

# LASER SOLUTIONS FOR FLAT PANEL & PHOTOVOLTAIC MANUFACTURING





## The Vytek Partnership

Vytek's approach is to partner with our customers in order to formulate and implement a solution which properly addresses both the application requirements as well as budgetary constraints.

We will Work With You to Carefully Blend a Laser Solution Seamlessly into Your Other Operations. We are Manufacturers Ourselves and as such, we have a Strong Understanding of Manufacturing Issues and Requirements. We Promise to Maximize the Benefits to You While Keeping the Expenses Down.

## The Vytek 3-Phase Thin-Film PV Start-Up Solution

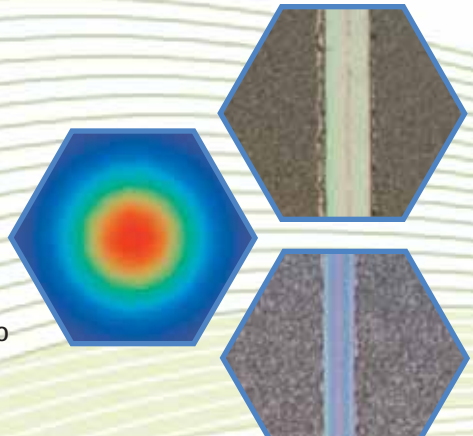
- PHASE I** FiberCab for Scribing and Edge Deletion on Test Coupons  
Full Access to Vytek's Application Center and  
Process Development Engineers
- PHASE II** Deployment of Vytek's Field Proven protoSCRIBE Low to  
Medium Volume, Full-Size Panel Scribing System for  
Pilot Production
- PHASE III** Axiom Production Laser Solutions for P1, P2 and P3  
High-Accuracy Scribing and Rapid Edge Deletion Tools



**protoCAB<sup>3X</sup>**  
300mm X 300mm Standard Work Area

### Features

- Digital Control 3-Axis Dual Wavelength 532/1070nm High-Speed Galvo Head
- Integrated Optical Rail Mounting System for Dual Laser Support 532/1064nm with Independent:
  - Adjustable Beam Expanders
  - Collimators and
  - Gaussian Inverters
- Optical Alignment System for Rotational and Positional Adjustment
- 32-Bit Motion Electronics
- Protective Cover Glass
- Tooling Table with Mounting Points
- Optional Work Area Expansion up to 500mm x 500mm



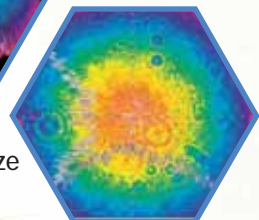
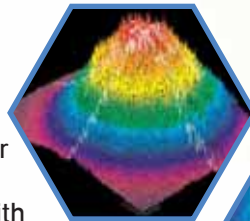


### protoSCRIBE

- Flat Panel System for Prototyping and Pilot Production
- Field Proven Laser Scribing System Generates High Precision Scribes through Successive Coating Processes

### protoTOOLS

- Custom Beam Shaping Optic Modules are Configurable to Optimize Beam Characteristics
- Gaussian to Top-hat Conversion for Uniform Material Removal
- Unique Focus Spot Geometries with Round, Square and Rectangular Shapes Available
- Beam Expansion and Collimation For Focus Spot Size Adjustments



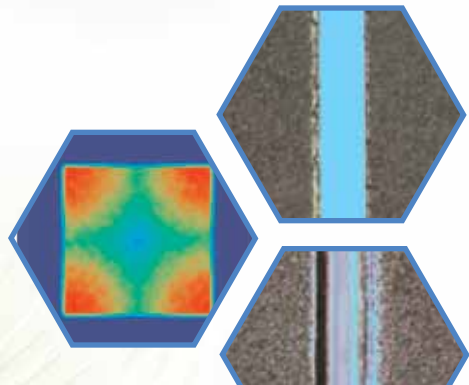


### Axiom

- High Volume Automated Workstation Delivering an Unprecedented Combination of High-Speed Positional Scanning, Large Work Area and Small Feature Size, Without Sacrificing One for Another.

### Features

- Configurable with Vytek's Proprietary protoTOOLS Beam Shaping, Along with Integrated Machine Vision, Material Handling and the Ability to Utilize Multiple Laser Sources for Enhanced Processing Through Parallel Processing Operations.



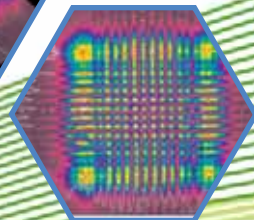
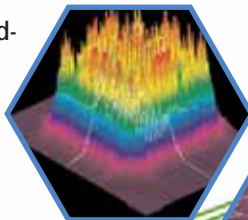


### protoSCRIBE GX

- GEN 7.5 Pilot Production Machine
- Fully Enclosed System Capable of Panel Pass-through for In-line Integration
- Modular Panel Transport System with Adaptable Work Holding Accommodating Coupon to Panel Sized Substrates
- Capabilities for Solar, TFT & Plasma Flat Panel Patterning

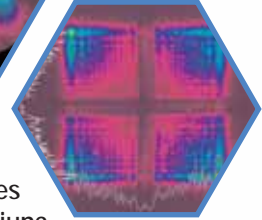
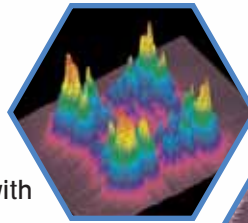
### protoTOOLS

- Fully Customizable Beam Shaping
- Optional Integrated Hi-Magnification Camera for Stand-Alone Inspection
- Machine Vision Package for Automated Part Location & Alignment



## Applications Center

Our Applications Center Is Equipped with a Full Compliment of Photovoltaic Processing Platforms outfitted with a wide range of laser sources. Our knowledgeable staff is dedicated to the development of new and novel processing techniques that employ our proprietary beam shaping optics in conjunction with our high-speed, precision motion platforms.



	Near Infrared	Visible	Ultraviolet
<b>c-SI PV CELLS</b>			
Edge Isolation	*	*	*
Via Drilling	*	*	*
Wafer Cutting	*		
Wafer Marking	*	*	
Diffusion	*		
Stringers/Solder Channels	*	*	*
Buried Contacts	*	*	*
<b>Thin-Film Substrates</b>			
P1, P2 & P3 Layers	*	*	*
Edge Isolation	*	*	
Edge Delete	*	*	
Defect Mitigation	*	*	
Sub-Surface Marking		*	*

For more information for submitting samples for evaluation, process refinement and equipment procurement please contact us at 978-342-9800, or visit our website [www.solarscribing.com](http://www.solarscribing.com)





## Corporate Overview

Vytek has been providing laser equipment to the photovoltaic, flat panel and glass industries as well as other major industries since 1990. Our Technical Staff is dedicated to the design, manufacture and support of our state-of-the-art Photovoltaic Processing Equipment at our Headquarters located in Fitchburg, Massachusetts.

With an install base of over 1,000 systems in a wide range of industries including Solar, Medical, Automotive and Aerospace Industries, Vytek is an expert in the field of Laser System manufacturing. Our experience and proven track record in materials processing and particle removal for such materials as Cadmium Telluride, Amorphous Silicon and Molybdenum is unparalleled due to our development of specialized beam Shaping Tools for a variety of wavelengths.

