



clear-vu
lighting

**LED LIGHTING TECHNOLOGY IN
UNIQUE APPLICATIONS
11/8/10**



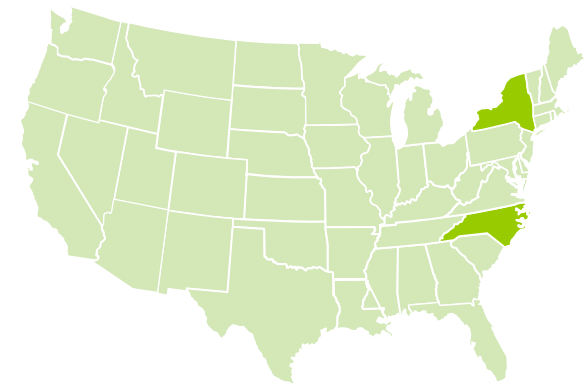
Autronic Plastics, Inc.

- **Founded in 1953**

API has grown from a small plastic molding company to an industry leading, multi-plant, injection molder known for its service, creativity, technology and commitment to excellence.

- **Clear-Vu Lighting LLC is a subsidiary of API**

CVL develops product-based solutions for advanced commercial and industrial lighting applications, focusing on energy efficiency, safety, and enhanced ergonomics.



- 75 employees
- 24 / 5 Manufacturing
- Made in the USA

ISO9001:2000 Certified

UL Certified Assembler and Fabricator

Clear-Vu's Experience in the LED Lighting Industry...

Local OEM for major lighting companies over the past 20 years,
manufacturing products including:

- LED Traffic Signals and Ped-X Signs for the 5 boroughs of NYC
- Edge-lit and traditional cavity LED-based Emergency Exit Signs



The Problem: A Temporary Lighting System from the 19th Century!



BEFORE



AFTER

The Solution: LED PORTABLE LAMP BANK

- CVL designed and manufactured an LED replacement for temporary incandescent lighting used in subway construction and maintenance work.
- The work light can be powered by a standard 110 AC outlet, NiMH battery pack, or high voltage DC 3rd rail source.
- Electricity consumption is reduced by approximately 75% generating a 1.5 year ROI.
- Light output and operational safety are dramatically improved.

