, configurable data and image logging support combined with unique python scripting capability.

**C**ost Effective - no programming, step by step adaptation to changing demands,

remote support and off-line verification of modifications ensures the lowest development, installation and maintenance cost.

**S**corpion Vision Software solves tasks within Robot Vision, Label Inspection, OCR, OCV, Multi Camera Assembly Verification, Colour Identification and High Precision Gauging.

**F**or evaluation download the complete software and a free demo license valid for 30 days from our web site or ask for a Scorpion CD.