

PRODUCT LINE UP

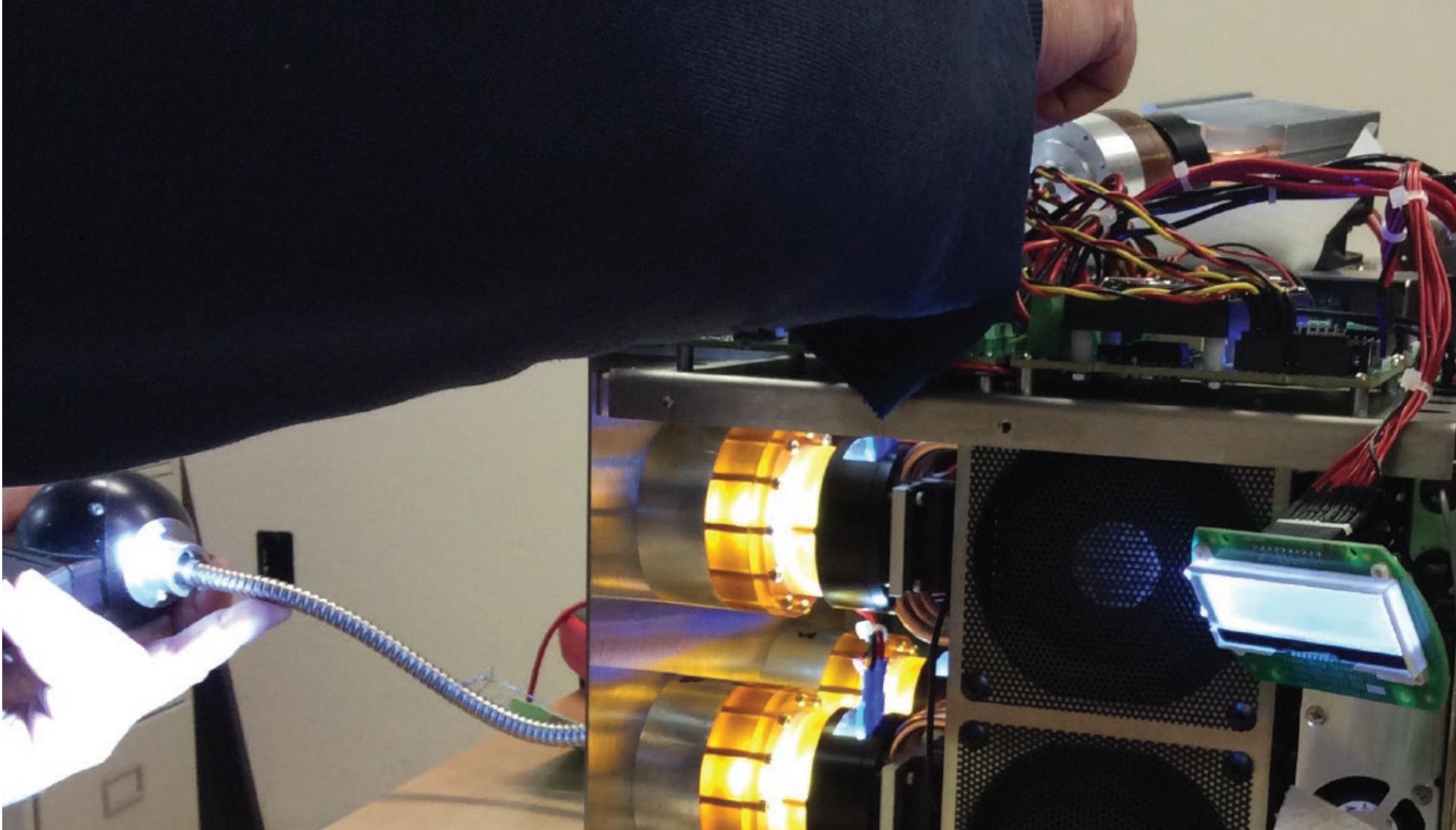
TechniQuip Corporation
530 Boulder Ct. #103, Pleasanton CA 94566
www.techniquip.com