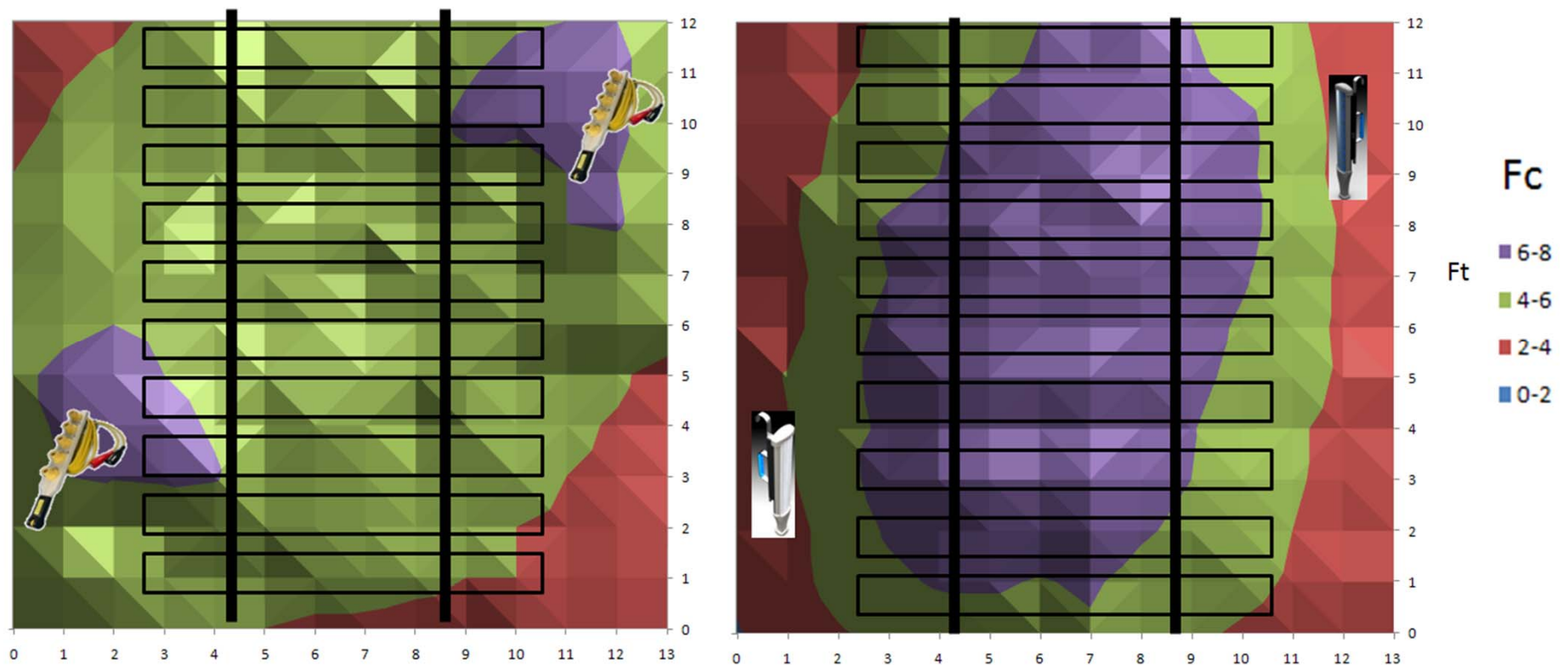


Comparison

Incandescent Solution vs. High Power LED Solution

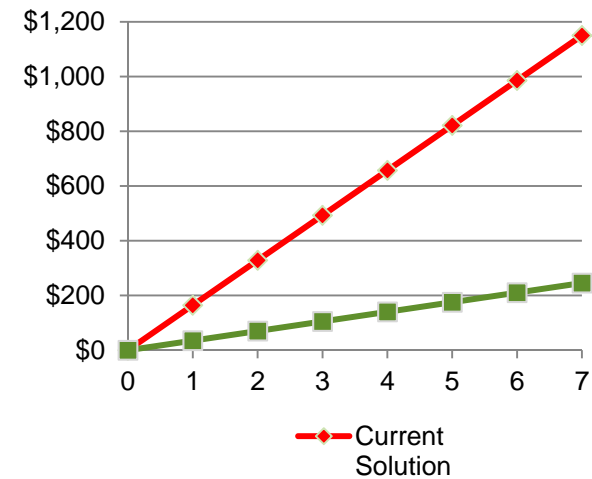
Parameters	5x75W Incandescent Solution	High Power LED Solution
Input Voltage	600 VDC	24 VDC Max, Constant Current
Current Draw	625 mA	750 mA
Power Consumption	375 Watts	92 Watts
System Operating Temp	70C	50C
Color Temperature	2850K	3000-6000k, user preference
Lumen Output	5600 lumens (unfocused)	3600 lumens (focused)
Viewing Angle	360 degrees	140 degrees
Lifetime	1,000 hour rated bulb life	50,000 hours at 70% lumen maintenance

Comparison of Light Output



1/2 Year Use, Individual Unit ROI

	Current Solution	LED Solution
Power consumption	375W	92W
\$/kWh	\$0.10	\$0.10
Usage/yr (h)	4380	4380
Electricity Cost/yr	\$164.25	\$40.29



Estimated Annual *Energy Savings*

(based on 5000 units)

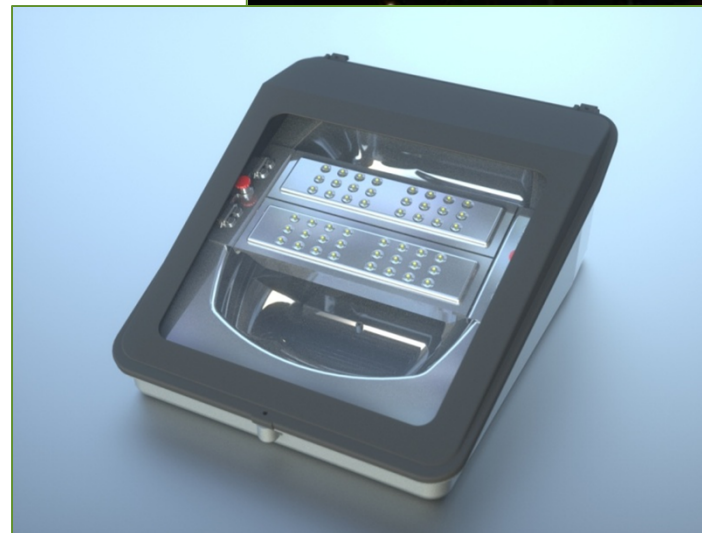
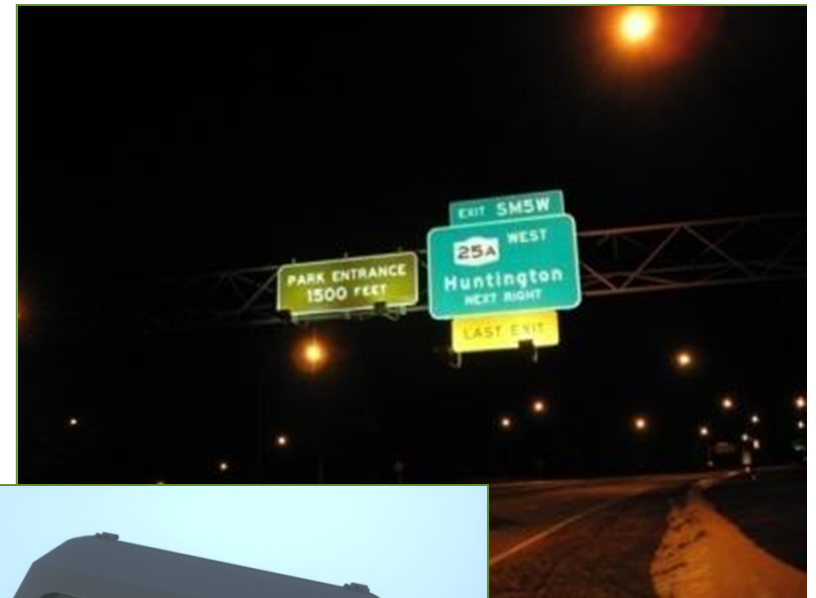
Conservative Use – 1/2 Year	Heavy Use – Full Year
1.79 Mega Watts	3.59 Mega Watts
6,460,500 kWh	12,921,000 kWh
\$646,060 based on \$.10 per kWh	\$1,292,100 based on \$.10 per kWh
9,561,540 lbs of CO2	19,123,080 lbs of CO2

