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.
<table>
<thead>
<tr>
<th>Inside Diameter</th>
<th>Series</th>
<th>Positioning</th>
<th># LEDs</th>
<th>Ring Material</th>
<th>Dimming</th>
<th>Segment Control</th>
<th>Table Top Controller</th>
<th>CE</th>
<th>Common Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>66 mm</td>
<td></td>
<td></td>
<td>Combination Die Cast Alloy / Engineering Polymer</td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td>ESD</td>
</tr>
<tr>
<td></td>
<td>SlimLine</td>
<td>Good</td>
<td>40</td>
<td>Machined Aluminum</td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td>UV</td>
</tr>
<tr>
<td></td>
<td>ProLine 40</td>
<td>Better</td>
<td>40</td>
<td>Machined Aluminum</td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td>UV- Dual UV/VIS - ESD</td>
</tr>
<tr>
<td></td>
<td>Proline 80</td>
<td>Best</td>
<td>80</td>
<td></td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td><img src="image" alt="Icon" /></td>
<td></td>
</tr>
</tbody>
</table>
# LED RING LIGHTS

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

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

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

## Series

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

<table>
<thead>
<tr>
<th>Series</th>
<th>TechniLight</th>
<th>Model 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positioning</td>
<td>Likely the Most Popular Metal Fluorescent Ring</td>
<td>Likely the Most Popular Polymer Fluorescent Ring For Over 25 Years</td>
</tr>
<tr>
<td>Lamp Options</td>
<td>White / Colors / UV</td>
<td>White / Colors / UV</td>
</tr>
<tr>
<td>Ballast Options</td>
<td>High Frequency</td>
<td>High Frequency</td>
</tr>
<tr>
<td>Input Power</td>
<td>115 / 230</td>
<td>115 / 230</td>
</tr>
</tbody>
</table>
# FLUORESCENT LINEAR LIGHTS

<table>
<thead>
<tr>
<th><strong>Series</strong></th>
<th><strong>SLT</strong></th>
<th><strong>132</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positioning</strong></td>
<td>Sealed for Wet Locations</td>
<td>High Frequency Low Profile Makes it Ideal for Imaging Applications</td>
</tr>
<tr>
<td><strong>Lamp Options</strong></td>
<td>White / Colors / UV</td>
<td>White / Colors / UV</td>
</tr>
<tr>
<td><strong>Ballast Options</strong></td>
<td>High Frequency</td>
<td>High Frequency</td>
</tr>
<tr>
<td><strong>Input Power</strong></td>
<td>115 / 230</td>
<td>115 / 230</td>
</tr>
</tbody>
</table>
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
8 Channel, Dimmable

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

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.
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.

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.

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

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.
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 Darkfield 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

24,000 Watt HMI Lighting System Developed by TechniQuip Engineers

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

Company Type: Privately Held

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United States

Toll-Free: (888) 414-0789
Main Line: (925) 251-9030