

# ULTRA PERFIX™ 120S

Automated Optical Shaping (AOS) System



# ULTRA PERFIX™ 120S

Make it Perfect.

Enabling major cost savings in fine-line advanced HDI & IC substrate production, Ultra PerFix™ 120S automatically shapes excess copper defects down to 10µm line/space resolution. The system delivers breakthrough capabilities for eliminating scrap by achieving perfect results in less than a minute on complex HDI, CSP, FC-CSP, BGA and FC-BGA designs.

## Benefits

### Maximum Scrap Saving

- Perfect shaping of shorts and excess copper defects down to 10µm
- Major yield improvement on advanced HDI & IC substrate arrays
- High quality results on advanced HDI, CSP, FC-CSP, BGA and FC-BGA designs

### Superior Quality with CLS (Closed-Loop Shaping) Technology™

- Iterative and controlled process
- Automatic comparison to the CAM data
- Minimum penetration to the laminate

### Robust Performance

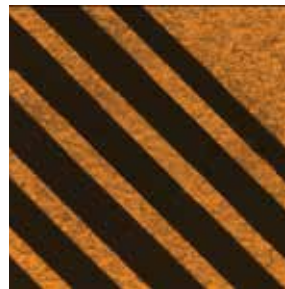
- Utilizes Orbotech's patented, high performance laser technologies
- Shapes more than 60 typical fine line defects per hour
- Fast setup enables switching jobs easily

### Connectivity

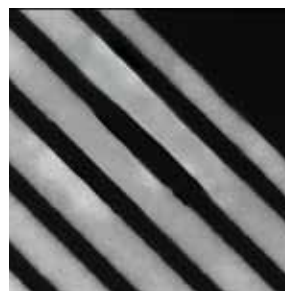
- Automatic connectivity to Orbotech's AOI and verification systems only
- Manual operation mode with other solutions



Before shaping



After shaping - White light image



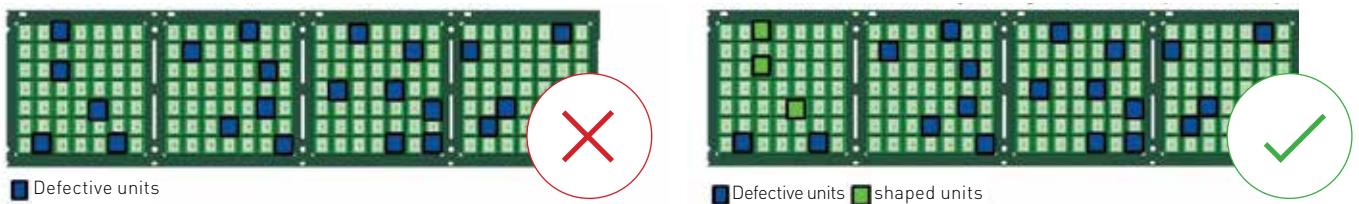
After shaping - UV light image



## Maximum Scrap Saving

Increasing production yields on even the most advanced HDI, CSP, FC-CSP, BGA and FC-BGA jobs, Ultra PerFix™ 120S saves advanced HDI & IC substrates that would otherwise have to be scrapped. Utilizing state-of-the-art technologies, the system shapes any type of short or excess copper defect including those on multiple lines, corners and ball areas, without damaging the shaping area. Thoroughly tested to meet the highest industry standards, Ultra PerFix™ 120S performs perfect shapings just as if there were never a defect originally. The system's results meet strict manufacturing specifications such as electrical characteristics, durability to time and stress, and visual requirements.

Ultra PerFix™ 120S significantly increases IC substrate yields by shaping defects and saving the whole strip from scrap\*.



Before Ultra PerFix™ 120S, whole strip was scrapped

\*Assumes a strip has to be scrapped if it has more than 10% defects

After Ultra PerFix™ 120S shaped just 3 defects, whole strip is saved!

## Superior Quality with CLS Technology™

CLS (Closed-Loop Shaping) Technology™ is the key to Ultra PerFix™ 120S's exceptional accuracy and speed. Orbotech's proven image acquisition captures precise images of the defect area. A set of specialized analysis algorithms compares the images to the CAM data in real-time, automatically finds the copper to be shaped, then guides the system's laser as it accurately ablates excess copper. The full, 3-step cycle of image acquisition, image analysis and laser ablation is repeated until the shaping is perfect, with no damage to conductors and minimum penetration to the laminate.

## Robust Performance

Ultra PerFix™ 120S achieves more than 60 shapings per hour for typical fine-line defects. The advanced laser system design emits high-frequency pulses combined with patented, ultra-fast moving mirrors for optimal control. An innovative optical mechanism maximizes laser intensity and accuracy to ensure superior laser performance on a variety of materials. Ultra PerFix™ 120S's fast setup enables easy switching between jobs.

## Connectivity

Ultra PerFix™ 120S becomes the shaping center for all excess copper defects detected along the advanced HDI & IC substrate production line. In mass production mode, defect coordinates are automatically received from Orbotech AOI or verification stations for maximum speed. Ultra PerFix™ 120S can receive coordinates from other types of equipment using manual mode.