UPDATED 5.10.16



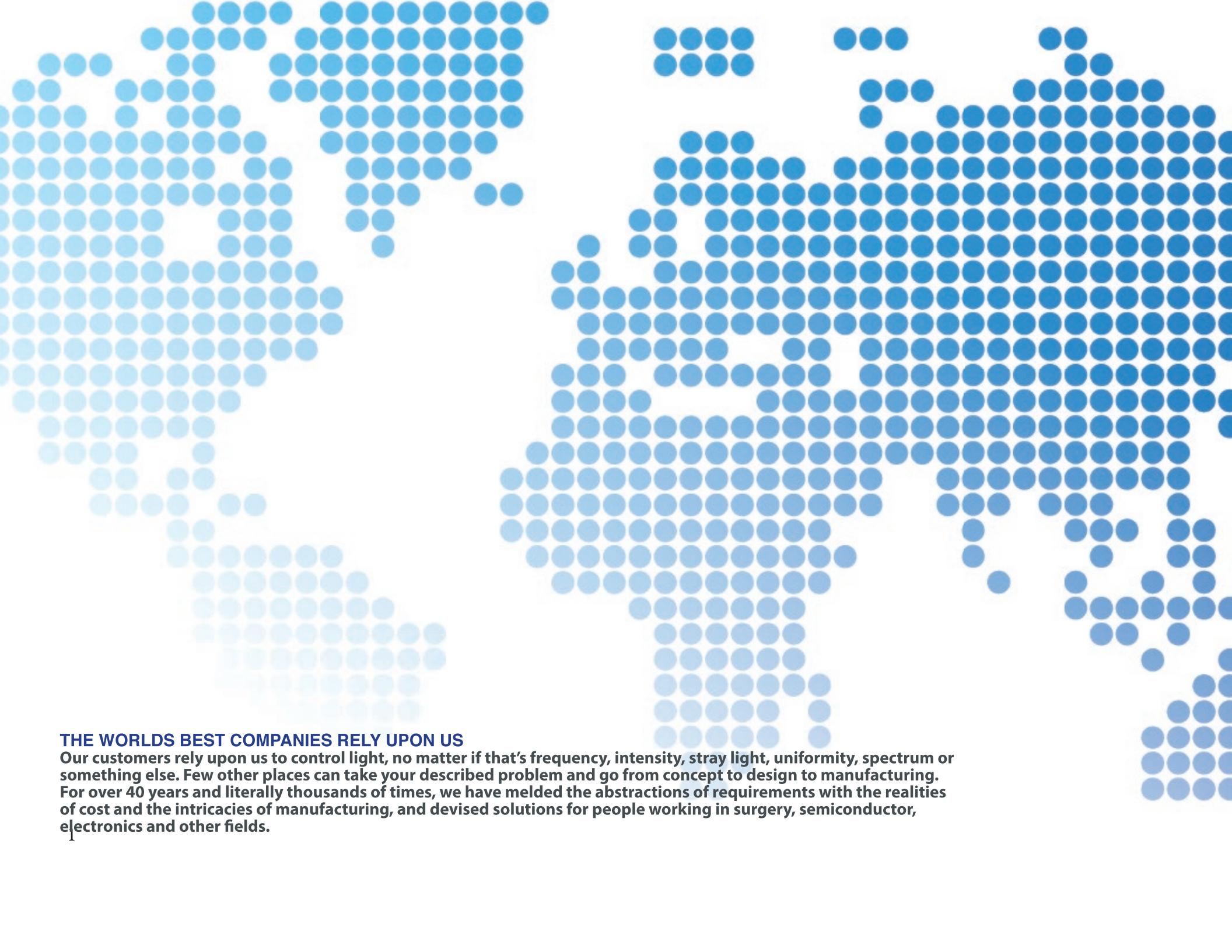
LIGHTING HELPS MAKE THE IMAGE

If your work relies upon obtaining a precise image then you know the importance of lighting and likely also know that lighting is in the midst of a dramatic renaissance - legacy technologies are giving way to LED. TechniQuip's products are on the forefront of this shift.



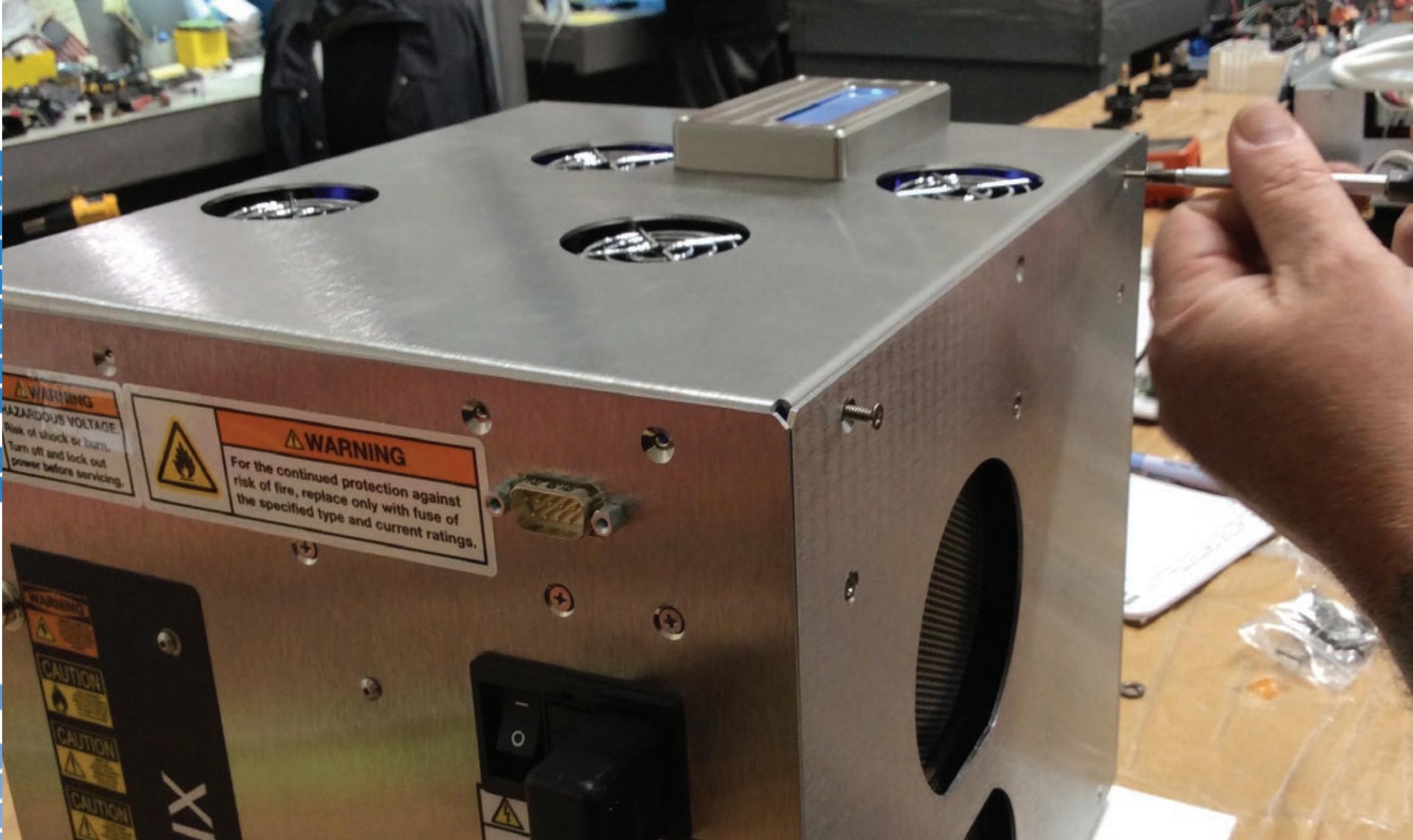
WE SOLVE LIGHTING PROBLEMS

We have completed thousands of projects, so we don't scramble around searching for a good approach, we work to get the job done cleanly, at the highest quality and at an appropriate price —and wouldn't consider any project done until you are 100% satisfied. Our precision-designed lighting systems enable a deep range of scientists, engineers and technology professionals (and their machines) to see better: with better results and productivity.



