

MT WITH WINCNC AND VISION SYSTEM(OPTISCOUT)

Overview and specification sheet

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WINCNC CONTROLLER

What is WinCNC?

- Windows PC based controller for CNC machines.

Highlights

- WinCNC provides a customizable easy-to-use interface for any operation [4].
- WinCNC uses a large look-ahead buffer, reading thousands of lines ahead while running GCode files. Reading ahead allows WinCNC to accelerate or decelerate through many small arc or line segments producing smoother motion and faster completion times [4].

OPTISCOUT

OPTISCOUT BRIEF OVERVIEW

What is Optiscout?

- Modular finishing software suite for multi-functional cutters in industrial environments contour-exactly digital cutting and milling.

What is used for?

- Compensates for data inaccuracy during the printing process.

Brief overview of how it works?

- Optiscout locates the position of OptiScout-video marks located on the work piece, using a camera that is mounted on the tool head.
- Optiscout then uses a correction algorithm to compare the current positions of the reference marks to the original positions of the marks in the primary job.

FEATURES

Workflow Optimization

- Automatic interfaces to Design and RIP software
- Compatible RIP software packages:
Caldera, PosterPrint, TexPrint, Colorgate, Wasatch, PosterJet, CADlink, MasterRip (IGEPA), ONYX, EFI, Prepare-it

Video Mark and Object Recognition

- Optiscout has the option to use different types of reference marks:
 - **circles, corners, crop marks, symmetrical objects, edges, and user defined**
- Recognizes different types of materials.

Barcode import

- Files can be read by a barcode reader and linked with pre-defined output files[1].

Macro Editor

- Automated processes can be made.

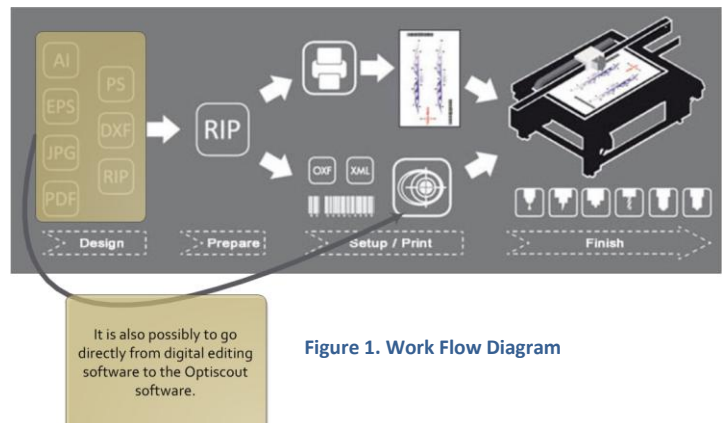


Figure 1. Work Flow Diagram

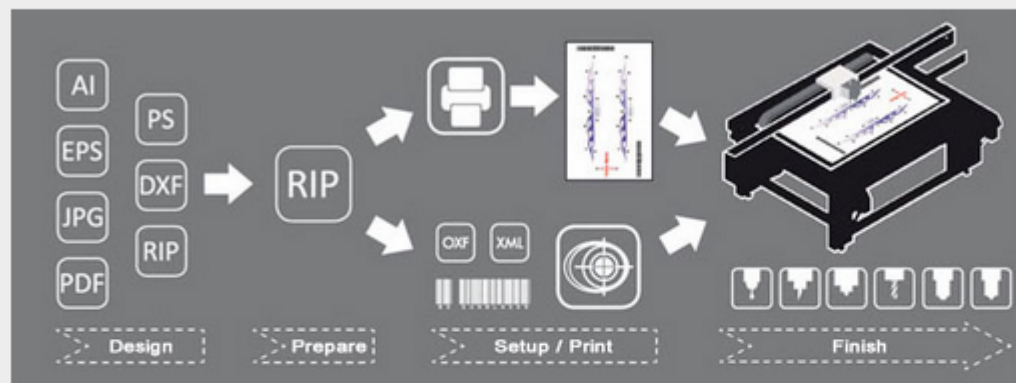
OPTISCOUT FURTHER BREAKDOWN

Workflow Ability

An important challenge in this market is "Workflow". Therefore OptiScout software must be workflow capable. It needs to have automatic interfaces to existing design- and RIP software packages. In OptiScout software this automatic data transfers is done e.g. by the OXF, OXX, PDF... file format. The OXF file format contains cut contour, register marks and - if applicable - barcode information.

