LASERVISION

Laser projection is fully established as a qualified dimensional referencing system – helping aerospace companies move from design to build seamlessly, more accurately, and in a fraction of the time required to use physical templates or measurement tools. The next logical step in fabrication technology is to automate inspection and documentation, bringing about greater speed, accuracy and detail. Until now, the inspection process has been cumbersome and has involved considerable waiting time for inspectors. It is often hampered by poor access or lighting of the characteristics being verified. Documentation has often amounted to little more than an inspector's stamp or signature. It makes sense to integrate inspection and documentation with the laser projection system, which is already operating with production data and tooling. LASERVISION not only projects patterns to be seen, but also sees, reports and archives what is built.

DESCRIPTION:

LASERVISION combines all the benefits of industrial laser projection with an automated imaging system. The machine vision component of LASERVISION instantly aims a hi-res high-magnification camera system anywhere within the field of the laser projection component. Manufacturing data used for laser projection automatically drives the capture of these inspection images. The captured high-res images of small complex regions are enhanced and electronically delivered to inspectors or image analysis algorithms. The images are automatically archived and combined with data for each individual part produced. With these capabilities, LASERVISION eliminates the wait time for inspection and the challenges of access and lighting.The calibrated images provide physical evidence that the build matches the design. LASERVISION process control and documentation improve quality while reducing cycle time.

APPLICATIONS:

Automated Fiber Placement (AFP)
Automated Tape Laying (ATL)
Composites Layup
Drilling
Fastening
Assembly

LASERVISION

REMOTE INSPECTION
USING INTEGRATED LASERVISION

Whenever an automated work cell pauses for required inspection tasks, by definition it is no longer performing value-adding tasks on the end product. Minimizing both pre-inspection calibration/setup and actual inspection time, LASERVISION automatically captures images with calibrated laser references while the work cell continues to add material and value. Captured images may be sent to the inspector outside the work cell.

Remote inspection removes the inspector from the work envelope, enabling production and inspection to occur in parallel, rather than in series. The system adds material while inspection is occurring in a safer, more amenable location. Human inspection is also improved through image magnification and contrast enhancement. On-screen gauging applied to the image improves the quality of the documentation.
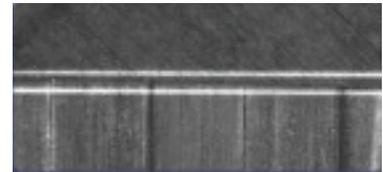
AUTOMATIC INSPECTION
USING INTEGRATED LASERVISION

Automatic inspection of captured images eliminates the "human factors" that have been known to compromise inspection results (fatigue, distraction, lack of precision). Automatic inspection provides a level of quantified inspection and documentation that simply cannot be achieved by human inspectors.
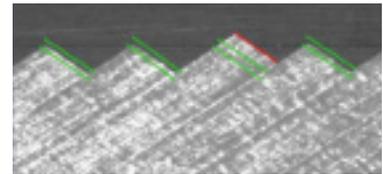
STANDALONE LASERVISION

The benefits of automatic verification and documentation are also realized in standalone laser projection applications, such as hand layup of composites. LASERVISION scans for FOD and verifies correct material types, fiber orientations and ply locations. Layup operators no longer lose time waiting for inspectors, and manufacturers gain detailed, traceable, hard evidence of correct fabrication. LASERVISION in standalone applications requires no new data input as it uses the already-existing data that drives laser projection.

FOD PREVENTION

LASERVISION automatically scans all surfaces for foreign objects and materials. FOD is always visible on a surface at some time in the production process. LASERVISION pinpoints any suspect location for quick resolution by the operator. LASERVISION meticulously recognizes poly, peel ply, and other objects that become FOD in composite parts, while an operator's human limitations all too often leaves FOD unnoticed before it is covered up and contaminates the part.

LASERVISION

SPECIFICATIONS

PROJECTION:

Size: 19.5" x 11" x 11"/ 49.4 x 28 x 28 cm

Weight: 45 lbs/ 20.5 kg Beam Color: Green (532nm)

Laser Line Width: 0.020"-0.075"/0.5mm-2mm
Projection Angle: 60° (+/- 30°)

Projection Range: 3'-40'/1m-13m

Simultaneous Projections on Independent Tools:
4 Laser Class: CDRH Class II/IEC Class 2

Accuracy: 0.015"/0.38mm (Meets Boeing D6-55902 requirements)

Warranty: Two Years

IMAGE CAPTURE AND PROCESSING:

Aiming Angle: 60° (+/- 30°) Range: 3'-20'/1m-6m

Camera Resolution: 2.8 MP with 150 mm lens

Image Files: ppm, jpeg, png

Image Processing: Aligned Vision routines or Third Party Algorithms

COMPLETE SDK:

DLL API

Manual and Sample Code Extensive Logging

32 or 64 bit .NET Framework

DATA:

All standard laser data formats supported for pattern display and image capture
(gcode, xml, xyzijk text, iges, dxf)