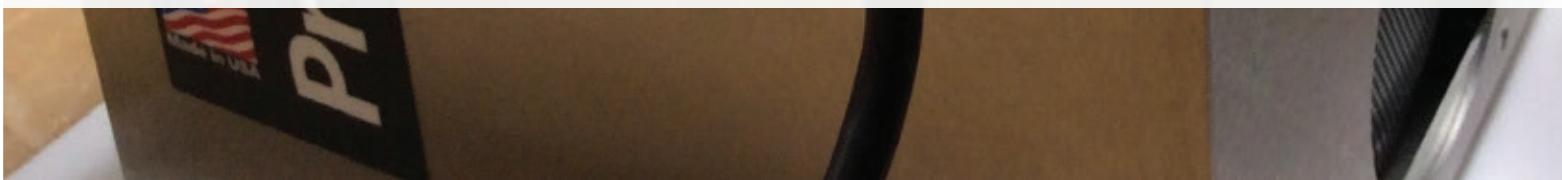
THE WORLDS BEST COMPANIES RELY UPON US

Our customers rely upon us to control light, no matter if that's frequency, intensity, stray light, uniformity, spectrum or something else. Few other places can take your described problem and go from concept to design to manufacturing. For over 40 years and literally thousands of times, we have melded the abstractions of requirements with the realities of cost and the intricacies of manufacturing, and devised solutions for people working in surgery, semiconductor, electronics and other fields.



CALIFORNIA DESIGN / BUILD CENTER

Our Design / Build Center is thoughtfully equipped with modern design and manufacturing tools, resources, skills, and methods. As such we have been fortunate to serve the lighting needs of the world's best companies and institutions.



LED RING LIGHTS



Inside Diameter	66 mm	66 mm	66 mm
Series	SlimLine	ProLine 40	Proline 80
Positioning	Good	Better	Best
# LEDs	40	40	80
Ring Material	Combination Die Cast Alloy / Engineering Polymer	Machined Aluminum	Machined Aluminum
Dimming	●	●	●
Segment Control		●	●
Table Top Controller		●	●
CE	●		Pending
Common Options	ESD	UV	UV- Dual UV/VIS - ESD

LED RING LIGHTS



Inside Diameter	44 mm	82 mm	82 mm
Series	ProLine 30	ProLine 882	ProMax 882
Positioning	For Zoom Optics and other Machine Vision Type Lenses	For long working distance 80 - 82 mm objectives	Short Working Distance 80 – 82 mm Objectives
# LEDs	30	80	80
Ring Material	Machined Aluminum	Machined Aluminum	Machined Aluminum
Dimming	●	●	●
Segment Control	●	●	●
Table Top Controller	●	●	●
CE			Pending
Common Options	UV	UV - ESD - UV/VIS	New!

KEY FEATURES OF LED RING LIGHTS

Segment Control

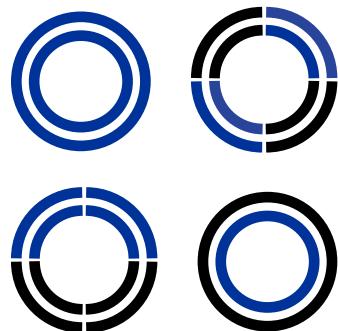


Table Top Controller / Dimmer



Optional Desktop Power Supply Makes International Power Options Easy



ESD Safe Versions Available



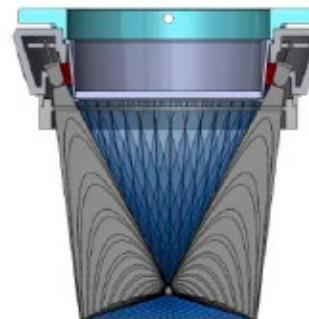
UV LEDs Available



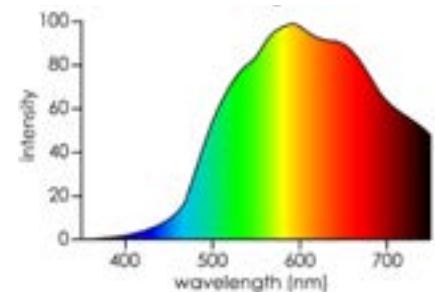
Precision Machined – Provides Superior Focusing / Uniformity



Complete Line of Polarizer / Analyzer Attachments



Complete Range Of Whites & Colors



LED FIBER OPTIC ILLUMINATORS



	Upgraded for 2016	New!	New!
Series	ProLux		Quad
Positioning	Standard Microscopy (bundles from 10 – 25 mm)	This illuminator has features which maximize flux into small bundles (but is equally competitive on larger bundles)	
Chassis	Electro Galvanized Steel	Extruded / Die-Cast Aluminum Alloy	Stainless Steel
Dimming	●	● (1024 Steps)	● (1024 Steps)
Remote Control	Tethered Dim / ON-OFF	USB (RS232)-Full Communication	USB (RS232)-Full Communication
Fault Detection		Full Range (Fans, Temp, Cables, etc.)	Full Range (Fans, Temp, Cables, etc.)
Display		Fully Programmable	Fully Programmable
Certification		UL 60601 (Medical) In Process - CE	New!

