

# ALIGNED VISION

## BRINGING THE DIGITAL FACTORY TO COMPOSITES FABRICATION



*Industrial Laser Templating*  
*Electronic Process Control*  
*Automatic Inspection*  
*Digital Thread Population*

[aligned-vision.com](http://aligned-vision.com)



UNLEASHING THE POWER AND AGILITY  
OF THE DIGITAL FACTORY

## Enabling Technologies and Expert Support

*REAP IMMEDIATE RETURNS  
AND FUTURE VALUE FROM YOUR DIGITAL INVESTMENTS*

Digital manufacturing technologies will soon be essential to composites fabricators — but this doesn't have to mean huge capital expenditures with faraway payoffs. A stepwise path into the digital manufacturing future is already paying dividends for Aligned Vision customers.

### OUR CUSTOMERS ENJOY

- Rapid ROIs
- Accelerated quality fabrication, and
- Full scalability and extensibility into today's manufacturing digitalization platforms

From the perspective of Smart Manufacturing, Aligned Vision systems are **digital point solutions** that offer out-of-the-box standalone benefits immediately, and serve as building blocks for the **fully integrated Digital Factory** of the future.

With our **SDK software development kit**, Aligned Vision solutions are easily integrated with Automated Fiber Placement (AFP), Automated Tape Laying (ATL), cutters or other automated fabrication technology cells; as well as other Digital Factory and enterprise systems, providing full visibility to all stakeholders.





## Tap Your Design Data to Guide the Fastest, Most Accurate Build

### OUR LIGHT BRINGS YOUR CAD INTO THE REAL WORLD

Leverage the power of your digital designs onto the manufacturing floor. LASERGUIDE imports the bill of materials (BOM) and bill of process (BOP) and delivers accurate 3D projections for the fastest builds.

## LASERGUIDE<sup>2</sup>

### Accurately guide multiple tasks anywhere in the workcell

- Best-in-class laser projection range and accuracy
- The only full selection of projectors in the industry, from long throw (up to 50 ft) to confined spaces (MicroLASERGUIDE)

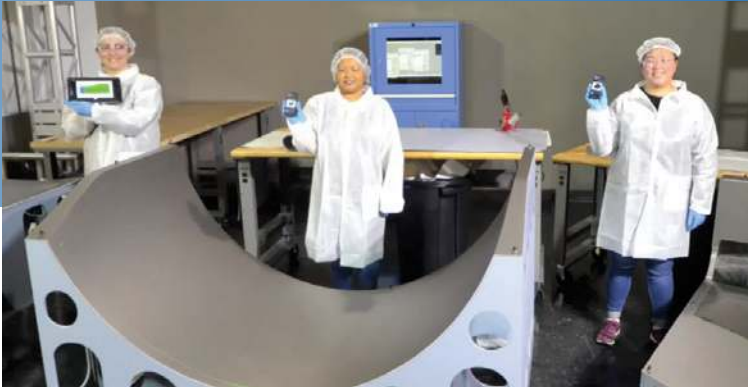
### Boost equipment productivity — and safety

- The only CDRH Class II/IEC Class 2 laser in the industry — safest available
- Fewer projectors, controllers and setup activities needed than with any other laser system
- Highly reliable projectors keep operators adding value – instead of working on the projectors

### Enhance operator efficiency and accuracy

- Multitasking system projects to 4 jobs, keeping 4 teams adding value
- Automatic alignment and continuous checks eliminate operator set-up tasks
- Automatic alignment accommodates ergonomic tool repositioning

*“When integrating a new technology into a process, it’s sometimes hard to justify the startup cost... but with the outstanding customer support and responsiveness of the [Aligned Vision] team, we were able to be up and confidently running within a day.” — Russell Rowles, NASA Goddard*



## Use Your Engineering Data to Efficiently Direct Fabrication Processes

### MAXIMIZE TIME FOR MACHINE AND OPERATOR VALUE-ADDED TASKS

With BUILDGUIDE digital process control suite, your engineers easily generate a bill of process (BOP) and electronic recipe that your operators follow with unparalleled efficiency and accuracy — usually from familiar smart mobile devices that keep your team at the tool, adding value.