An automatic data transfer with OXF, OXX or PDF file format into OptiScout containing cut contour, register marks and barcode is integrated into these RIP software packages:

Caldera, PosterPrint, TexPrint, Colorgate, Wasatch, PosterJet, CADlink, MasterRip (IGEPA), ONYX, EFI, Prepare-it



Print & Cut Workflow

Three Steps From Artwork to Finished Job

The OptiScout solution guides users step by step through the pre-press, printing and finishing stages, regardless of the job, printer or RIP. OptiScout has unique features to streamline the workflow. OptiScout software lets users follow the same workflow from pre-press to finishing - cue: macros. The operator can continue using the RIP the way he did before having a finishing device (flatbed cutter). Creating and preparing the cut data will always be performed in the same way, fostering a consistent workflow that is familiar to all staff and easy to train on.

A Print Workflow

Step 1: Cut Data Design and Preparation

Cut data creation is accomplished either in the design software (Illustrator, CorelDRAW, OptiScout Design) or in the RIP Software. In the design software the operator designs or imports the artwork. The operator generates a cut-contour around the artwork in his design application. This artwork file with the cut contour is sent to the RIP. In the RIP software the operator prepares the print file for the belonging printer and generates regmarks and a barcode around the artwork. An extracted separate file with cut-contour, marks and barcode only is sent as e.g. an OXF or PDF file to the OptiScout software.

Step 2: Print and Setup

When the generated print file is processed through the RIP software, it is sent to a printer. The cut-contour will not be printed. The registration marks and the barcode will be printed together with the artwork onto the substrate. The completed print is ready for cutting. In the OptiScout software the operator takes the OXF file with the cut-contour and the regmarks and sets up the cut file for the output to the cutting table. The tools are assigned.

B Cut Workflow

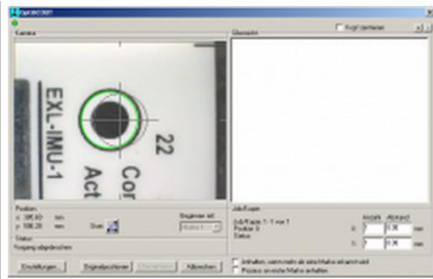
Step 3: Automated Cut Finishing (Cutting - Creasing - Milling - Lasering)

The device must be equipped. At cutting time, the operator simply places the print on the cutting table and scans the printed barcode. OptiScout automatically detects the correct cut data. By reading the regmarks with the camera mounted on the head of the cutter, OptiScout compares the position of the registration marks in the data to those on the printed job. Once the system has analyzed the exact image position, it starts cutting. Sophisticated optical registration capabilities ensure perfect accuracy for any size or shape.

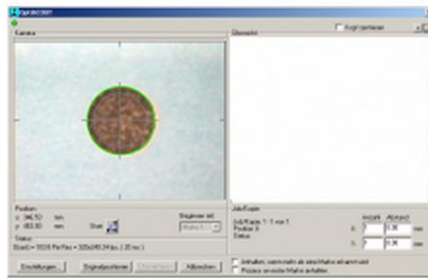
The finished, cut pieces are ready for delivery with minimal operator intervention, 100% accuracy and reduced rejects and turnaround time.

Figure 2. Can be found on the optiscout website[1]

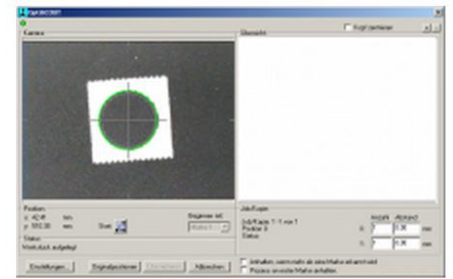
TYPES OF REGMARKS AVAILABLE



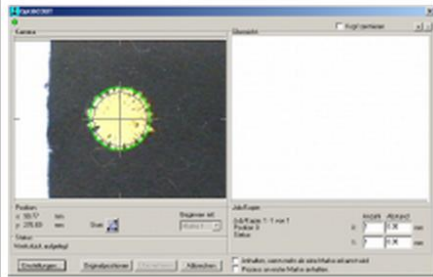
Register mark printed on keyboard membrane



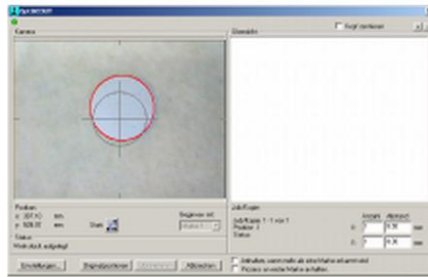
Punched hole in gasket



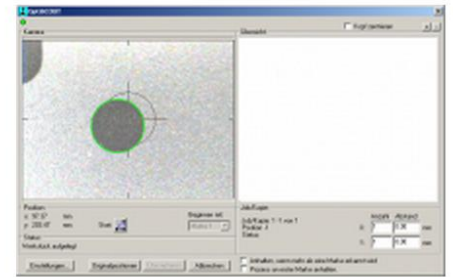
White printed register mark on structured plastics (negative print)