LED SPOT LIGHT PRODUCTS



	New!	Coming 2016
Series	P1099	
Positioning	LED Gooseneck Beams (Oblique Lighting)	Point Source for Transmitted Light Applications
LED Options	Warm – Cool – Day – UV - Colors	Warm – Cool – Day – UV - Colors
Configurations	Available with Single / Dual Arms	Comes with threaded tip that accepts adapters
Cord Wrap	Integral Cord Wrap	
Input Power	Global Power Input (90 – 264 VAC)	Global Power Input (90 – 264 VAC)
Dimming	●	●
Controls	Capacitive Touch Controls	Capacitive Touch Controls
Optics	Triple Lens Optical System	Triple Lens Optical System

HALOGEN FIBER OPTIC ILLUMINATORS



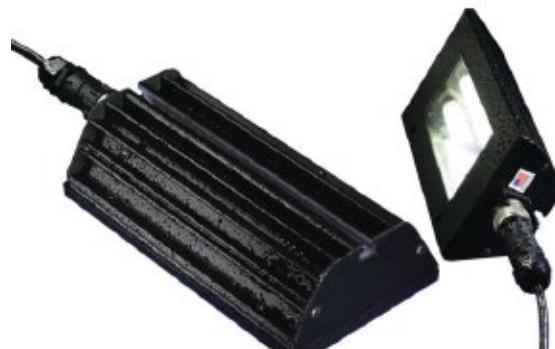
Series	FOI 150 / 250	21 AC	21 DC
Positioning	Likely the Most Popular Fiber Optic Illuminator for Stereo Microscopy For Over 25 Years	Sleek Extruded Aluminum Chassis	Regulated DC Output for Imaging Applications
Power Options	150 / 250	150	150
Remote Control	Tethered Dimming - ON/OFF	Tethered	0 – 10 VDC Computer Control
Certifications	UL	CE	UL, CE
Common Options	IR Filter		Multi-spectral Lamps

FLUORESCENT RINGS



Series	TechniLight	Model 10
Positioning	Likely the Most Popular Metal Fluorescent Ring For Over 25 Years	Likely the Most Popular Polymer Fluorescent Ring For Over 25 Years
Lamp Options	White / Colors / UV	White / Colors / UV
Ballast Options	High Frequency	High Frequency
Input Power	115 / 230	115 / 230

FLUORESCENT LINEAR LIGHTS



Series	SLT	132
Positioning	Sealed for Wet Locations	High Frequency Low Profile Makes it Ideal for Imaging Applications
Lamp Options	White / Colors / UV	White / Colors / UV
Ballast Options	High Frequency	High Frequency
Input Power	115 / 230	115 / 230

CORPORATE CAPABILITIES: **MANUFACTURING**

FIBER OPTICS / BULK OPTICS

We fully understand how to work with borosilicate fibers – routing, lapping, bonding, etc. in order to make virtually any configuration – single, many channel, rings, medical devices, lines, etc. Our team is trained in working with bulk optics (handling, placing, bonding, aligning, etc.) We have a dedicated room for fiber optics with the appropriate ventilation and equipment (ovens, tables, diamond saws, lapping wheels, heat guns, test illuminators, chop saws).

FIBER OPTIC MANUFACTURING CAPABILITIES

DARKFIELD



GOOSENECKS



ANNULARS



LINES



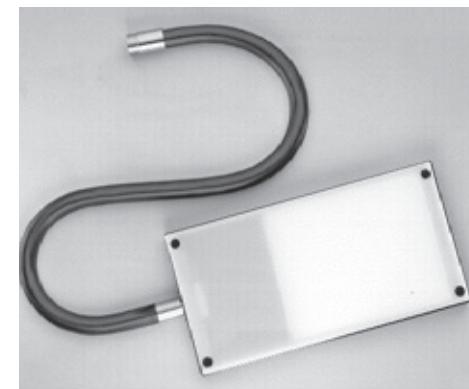
MEDICAL



HIGH TEMP (IR)