## BUILDGUIDE

### Eliminates paper from the shop floor

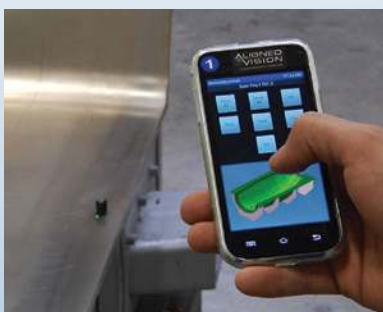
- Electronic recipe, including both layup and non-layup steps, replaces paper work instructions
- Electronic sign-in and buy-off track team members working on each piece
- Automatic data collection and digital archiving eliminates paper traveler recording time and inaccuracies

### Eliminates costly interaction with the control computer

- Operators advance to the next fabrication step without stepping away from the tool
- Eliminated step-away time accumulates quickly into real cycle time reductions
- Potential distractions during step-away time are eliminated, keeping operators on task

### Makes work instructions and graphics fully accessible where they are needed

- Tablets and/or smartphones provide full operator control of the fabrication steps
- Projection system tracks fabrication sequence so operators don't have to
- Mobile device guides operator through full step completion (e.g. full vacuum and time for debulks)



*"The laser ply projection system reduced the lay-up production time by 80% over conventional methods." — Steve Sucic, United Technologies*

*"85% savings with LASERGUIDE." — Danielle Fernholz, General Dynamics*



## Deliver Detailed, As-Built Data to Feed Traceability And Continuous Improvement

### *AUTOMATICALLY GENERATE, AGGREGATE AND CONTEXTUALIZE MANUFACTURING DATA*

Major digital systems providers are creating the paths for closed-loop manufacturing that offer a common platform for as-designed, as-planned and as-built data. LASERVISION generates vital as-built data that is fed back to design and engineering.

## LASERVISION

### **Minimizes idle time and raises inspection quality**

- Each inspection is automatically carried out when electronic recipe reaches inspection step
- No wait-time for inspector: inspection is conducted in seconds with no operator intervention

### **Corrects errors when rework costs the least**

- Inspection verifies attributes in real time, and flags FOD, misaligned plies or other flaws for immediate correction
- Rework and scrapping of costly components is markedly reduced

### **Automatically populates electronic documentation and generates the as-built Digital Twin**

- Calibrated images of every ply surface are captured and saved as part of each component's as-built Digital Twin
- Documentation includes any non-conformances and corrective actions, and enables direct comparisons between as-designed and as-built attributes

### **Enables continuous process and product improvement**

- As-built Digital Twin comprises Manufacturing Intelligence that feeds Deep Learning and closed-loop fabrication improvements
- Uncertainty is quantified, enabling tighter allowables and less overdesign



*"Our automated inspection system was really an enabling technology for this next-generation wing." — Todd Rudberg, Electroimpact*



*ENABLING FASTER, SMARTER, MORE ACCURATE MANUFACTURING*



**Aligned Vision pioneered the first laser templating system, and we continue to innovate and extend the reach of our technologies through the entire fabrication process.**

## **We are pioneers**

producing every major "first" in our industry for more than three decades.

## **We are investigators**

helping our customers identify opportunities, then plotting the path forward to seize each opportunity.

## **We are collaborators**

servicing our customers to help you gain optimal benefit from our solutions.

## **We are empowerers**

helping our customers make extraordinary leaps forward.

## **We are innovators**

continuing to trailblaze and persisting until we've maximized the payoff for our customers.

## **EXPERIENCE SUPERIOR CUSTOMER SERVICE**

- Immediate technical support
- Unlimited free phone/email support
- Artificial Intelligence-enabled rapid application development
- Quick service turnaround: 2-3 days
- Lowest cost cal/cert and overhaul
- Loaner units provided during servicing
- Field-replaceable laser and galvos

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*2020 Excellence in Composites Manufacturing Award Winner*