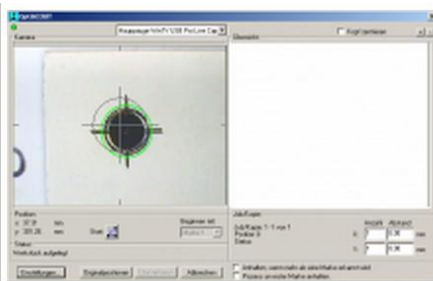
Embroidered video mark



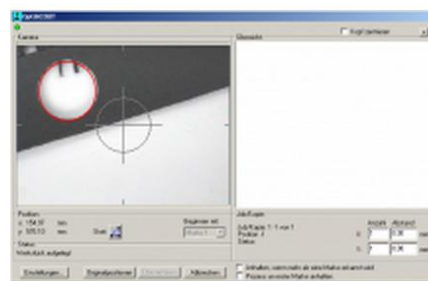
Video mark on printed circuit board track



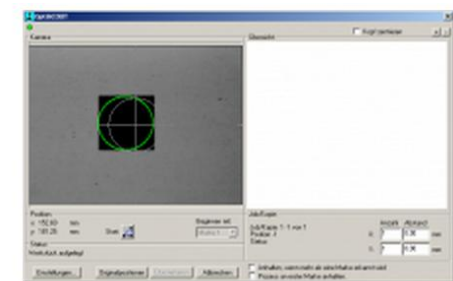
Video mark printed on reflective safety flock