BACK LIGHTS



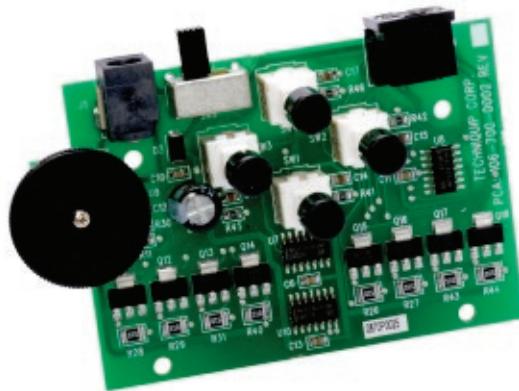
OEM / CUSTOM



CORPORATE CAPABILITIES: ELECTRONICS

LED DRIVER

4 Channel Dimmable



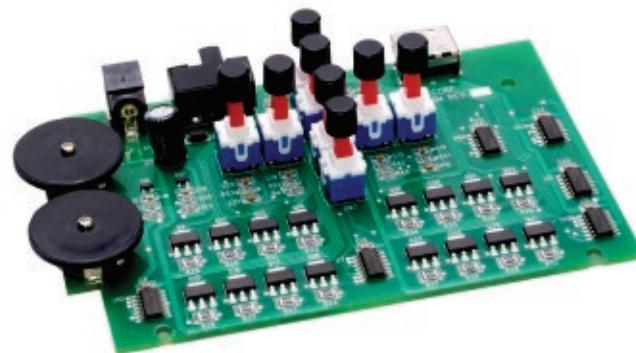
LED DRIVER

2 Channel – Dimmable – Capacitive Touch
Controls – Medical – Firmware Controlled



LED DRIVER

8 Channel, Dimmable



ELECTRONIC FLUORESCENT BALLAST

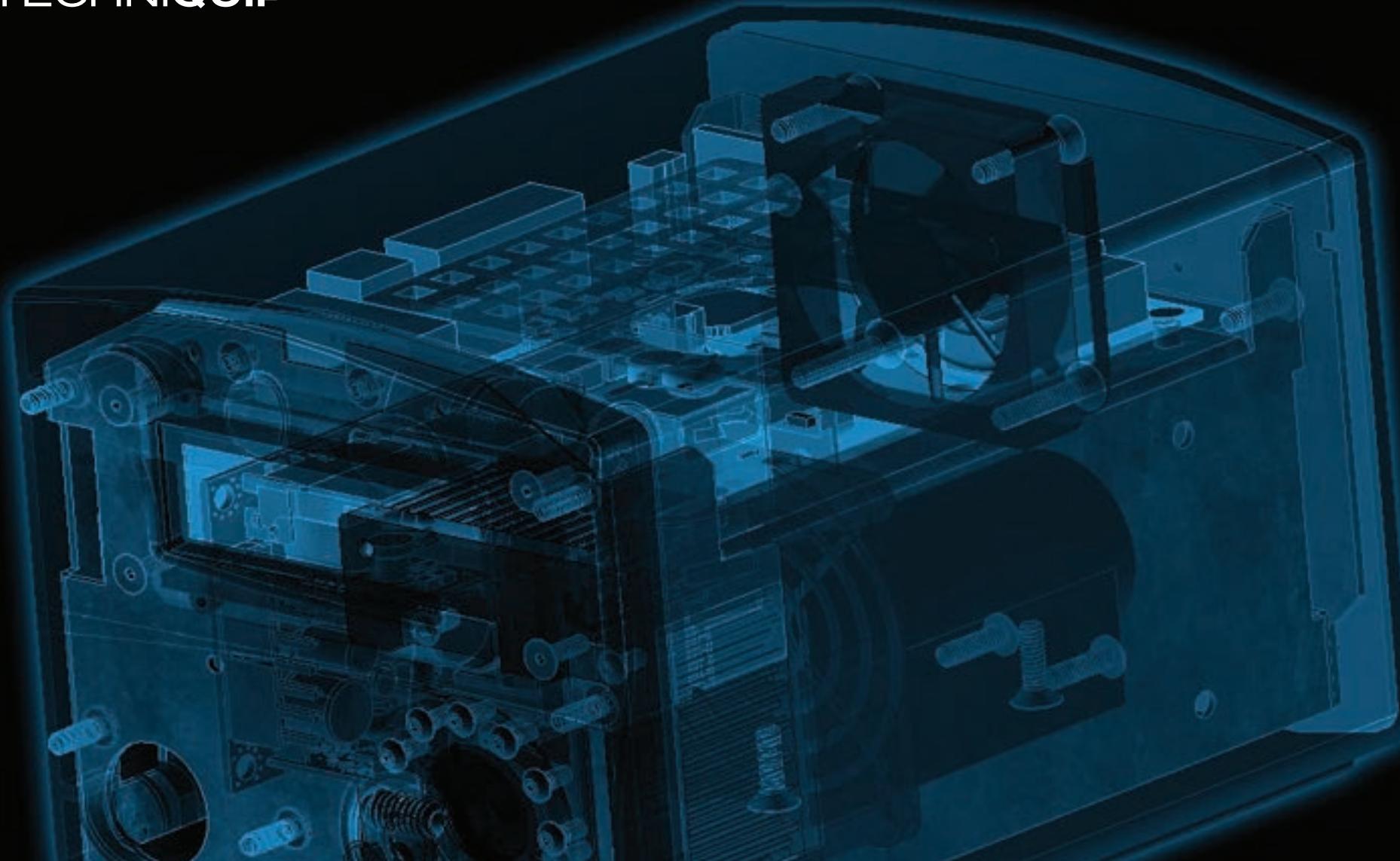
High Frequency (Flicker Free) Fluorescent Ballast



LED DRIVER

Single Channel, Computer Controllable, Daisy
Chain Up to (8) For Simultaneous Operation,
True DC, 30A (108 Watts), 1023 Dimming Steps, <
5 ms Response Times, Fault Detection,
Firmware Controlled.





MECHANICAL DESIGN

We have extensive mechanical design capabilities from metalwork of all types (cnc, spun, formed, sheetmetal, die cast, extruded) to plastics (formed, injection molded, machined, etc.) to moving parts.

CORPORATE CAPABILITIES

ELECTRONICS

- LED Drivers
- Fluorescent Ballasts
- Halogen Power Supplies
- Metal Halide Ballasts
- Capacitive Touch Controls
- Firmware
- Lithium Ion Batteries
- Touch Control / Overlays
- PWM and Non PWM Dimming
- Trailing and Leading Edge Dimmers
- Extensive EMC Requirements
- Low Voltage Directive

Some of the unique challenges we encounter frequently:

- **Flicker – Free Operation:** Video and Film require lighting that does not generate light and dark periods – for that reason we have considerable experience with electrical techniques to avoid this “strobing” effect.
- **Leakage Current:** Patients with exposed body parts are vulnerable to even low levels of leakage current and for that reason many of our products must meet stringent requirements.
- **Dimmable Low Voltage / High Current / True DC LED Driver:** Many of today’s highest power leds still operate at under 3.8 Vf. For that reason we developed drivers that can operate up to 30 amps at these voltages – furthermore we developed such drivers with true DC output, computer control, eeprom configurability, fault detection and the like.

CERTIFICATION

With extensive certification experience (UL, TUV, CE, Aviation, etc.). We have undergone numerous audits by certification authorities.



