BUSINESS PROGRAMS

Industrial Lighting

BEST PRACTICES

Incentives are available for Best Practices. Contact Focus on Energy for more information. 888.762.7077

To learn more about Focus on Energy, call 800.762.7077 or visit focusonenergy.com

Lighting can be a significant operating expense in an industrial facility. Retrofitting your industrial lighting is low cost and easy. And when you add in the energy savings, your investment decision becomes clear. Best Practices for lighting covers both technologies and procedures that will help you maximize the revenue potential of your business. Properly designed lighting provides safer and more productive work environments, improves employee comfort and increases plant efficiency. Industry leaders employ the following energy efficient technologies, policies and practices to economically reduce lighting energy costs:

ESTABLISH LIGHTING LEVEL STANDARDS FOR YOUR FACILITY AND VERIFY WITH A LIGHT METER TO ENSURE PROPER LIGHTING LEVELS.

Properly designed lighting most efficiently uses the energy needed to illuminate a space and deliver that illumination to the work area. Base your lighting level standards on the Illuminating Engineering Society of North America's (IES) published standards and the needs of the workers at your facility. Verify light levels with light meters to ensure appropriate lighting levels for each task and that light is being used most effectively. Facility delamping (removing excess lighting fixtures) should be done through a routine procedure that accounts for industry light level standards.

PROPERLY MAINTAIN YOUR LIGHTING SYSTEM.

Over time the performance of every lighting system declines. Lamp performance deteriorates, fixtures and lenses accumulate dirt and system components fail. Be sure to properly maintain the lighting system by cleaning fixtures, lamps and lenses; check for and replace failed fixture components; and perform scheduled facility relamping. Proper maintenance results in better light output, longer component life and lower lifetime costs.

HIGHBAY FLUORESCENT LIGHTING

USE HIGH EFFICIENCY T8 OR T5 LAMPS WITH ELECTRONIC BALLASTS WHEREVER POSSIBLE.

Fixtures with T8 or T5 lamps and electronic ballasts are approximately 40 percent to 45 percent more efficient than standard T12 fixtures and almost 50 percent more efficient than metal halide fixtures. Approximately 88 percent of the lifetime cost of a lighting system results from the energy consumed by the lamps and ballasts. Although T8 or T5 fixtures can be more expensive than standard T12 or metal halide fixtures, the energy savings can pay for the replacement system within three years.

USE PULSE-START METAL HALIDE LIGHTS IN AREAS WHERE IT IS NOT FEASIBLE TO USE ENERGY EFFICIENT FLUORESCENT LIGHTING

Pulse-start for metal halide provides the following improvements over probe start metal halide: greater efficacy (lumens/watt), better lumen maintenance, longer lamp life, better color rendition, faster warm up, quicker restrike times and the ability to start in colder temperatures. When combined with energy saving ballasts, pulse-start metal halide lamps can save an additional 58 watts per fixture.

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INSTALL HIGH COLOR RENDERING INDEX LAMPS WHERE LIGHT QUALITY IS IMPORTANT

Color rendering index (CRI) is an industry measure of the ability of a light source to render the color of objects "correctly". Using a scale of 1 to 100, a light source's CRI is compared to a reference source with comparable color temperature. The higher the CRI the more natural and vibrant an object's color will appear.

SPECIFY THE APPROPRIATE LAMP COLOR TEMPERATURE FOR THE LIGHTING APPLICATION.

Manufacturing areas typically warrant cool lighting colors (4000K+). Depending upon the task, other color temperature lamps may improve light quality. This is especially true for quality control tasks, such as printing, painting and finishing where visual acuity is important.

USE OCCUPANCY SENSORS OR OTHER CONTROLS IN AREAS WHERE THE LIGHTING MIGHT BE LEFT ON WHEN THE SPACE IS NOT IN USE.

Properly installed and operating occupancy sensors can save 50 percent or more in energy costs. Dimming controls can also reduce energy costs and extend lamp life.

TURN OFF LIGHTING WITH OTHER PRODUCTION PROCESSES.

During plant idle times or shutdown always turn off task lighting and minimize area lighting. Lighting above safety levels need only be used when those areas of the plant are in operation.

MAXIMIZE TASK LIGHTING AND MINIMIZE AMBIENT OR OVERHEAD WHEN UPGRADING LIGHTING.

A combination of area lighting and independently switched task lighting can save up to 20 percent compared to a standard lighting design that provides full illumination. Ambient or overhead lighting should provide enough light for people to move about. Apply task lighting to provide the remaining required illumination.

USE LED LAMPS IN EXIT SIGNS.

Save up to 90 percent of exit sign energy by replacing incandescent or fluorescent bulbs with LED lamps. Also most LED lamps are rated for up to 100,000 hours compared to 5,000 hours for incandescent lamps and 10,000 hours for fluorescent lamps which significantly reduce life cycle costs.

NEXT STEPS

To see which Best Practice opportunities will work best for your facility – contact an equipment or service supplier to perform an evaluation on your facility.

To obtain names of suppliers or find out more about Focus on Energy incentives and technical assistance, call 800.762.7077 and ask for the Industrial Program. focusonenergy.com

USE COMPACT FLUORESCENT LAMPS (CFL'S) INSTEAD OF INCANDESCENT BULBS.

Replace incandescent lamps with longer-lasting energy efficient CFL's to save up to 75 percent per application. Today CFL's are sized and configured to replace any incandescent.

EVALUATE DAYLIGHTING OPPORTUNITIES AND APPLY DAYLIGHTING TECHNIQUES WHERE PRACTICAL.

Daylighting can significantly reduce electric lighting needs during daylight hours. Daylighting may be practical if:

- adequate daylight is available for significant periods day for sufficiently large areas of the building
- occupants won't override daylight controls
- the system owner is committed to proper design, commission, operation and maintenance of the system

EVALUATE AND APPLY DIMMING CONTROLS WITH DAYLIGHTING WHERE APPROPRIATE.

Daylighting dimmers can save between 20 and 40 percent of lighting energy costs. Typically daylighting controls work best with fluorescent lighting; however, they can also be considered for Hi/Lo HID.

TASK LIGHTING ILLUMINATES WORK AREA.

Focus on Energy works with eligible Wisconsin residents and businesses to install cost effective energy efficiency and renewable energy projects. Focus information, resources and financial incentives help to implement projects that otherwise would not get completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and businesses manage rising energy costs, promote in-state economic development, protect our environment and control the state's growing demand for electricity and natural gas. For more information call **800.762.7077** or visit **focusonenergy.com**.

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