

# FSI Machine Vision Consulting, Engineering & Lab Services



## Helping you is our vision.

FSI has been a trusted, engineering oriented manufacturer of industrial automation products and military electronics for over 46 years. We are known for bringing extensive engineering and scientific expertise to bear on newer and more complex technologies.

### Machine Vision Challenges

Using Machine Vision for automatic inspection provides substantial benefits and unique challenges. Benefits arise from the ability to accurately do 24/7 100% inspection of even high-speed production without labor costs or personnel fatigue. The unique challenges make it all too common for machine vision projects to fail, perform poorly, or move too slowly and expensively in the investigation or implementation phase. These differences and challenges include:

Factors and variables that appear to be minor, secondary or irrelevant often have a major impact on the cost and feasibility of machine vision for that application.

Machine Vision equipment is a major tool but just a tool used in the implementation process to accomplish the mission.



Effective Machine Vision combines an unusually broad range of disciplines. Besides industrial control automation and communications, it has substantial elements of physics, optics, the interaction of light with surfaces, gauging and measurement type mathematics, creative use of digital hardware and software, and expertise with the various types of specialized hardware for acquiring and handling images.

When handled optimally, equipment selection, confirmation of viability and even accurate quotation occurs only after a greater amount of technical work has been done. A strategy of obtaining these as (for "free") part of the sales process can be detrimental to the overall goals (i.e. very expensive). When this occurs, goals of minimizing cost and risk of failure and economically maximizing performance are not achieved. Also, large amounts of man-hours are

commonly wasted on learning curves trying equipment that is not the right choice; an expenditure that is good for the vendor but bad for the customer.

Selection and application of "accessories" may be more critical and difficult than the "main" equipment, but true involvement (at the manufacturer level) by the main equipment manufacturers in these items is rare.

At the project level, FSI Machine Vision has the expertise to design solutions that recognize and navigate these challenges, providing large benefits from a small investment in these services. These cover various stages and challenges such as:

Where do I start?" challenges when first considering an application for automatic inspection. We get the process started quickly and successfully in these situations.

Creating the application specification. The methods, scale and importance of this phase are counterintuitive, and are usually overlooked or underestimated even by persons who are experts in other industrial automation fields. Our process combines our extensive expertise and experience in this field with close communication with the client to arrive at a specification that fulfills their needs, has the credibility to be enforceable, and provides an average of ten times the investment (1000% ROI) in reduced project cost savings.

Finalizing equipment selection on the more expensive items.

Developing inspection strategies or investigating feasibility on unusually difficult inspection missions. This gets the process moving to provide machine vision's benefits where it was previously at a technical impasse.

## Outline of Capabilities, Technologies and Services

### Research and Consulting Services

- Research and Development
- Consulting
- Feasibility Studies
- Project Management
- Technology Base Development
- Machine Vision Specification
- Development

### Areas of Expertise

- Machine Vision
- Robot Guidance
- Physics
- Electronic Design
- Optics
- Lighting Physics
- Lighting Hardware
- Opto-electronics



**FSI Technologies Inc.**

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## **Project Management Specialties**

Automatic Inspection  
Machine Vision  
Robot Guidance  
Related Factory Automation

## **Synergy of capabilities: “2 + 2 = 10”**

Synergy of Capabilities & Areas of Expertise  
Avoids co-ordination costs between dispersed expertise  
The Right Results, Efficiently

## **Additional Areas of Expertise**

Available Technologies  
Factory Floor Environments & Systems

Machine Vision Hardware  
Machine Vision Software  
Software Development at All Levels  
Program Development  
“Outside the Box” solutions using a broad range of technologies

## **Inspection Process Areas of Expertise (Examples)**

Assembly Verification  
Packaging Verification  
High Accuracy Gauging & Measurement  
Industrial In-Process Inspection  
High Speed Inspection  
Surface Analysis  
Color Analysis  
Graphic & Print Quality Analysis  
OCR & OCV



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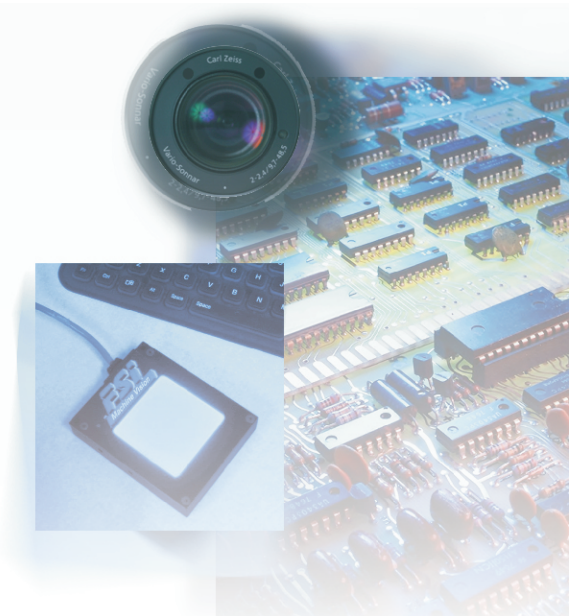


## Benefits areas where it makes a difference:

- Success at the Application
- Maximized Results
- Cost Optimization
- Viable Long Term Ownership
- Supportability
- Protection of investment
- Acquire new technological areas.

## Benefits: avoids these common machine vision pitfalls:

- Failed or Partially-Failed Projects
- Errors in Direction
- Runaway Costs
- Excessive Lead Times
- Excessive Person-Hours



- Large lost learning-curve investments
- Poor long-term supportability, excessively high long-term ownership costs
- Poor supportability for mission critical environments.

Please contact the FSI Factory or your FSI Machine Vision Representative to put these capabilities and services to work for your company.



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