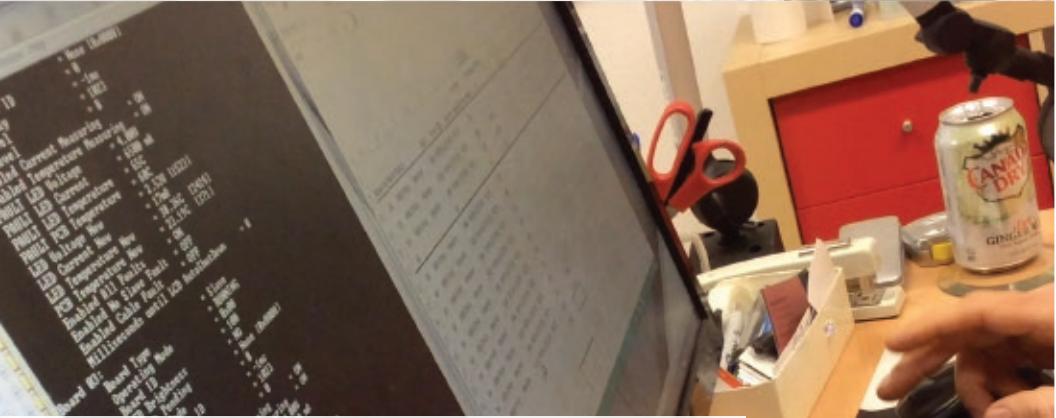
TEST ENGINEERING

Virtually all our new designs undergo extensive testing – firmware, mechanical, electrical, thermal, photometric, ergonomics, etc.



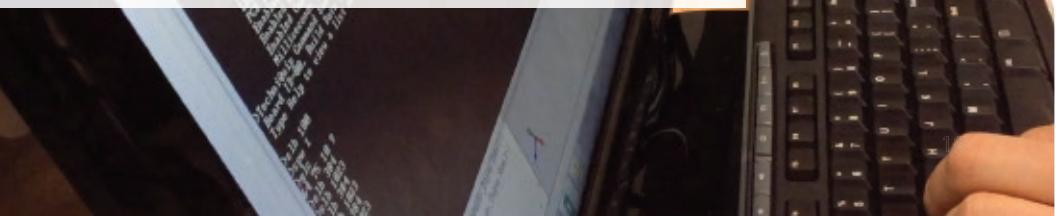
TOOLING DESIGN

We have sufficient knowledge of tooling design (fixtures, molds, dies, etc.) such that our designs accommodate the specific requirements of the tooling process.



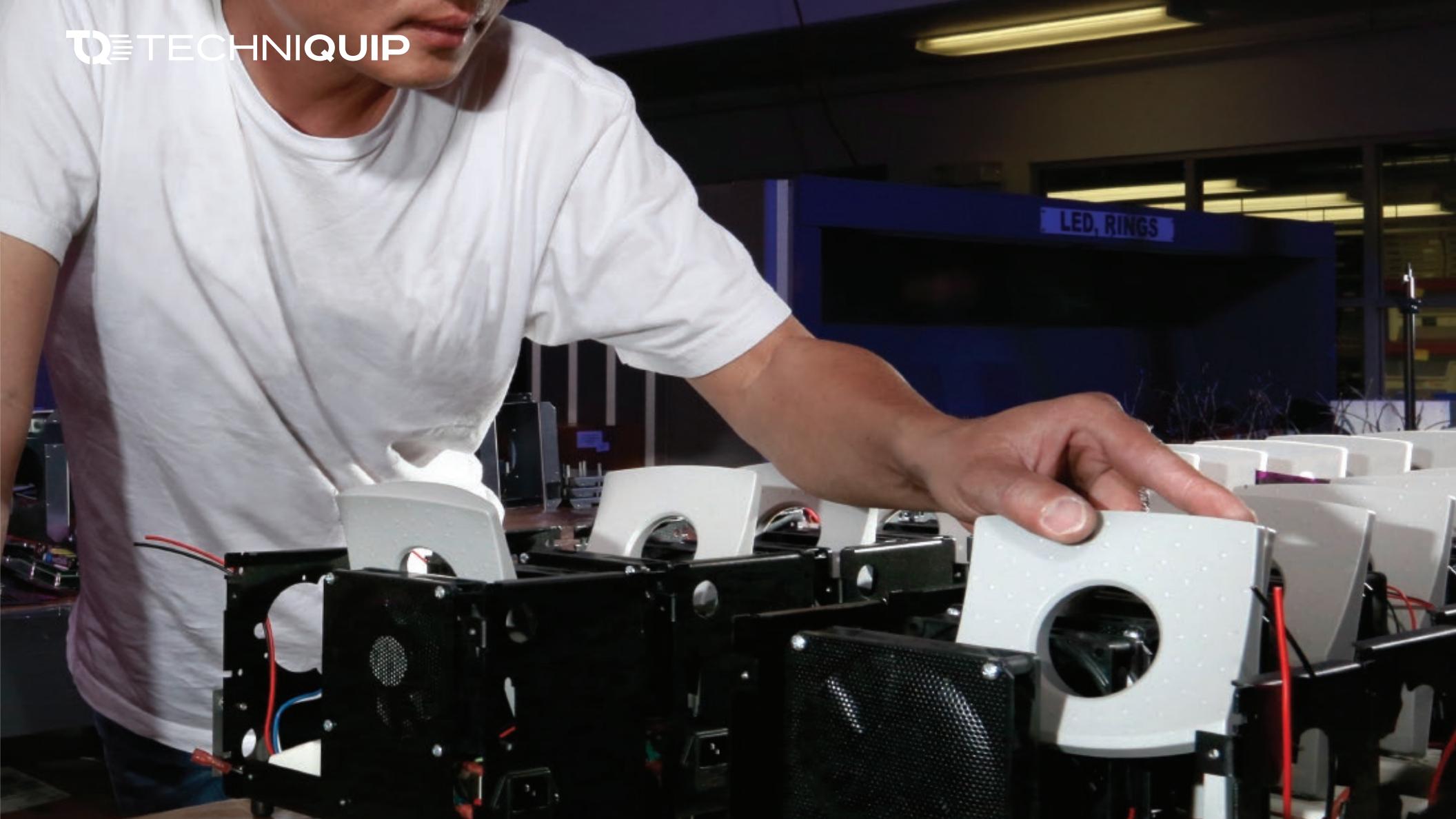
FIRMWARE DESIGN

Our firmware designs are outsourced but we have sufficient expertise to specify and source it efficiently, test it rigorously, and support it.



