

THE FUTURE OF REPAIR DECK AUTOMATION



Dynamic Defect Inspection

- > Increased positive detection rate of 95-99.9% using grouping algorithms and bright/dark field technology (including edges)
- > Faster processing speeds capable of higher JPH for dynamic inspection (80 JPH)
- > **Higher resolution images & brighter lights (LED technology with 10+ year life expectancy)**
- > Reduced system footprint and lower cost installation
- > Technology can be utilized for Clearcoat, Primer, E-Coat, painted plastics, and certain metal types
- > **No need to recalibrate new colors**
- > **Type classification of defects used for Robotic Repair**
- > Patent pending technology and IP owned by Inovision with U.S. based support



Dynamic Defect Repair

- > SMARTFinish application software provides user controls and automated coordination of robot workloads
- > **Advanced repair techniques that generally are not maintainable in a manual process**
- > Ability to vary repair technique based on Clearcoat technology (1K, 2K)
- > **Consistency from Robot to Robot and Shift to Shift**
- > Precision Force Through Active Compliance
- > The use of electric tools for accuracy and feedback
- > Consistent dispensing of water and polish
- > **Process efficiencies reduce repair time per defect**
- > Less consumable waste through fluid dispensing and active force control



AUTOMATIC PAINT DEFECT REPAIR AND POLISH

SCHEDULE A DEMO

Send us painted vehicles on skids or individual hoods and we can demonstrate a complete automated inspection and robotic repair process.

Email us at contact@inovision.com



"Creating Solutions for a Changing World"

Inovision Inc.

2610 Bond St.
Rochester Hills, MI 48309
+1 (248) 299-1915



SYSTEM OVERVIEW



The Invision SMARTFinish paint defect repair system is the only **automatic** robotic spot sand and polish paint defect repair system in the world.



Our solution is used with automated inspection systems that can classify defect types and provide **precise** defect locations.



SMARTFinish is an inline tracking robotic repair system that is ideally retrofitted to your existing indexing or continuously conveying repair deck. Together with our Invision SMARTInspect automatic defect inspection, detection, and classification system, you can fully automate your repair deck.

END OF ARM TOOLING

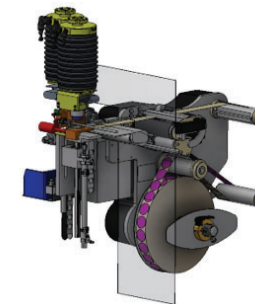
DENIBBING TOOL

- > Electric servo driven with precise speed control
- > Active Force Compliance



MEDIA CHANGER

- > Automatic media replacement without manual intervention
- > Solutions for hook & loop and adhesive back media



POLISHING TOOL

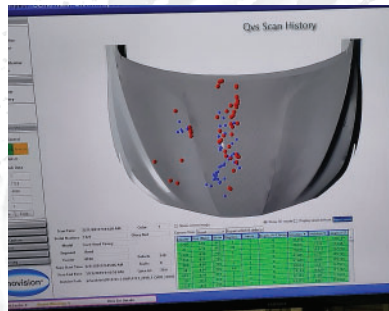
- > Electric servo driven with precise speed control
- > Active Force Compliance



THE REPAIR PROCESS

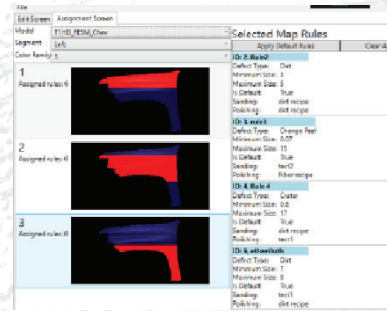
1 Defect data is sent from SMARTInspect System

Defect data is sent from the automated SMARTInspect defect inspection system with both precise defect location and automatic defect type classification.



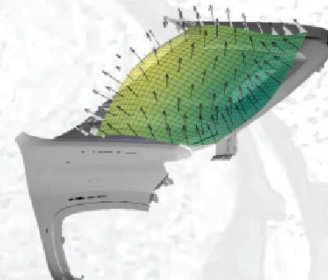
2 Automatic defect repair assignment to robots

Defects are automatically distributed to each robot based on position and available cycle time per robot by the SMARTFinish advanced software.



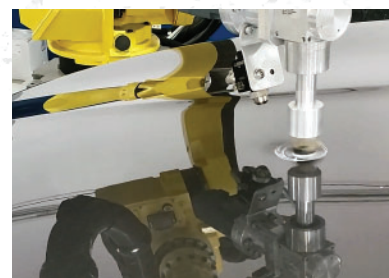
3 Robot programs are dynamically created

After teaching robot approach positions, programs are created for each robot to repair each defect with the correct processes to sand and polish each defect type.



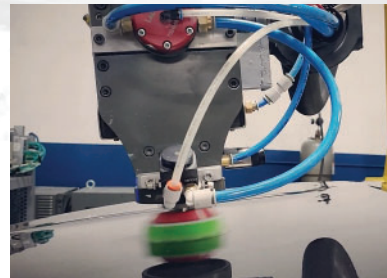
4 Defects are removed with a moist sand process

With a precise misting applicator and electric force control sanding tools, each defect is removed based on pre-defined proven preset parameters for each type of defect. Sand paper is automatically changed after a predetermined number of cycles, or if paper damage is detected by the built-in media inspection system.



5 Sand marks are removed with polishing robots

Polishing compound is finely misted at the precise location of the sand mark and removed with electric force control polishing tools. Minimal polishing material is used and consistent polishing programs ensure complete repair of each defect.



6 Polish removal and final inspection

A minimum number of manual operators will be focused on removing remaining polish residue and final inspection of defects. An automatic SMARTInspect system can be installed to ensure defects were repaired, and all defects were found, prior to transport to final assembly.



- > Invision based SMARTInspect and SMARTFinish complete repair deck solution
- > Customer demonstration and solution developments centers at 3M, Invision and ASIS around the world
- > Consumables developed for robotic repair application by 3M

- > Development of SMARTFinish process parameters based on proven 3M finishing techniques
- > Force Control Robotic tooling with automatic media changing stations designed for SMARTFinish



expert collaboration
automate | integrate | finish | inspect

PROVEN TECHNOLOGY

FEATURES & BENEFITS

PROCESS

- > Advanced repair techniques that generally are not maintainable in a manual process
- > Ability to vary repair technique based on clearcoat (1K,2K)
- > Consistency from robot to robot and shift to shift

TOOLING

- > Precision force control through active compliance
- > Electric tools for increased accuracy and feedback
- > Consistent dispensing of water and polish
- > Built-in vacuum options for full area sanding

EFFICIENCIES

- > Inspection time reduced
- > Reduced manual labor costs
- > Eliminated new defects caused by operators coming into contact with the vehicle and/or improper repair technique
- > Reduction in personnel repetitive stress injuries
- > Less consumable waste

