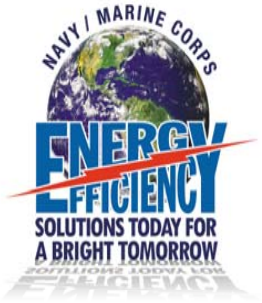
Navy Techval Program



Techval

FUPWG

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Ontario, CA

Paul Kistler, PE CEM
NAVFAC Engineering Service Center
Port Hueneme CA

Purpose

- Use the data collected by Techval to transition newer technologies into Navy wide use
- Use the data collected by Techval to prevent the Navy from investing in technologies that do not work
- Tech Assistance
- Help the Navy to meet increasingly tougher energy goals

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Green Light Technologies

- Oil Free Magnetic Bearing Chiller Compressor
- Vending Machine Occupancy Sensor
- Thermal Destratifiers
- Airfield LED lighting
- Super T8 lighting
- Day Lighting
- CO2 HVAC Control
- Spectrally Enhanced Lighting
- Heat Pipes
- Duct Sealants
- HID Dimming
- Photo Luminescent Exit Signs
- Video Game Occupancy Sensors
- Video Game Timers
- Exterior LED Lighting

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Yellow Light Technologies

- Desuperheaters
- Sand Filters
- EMP Water Treatment
- Boiler Combustion Controls
- HVAC Occupancy Sensors
- LED Lighting
- Walk in Cooler Fan Controller
- RF Plug Controller
- Exterior Insulation
- Induction Lighting
- Air Cooled Magnetic Bearing Compressor
- Cool Roof
- Work Station Specific Lighting

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- Spectrally Enhanced Lighting
- Outdoor LED Lighting
- Work Station Specific Lighting

  - What is it, how does it work?
  - Data from projects
  - Where does it work best?

Spectrally Enhanced Lighting (SEL)

What Is It?

- Conventional practice utilizes lamps with correlated color temperature (CCT) of 3000K to 4100K
- The eye is more sensitive to light in the higher CCT range (bluer, closer to the color of natural sunlight)
- Spectrally Enhanced Lighting (SEL) uses lamps with a CCT of 5000K
- Since eye is more sensitive to light with higher CCT, lower ballast factor ballast can be used to dim the lights which is not apparent to the eye.

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Building 166
Washington Navy Yard
Data

	PRE	POST
Predominant Fixture	2X4 Troffer	2X4 Troffer
Total Fixtures	810	810
Total Lamps	2877	1789
Ave Lamps/Fixture	3.55	2.21
Nominal Lamp Wattage	32	32
Lamp Color	741	850
Ballast Factor (BF)	0.88	0.78
Watts/luminaire	100	63

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Building 166
Washington Navy Yard

Simple Payback (Energy Savings Only)

Total Installed Cost	$97,104
Annual Savings	$10,266 (37%)
Payback (Yrs)	9.5

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Where To Use SEL

1. Where spaces are overlit
2. Where visual performance is critical
3. Office buildings

Outdoor LED Lighting

What Is It?

1. Uses individual LED lights for parking lot and street lighting
2. Bluer than HPS
3. Easily controlled

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Outdoor LED Lighting

Data From Parking Lot At NAVFAC Engineering Service Center, Naval Base Ventura County

23 ea. 400W HPS lights replaced with 19 ea. 156W LED

1. Load reduced from 10.88 kW to 2.81 kW.
2. Went from 2000K to 6400K
3. Went from max/min of 402/1 lux to 38/1 lux.
4. Went from 11,968 kWh/yr to 3,091 kWh/yr

Outdoor LED Lighting

Where to use

1. Where security is critical
2. Where visual performance is critical
3. Where lights are on most of the night
4. Where lights need to be dimmed
5. Where lights need to be instant on (motion detectors)
6. Where utility rates are high
7. Low ambient temperatures
8. Where lights are difficult to replace

Work Station Specific Lighting

What Is It?

1. Pendant light used mainly in open cubicles
2. Each cubicle has own dedicated fixture
3. One up light
4. Two down lights
5. Dimmed by the occupant
6. Occupancy sensor
7. Day light sensor
8. T5 5000K

Work Station Specific Lighting

Data

1. No data yet from Techval project, 50% design currently under review.
2. Projected payback is 11.7 years
3. Projected pay back on incremental cost is 3 to 4 years
4. Recent projects indicate a total savings of 70% lighting energy use
5. Most of the savings due to occupancy sensor

Work Station Specific Lighting

Challenges

1. Building new in 1996.
2. Originally 3 lamp T8 2 X 4 recessed troffer, est. 50 FC
3. During California energy crises, severely delamped
   a) Currently 21 fixtures with 0 lamps
   b) 23 fixtures with 1 lamp
   c) 10 fixtures with 2 lamps
   d) 0 fixtures with 3 lamps
   e) Average 11.8 FC, 0.4 min, 41.9 max
4. Choice of 28W T5 (22FC) or 54W T5HO (44FC)
5. New occupants relamped their area

Work Station Specific Lighting

Where to use

1. Open cubicles
2. Cubicles are frequently unoccupied
3. Daylight in outer zones
4. Large number of people that perform various visual tasks

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Paul Kistler P.E. C.E.M.
Mechanical Engineer
NAVFAC Engineering Service Center
1100 23rd Ave.
Port Hueneme CA 93043
(805) 982-1387
paul.kistler@navy.mil

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