**METALWORKING**

We have a full machine shop with state-of-the-art HAAS CNC tools and a variety of complementary equipment (deburr, grinding, cutting, etc.). We can make virtually any metal part that does not require a 5 axis machine nor a swiss screw machine. We use Surfcam CAM to speed up programming times – we can mill true 3D surfaces.

**ELECTRICAL / PCBA**

Almost all our designs utilize PCBAs but we chose to have them fabricated and stuffed locally here in Silicon Valley. All of our assemblers are capable of installing cables and wires, soldering, crimping, cutting, testing, etc.





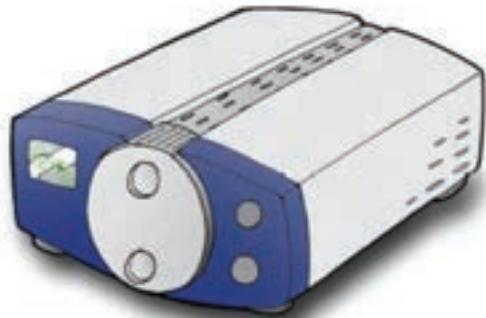
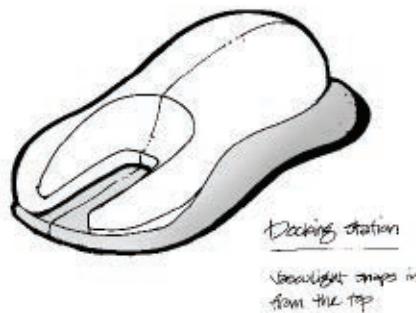
FINAL ASSEMBLY / TEST

We have several trained assemblers who are capable of assembling (fasteners, epoxies, etc.), making and installing cables and wires, soldering, crimping, cutting, polishing, cleaning, etc. We have full electronics and photometric test capabilities and staff is trained to use these. (Ground bond, DC hypot, AC hypot, Leakage Current, Global Power Inputs, IR Cameras, UV Meters, Illuminance Meters, Integrating Spheres, Spectrometers, Digital Multi-meters, Oscilloscopes, etc.)

CORPORATE CAPABILITIES: **DESIGN**

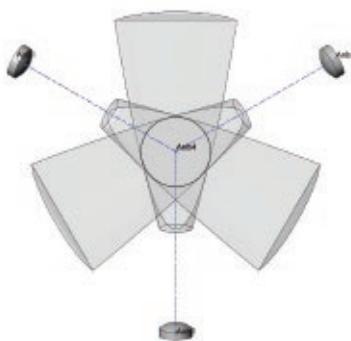
INDUSTRIAL DESIGN

We have considerable expertise with industrial design and are capable of modeling complex surfaces in solidworks. We also have a 3D printer to aid in the process.



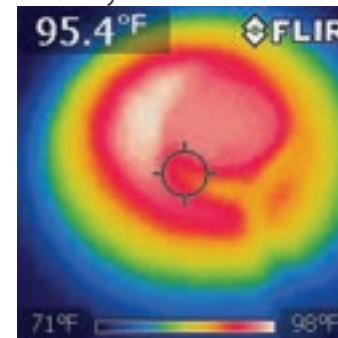
OPTICAL DESIGN

We have extensive experience designing optics for lighting.



THERMAL DESIGN

Thermal Design is critical in most of our products and we have extensive experience designing and testing robust solutions, from modeling with electrical analogies to finite element analysis.



CORPORATE CAPABILITIES: ILLUMINATION DESIGN

- CPC Reflector Design
- Kohler Illumination
- Collimators
- Randomized Fiber
- Glass Ground Lenses
- Spherical Reflectors
- Modeling of Rays
- Control of Stray Light
- Cladding and other Finishes
- Liquid Light Guides
- Borosilicate Fiber Guides
- Fiber Optic Coupling
- IR Cold and Hot Mirrors
- Polarizing Materials
- Fresnel Lenses
- Zemax
- Precision Apertures
- Sputtered Coatings
- Achromatic and Apochromatics
- Aspheres
- Plastic Molded Lenses
- Glass Molded Lenses
- Projection Optics
- Diffusers
- FRED
- Diamond Turning
- Remote Phosphur

Some of the unique challenges we encounter frequently:

- **IR - Free Operation:** IR can be damaging to many specimens / subjects – most of our systems have features to limit its arrival on the target.
- **Etendue:** Etendue is a property of light in an optical system, which characterizes how “spread out” the light is in area and angle (in short how much light can we stuff into a fiber / get to the target / or otherwise move around in a system).
- **Color:** If blood is not properly illuminated surgeons can be fooled by the resulting color and incorrectly interpret the patient’s condition.
- **Generating Crisp Beams:** Beams with well defined edges and a lack of chromatic aberrations.
- **CPC Light Engines:** We have developed several products using CPC reflectors to efficiently couple light from a single led into fiber optics.

CORPORATE CAPABILITIES: INFRASTRUCTURE

WAREHOUSE / OPS CENTER

Our 8,200 square foot facility has adequate space for storage of inventory to support production. We are located close to the Port of Oakland for international bulk shipments.

With dedicated OPS Center that is manned during business hours – we answer 100% of incoming calls here, process orders, coordinate production, resolve issues, provide sales support, etc.

QMS / IT INFRASTRUCTURE

By being an ISO 9001:2008 certified for almost 10 years and undergo annual audits. We maintain a software based NCR system for tracking issues.

We have a variety of IT Assets – including an inventory based accounting system with MRP capabilities – we utilize a number of cloud based services including dropbox, box, wedoist, etc.