The Problem: Metal Halide Sign Lighters are inefficient and it is costly to replace bulbs



The Solution: High-Output LED Retrofit Kit

- CVL designed and manufactured an LED retrofit kit for prevalent Metal Halide shoe box fixtures, including GE & American Lighting
- Electricity consumption of the fixtures in an initial test on a major highway system in NY was reduced from 175W to 54W per fixture.
- The LED engine will last 5 times as long as the existing MH bulb, reducing the expensive labor burden to install replacement lights.



Annual *Energy* Consumption

	Metal Halide	LED Solution
Units	5000	5000
Average Usage/yr (h)	4380	4380
Unit Power Consumption (W)	200	60
Annual Power Consumption (kWh)	4,380,000	1,314,000

Estimated Annual *Energy Savings*

Based on 5,000 Units
0.7 Mega Watts
3,066,000 kWh
\$490,560 based on \$.16 per kWh
1,606,584 lbs of CO ₂

FLEX SLS: Temporary Lighting System

- CVL designed and manufactured an IP67 rated, outdoor LED lighting system for construction, currently on display at Skanska's CUNY construction site in Harlem, NY.
- The FLEX SLS system consumes less than 1/4 of the electricity required by the metal halide fixture that it replaced, while providing an operating life 5 times longer!
- This is one variant of an entire new mindset in low voltage temporary lighting...

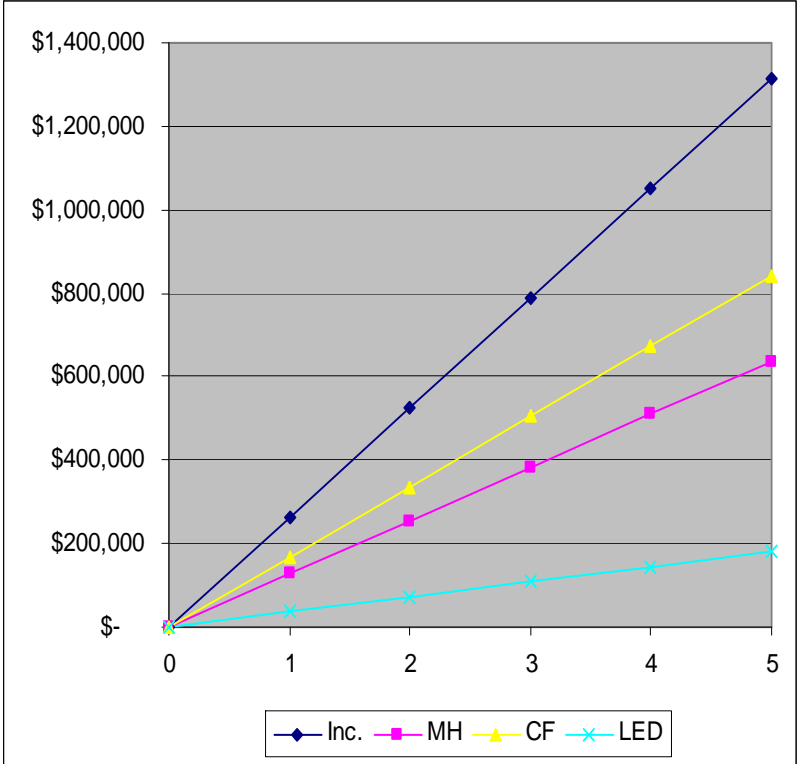




Electricity Cost Savings

For 250,000 Square Foot Building

	Incandescent Stringer	Metal Halide	Compact Fluorescent	FLEX SLS (LED)
Power Consumption	250,000W	121,111W	160,000W	39,260W
\$/kWh	\$0.12	\$0.12	\$0.12	\$0.12
Usage/yr (h)	8760	8760	8760	8760
Annual Electricity Cost	\$262,800	\$127,312	\$168,000	\$36,000
5 Year Cumulative Electricity Cost	\$1,314,000	\$636,560	\$840,960	\$180,000



Q & A