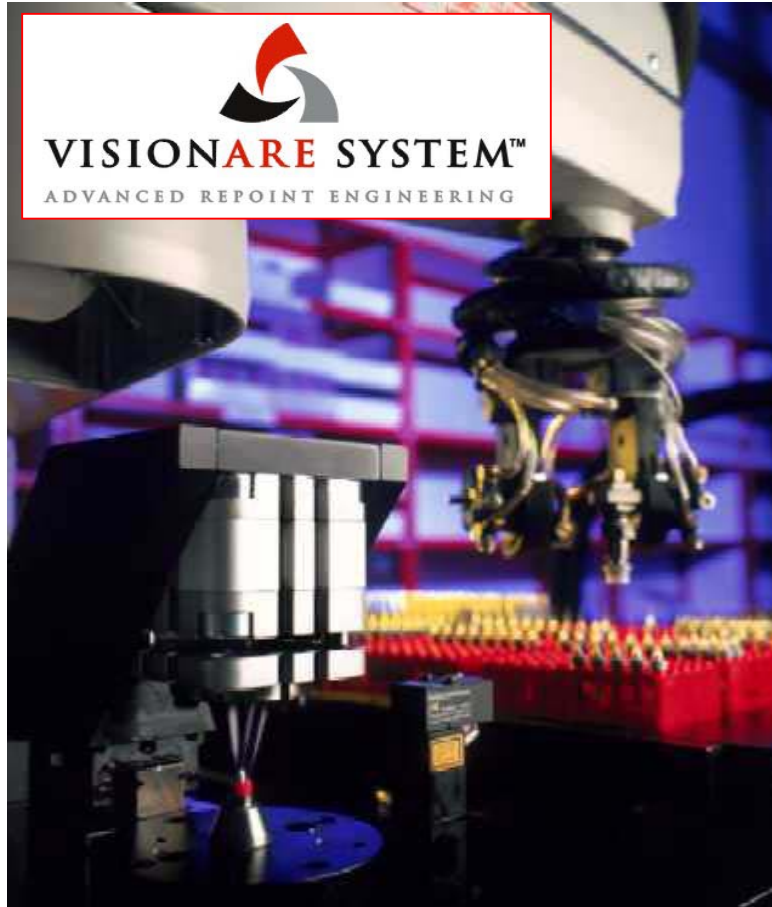


***VISIONARE* ...The Future of Micro Drill Resharpening**



- **100% Robotic Handling** "from box to box" on a single machine, eliminating handling damage and ensuring precision at every step.
- **100% Screening of Every Tool Before Resharpening** to ensure proper geometry and confirm sufficient remaining flute length.
- **100% Inspection of Every Tool After Resharpening** for 11 critical attributes prior to repackaging.
- **100% Stock Removal Measurement** to ensure that the specified amount has been removed. Ensures quality of point while maximizing tool life.
- **100% Sharp Tools** ensured by an automatic 2nd pass resharp with variable stock removal in cases where the initial specified stock removal was insufficient to achieve the desired cutting edge sharpness.
- **100% SPC Data Collection** with real time, machine adjustments automatically made based on trends. Extensive reporting of all data.



VISIONARE SYSTEM™
ADVANCED REPOINT ENGINEERING

U.S. Patent Number 6,030,276

The industry leading closed loop resharpening system combines six axis robotics with optical image recognition and measurement.

The operator variation of a manual resharpening system when processing drills of less than 0.020" diameter has been replaced with an optical image recognition and analysis system. The **VISIONARE** patented optical system achieves the industry's best Gage R&R results.

The patented optical image capture and measurement system is used at two key process points.

1. Pre-Grind Screening and Alignment

Prior to grinding, each tool is confirmed for diameter, geometry, and to have sufficient remaining flute length. Digital images from the tip and flute align the drill bit into position.

2. Post-Grind Point Geometry Inspection

Each tool receives 100% point geometry inspection for 11 attributes to ensure compliance to the specification prior to repackaging packaging.

Optical image capture and analysis of each tool

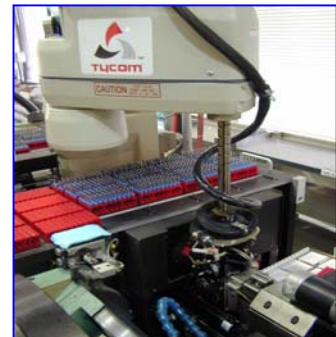
Pre-Grind

Diameter
Point Angle
Margin Width
Helix Angle
Overall Length

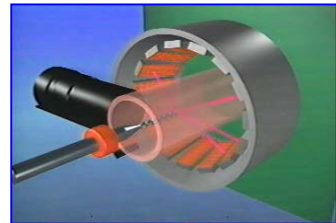
Post-Grind

Diameter
Gap/Overlap
Flare/Negative
Offcenter
Offset
Cutting Edge Chips
Round Corner
Stock Removal
Overall Length

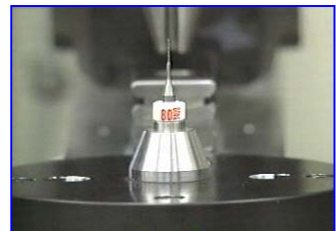
Measured data is collected and analyzed using real time SPC logic control. The closed loop quality system, exclusive to **VISIONARE**, is programmed to stop the process in reaction to trend data or out-of-control data points, consistent with traditional rules of statistical process control.



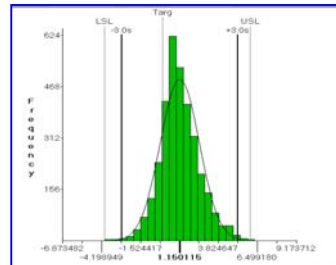
"Box to Box" Robotic Handling



Patented Digital Optics



Patented Ringset Technology



SPC Data Control