MAIN SHOP FLOOR

We have a main shop floor with cells dedicated to each line and with the associated inventory located in efficient nearby locations.

BURN IN ROOM

We have a dedicated burn in / test room where all products undergo burn in and test before shipment.



LEADERSHIP TEAM

DAVID WENSLEY

President

Technology has long intrigued David whose father and peers developed some of the most commonly used technology while at Stanford and its spin-off SRI International.

Visits to SRI during childhood provided a peek into what would become the computer mouse, the graphical user interface, robotics, and many other such wonders.

Upon graduating from the University of California Berkeley David went to work at United Air Lines where the miracle of flight was on display each and every day. From there David co-founded TDG Aerospace, a company that developed anti-icing technology for MD80 aircraft. David has overseen TechniQuip since its acquisition by Technology Dynamics Group in 1996.

David is married and raising three children with his wife of 25 years.



CHARLES (CHUCK) MATHEWSON

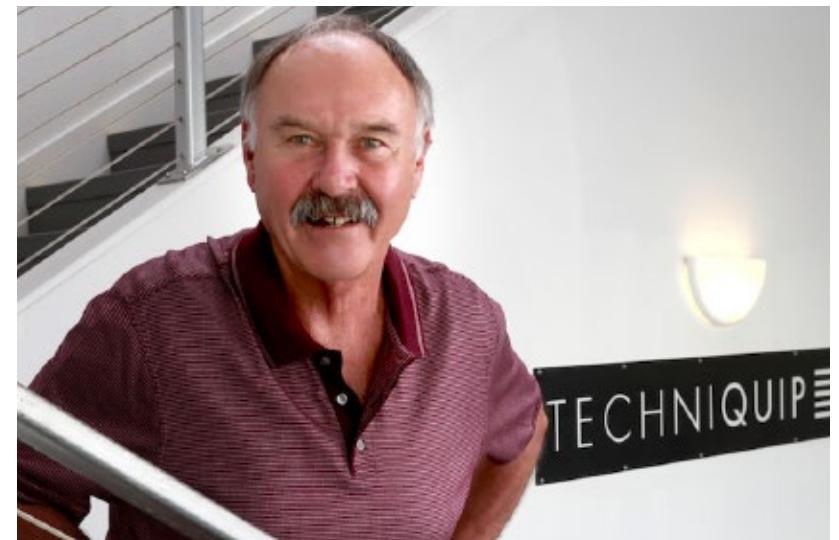
Director of Sales

As TechniQuip's Director of Sales Charles Mathewson, also known as "Chuck", has forty five years experience in the engineering industry including sales and operations management.

Utilizing both his engineering technology degree and business management degree, Chuck designed Cockpit Lighting for the Boeing 727 and 747 Flight simulators.

His proudest accomplishment was supporting Launch and Recovery at NASA Johnson Space Center for Lunar Landings.

Chuck has been married to his wife for twenty three years and is the honored father of six children.



ROBIN STEINGRAF

Materials Controller

The lifeblood of any manufacturing company is the supply of raw materials and components at a level sufficient to satisfy production but below a level that destroys investor value with excessive inventory holdings. Robin walks that thin line, using the latest MRP tools.

In the last ten years this task has grown more challenging every year as component suppliers have moved offshore creating much longer lead times for the simplest of parts such as switches, fasteners, and the like.

Robin's BS in Managerial Economics from the University of California, Davis and her prior work managing complex tasks for other companies has made her uniquely qualified for the complex, fast paced challenge of manufacturing a low volume, high mix group of products on schedule each month.

When not tackling supply issues, Robin is busy raising three children.

**GEORGE GRAUER**

Director of Operations

Automation dramatically levels the global playing field and provides precise and consistent results. As such, TechniQuip fully invested in the latest CNC technologies from HAAS several years ago. George's background in mechanical engineering made him uniquely qualified to manage these operations.'

George graduated with a BSME from the University of Illinois, Champaign and went on to do design work for the US Navy and United Air Lines before co-founding TDG Aerospace, Inc. with Dave Wensley and two other individuals in 1991.

George, and his wife of 23 years, Annika have two college age children.



A PROUD HISTORY OF PROVIDING CUSTOM SOLUTIONS

Plasma Light Source For
Surgical Microscopy circa 2010



4 Channel IR / VIS
Illumination for
Top side / Bottom side
Wafer Inspection



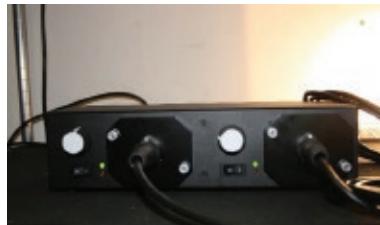
Dual Channel Medical
Metal Halide / Halogen
Illuminator circa 2011



Dual High Intensity Computer Controlled Dark-field Light Source for Automated Wafer Inspection
- Powered by (4) 60 Watt LEDS circa 2015



2 Channel Multispectral (IR / VIS) Illuminator for Scientific Imaging Company



Injection Molded Autoclavable Fiber Optic Vein
Illumination System circa 2011



LED Portable Medical Device
(Vascular) Circa 2011



Metal Halide Light Source for Ultra-Precise
Wafer Positioning During E-Beam Metrology
circa 2005



1st Generation LED Surgical Microscope
Lighting System Circa 2015



2nd Generation LED Surgical Microscope Lighting System Circa 2015



Metal Halide Lighting Systems for Museums circa
2010



INDUSTRIES WE **SERVE**

- Surgical microscope companies
- Semiconductor / Electronics companies
- Museums
- Forensics, Law Enforcement
- Pathology / Biotechnology
- Automated Laser Equipment manufacturers
- Gem and Jewelry
- University Researchers
- Defense
- Consumer Products Manufacturers
- Microscopy Companies

Website:
www.techniquip.com

Industry:
Electrical/Electronic Manufacturing

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Privately Held

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