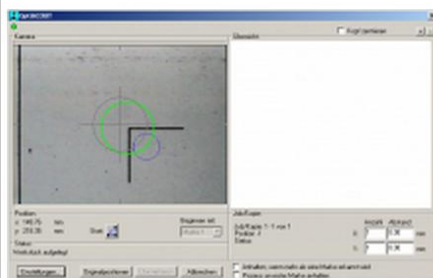
Register mark from offset print process



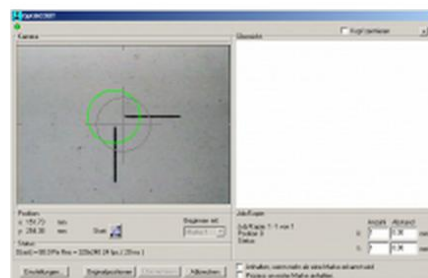
Punched hole in mesh/net material



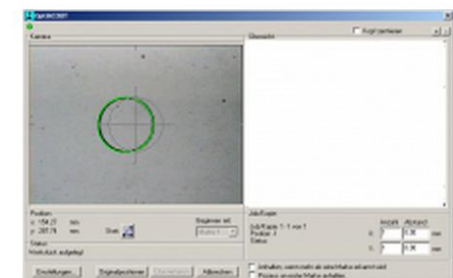
Video mark type: symmetrical objects



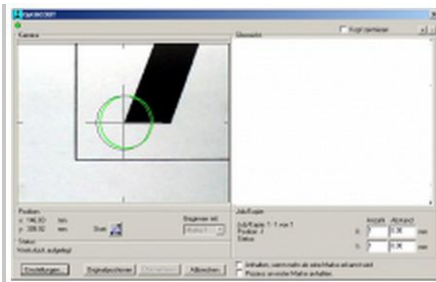
Crop mark type: angle



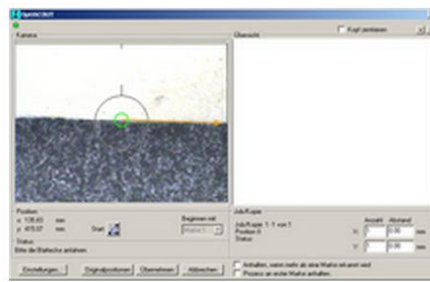
Crop mark type: open angle



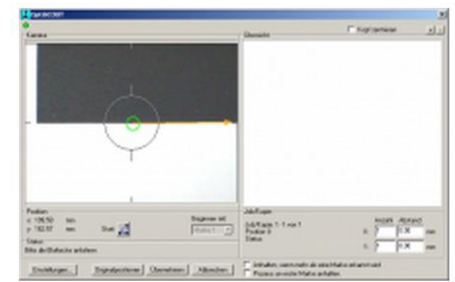
Hairline circle



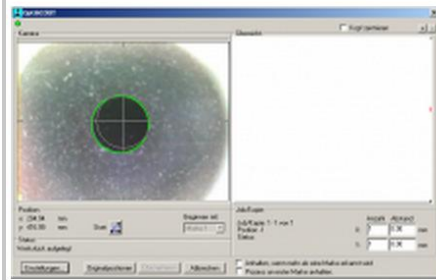
Job object edge used as video mark



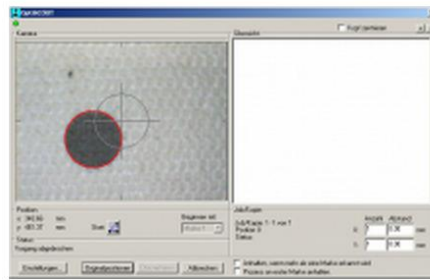
Cardboard (0.2 in) edge used as video mark



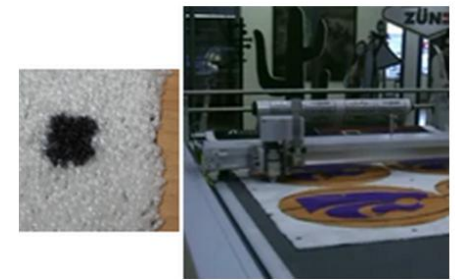
Printed edge used as video mark



Highly reflective material (mirror foil)



Video mark printed on cotton canvas



Woven video mark in carpet

Figure 3. Can be found on the optiscout website

MACHINE SPECIFICATIONS

Max Rapid Speed - Currently 1500 inches/min , Note relative to each application.

Max Feed Rate - Currently 900 inches/min , Note relative to each application.

AVAILABLE TOOLS AND ATTACHMENTS

- On the tool head, Our machine is designed to have up to 2 tangential heads, 1 camera, and a spindle.
- Can also have touch probe, and ATC.

TANGENTIAL HEADS

- ECOCAM TCM-4 - Tangential cutting module
 - foils and flocking material, not limited to.
- ECOCAM EOT-3 - Oscillating tool
 - cardboard, sealing materials, foils, corrugated cardboard, carbon fiber prepreg material, leather, rigid foam, not limited to.
- ECOCAM TCT-1 - Tangential creasing tool
 - cardboard, paperboard, corrugated cardboard, polypropylene

PC SPECIFICATIONS

Processor: Intel(R) Core(TM) i3-3240 CPU @ 3.40GHz

RAM: 4.00GB

System type: 64-bit Operating System

Windows 7 Home Premium

COMPATIBLE FILE FORMATS WITH OPTISCOUT

Description	File extension
Adobe illustrator	.AI, .EPS
Adobe Photoshop 3.0	.psd
Bitmap	.bmp, .pcx, .jpg, .tif, .tiff, .gif, .png
CMX	.cmx
CUT Import	.CUT
DXF Import	.DXF
EuroCUT 1.5 JOB	.job
GIF Bitmap	.gif
Grafityp Logo Files	.GTP
HPGL Import	.PLT, .HPG, .HPGL
JPEG/LEAD	.cmp
JPEG Bitmap	.jpg
Job Files	.job
Job Template	.jtp
Kodak Photo CD	.pcd
OXX import	.oxx
Onyx import	.xml
optiSCOUT eXchange Format	.OXF
PDF Import	.PDF
Paintbrush	.pcx
Portable Network Graphics	.png
TARGA Bitmap	.tga
TIFF Bitmap	.tif, .tiff
Text Files	.txt

URW Signus Ikarus	.ik
Vector2 Files	.evj
WMF/EMF-Meta File	.WMF, .EMF
Windows Bitmap	.bmp
Zuend ZCC import	.zcc

SOURCES

[1] "OptiScout." *OptiScout: Modular Optical Recognition Software for Industrial Usage in Outline-exactly Digital Finishing Processes*. N.p., n.d. Web. 15 Oct. 2014. <https://www.optiscout.com/index.php?erzw_sprache=eng>.

[2] Optiscout Production 7 Manual

[3] ECOCAM. Tangential cutting module TCM-3. User manual.

[4] "MicroSystems World CNC - PC Based CNC Controller". "*Home*" N.p., n.d. Web. 15 Oct. 2014. <<http://wincnc.net/index.php>>.

[5] "ECOCAM CNC - Precision Made in Germany." N.p., n.d. Web. 15 Oct. 2014. <<http://www.ecocam.de/11-sites-eng/index.html>>.