



CMP's Lighting Connection

Bright ideas to improve your bottom line

Central Maine Power Company, 83 Edison Drive, Augusta, Maine 04336

To kick off a new year and our new look, this issue of CMP's Lighting Connection starts with a slightly different approach to our featured customer profile: a before and after story structure. In this issue we are with Dunlap Corporation during the planning phase of their lighting project. Later this year we will update you on the project's results.

Another local business looks at lighting to improve its productivity

The Dunlap Corporation is among the largest insurance agents in North America — and one of the top three in New England. As a leader in the insurance industry, they're well aware of the direct connection between workplace environment and employee comfort, well-being, and productivity.

Dunlap's Real Estate Manager, the goal was to achieve high-quality lighting that would provide employees with a safe, well-lit work environment. "From my investigation of our lighting needs, one thing kept standing out — how much our business depends on lighting. Everyone in our office reads, writes, and uses a computer daily and lighting has a large effect on each function. Quality lighting makes for a highly productive office where employees feel comfortable and safe."

CMP's Lighting Experts are a phone call away

When it comes to insurance, the people at Dunlap are experts. But they knew it would take a different group of specialists to help achieve their lighting goals. "I prefer working with local companies as much as I can." Arel said. After extensive review, Dunlap awarded the project to Tom Hayes of Quality Conservation Services, Inc. (QCS), who in turn,

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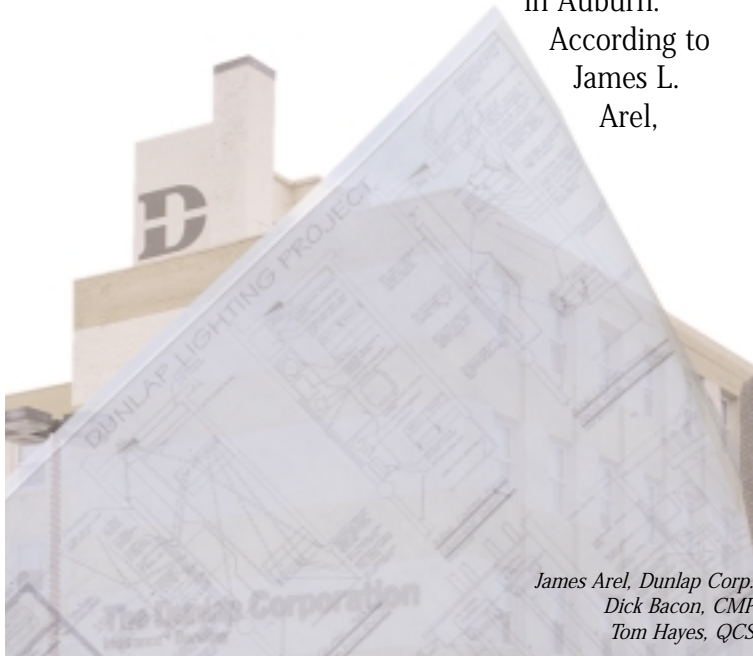
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"From my investigation of our lighting needs, one thing kept standing out — how much our business depends on lighting..."

James Arel
Dunlap's Real Estate Manager

So it made sense for Dunlap to decide to upgrade the lighting systems at their 4-story, 18,000 sf office building in Auburn.

According to
James L.
Arel,



James Arel, Dunlap Corp.
Dick Bacon, CMP
Tom Hayes, QCS

Dunlap...

contacted CMP's Lighting Expert, Dick Bacon, for further lighting analysis.

Arel and Hayes approached the project in a way that would ensure success. They started with a full facility study to look at the project as a whole, and conducted a needs-based survey to analyze general and task lighting requirements. Recommendations included using the highest efficiency lamps and ballasts — aiming for optimum color rendering and minimum glare in every area. The resulting plan was extensive — including repairing, replacing, or retrofitting every fixture.

Meeting the lighting needs

According to Hayes, "After several discussions with Jim (Arel) it was clear what he wanted. High quality fixtures and components control the light better, last longer, and are more efficient than standard items, and this will save money."

As part of the project, QCS will replace fixtures, lamps and ballasts as needed. The lamps are Osram/Sylvania T-8's, and depending on the space, will range from 3500-4500 Kelvin to give the correct color in the facility. During planning, QCS kept employees involved in the project by installing color-corrected lamps in existing fixtures over some workstations and letting the employee see the effect. Plans also include using Osram/Sylvania electronic ballast that are sound rated A plus (see this issue's Q&A on ballast

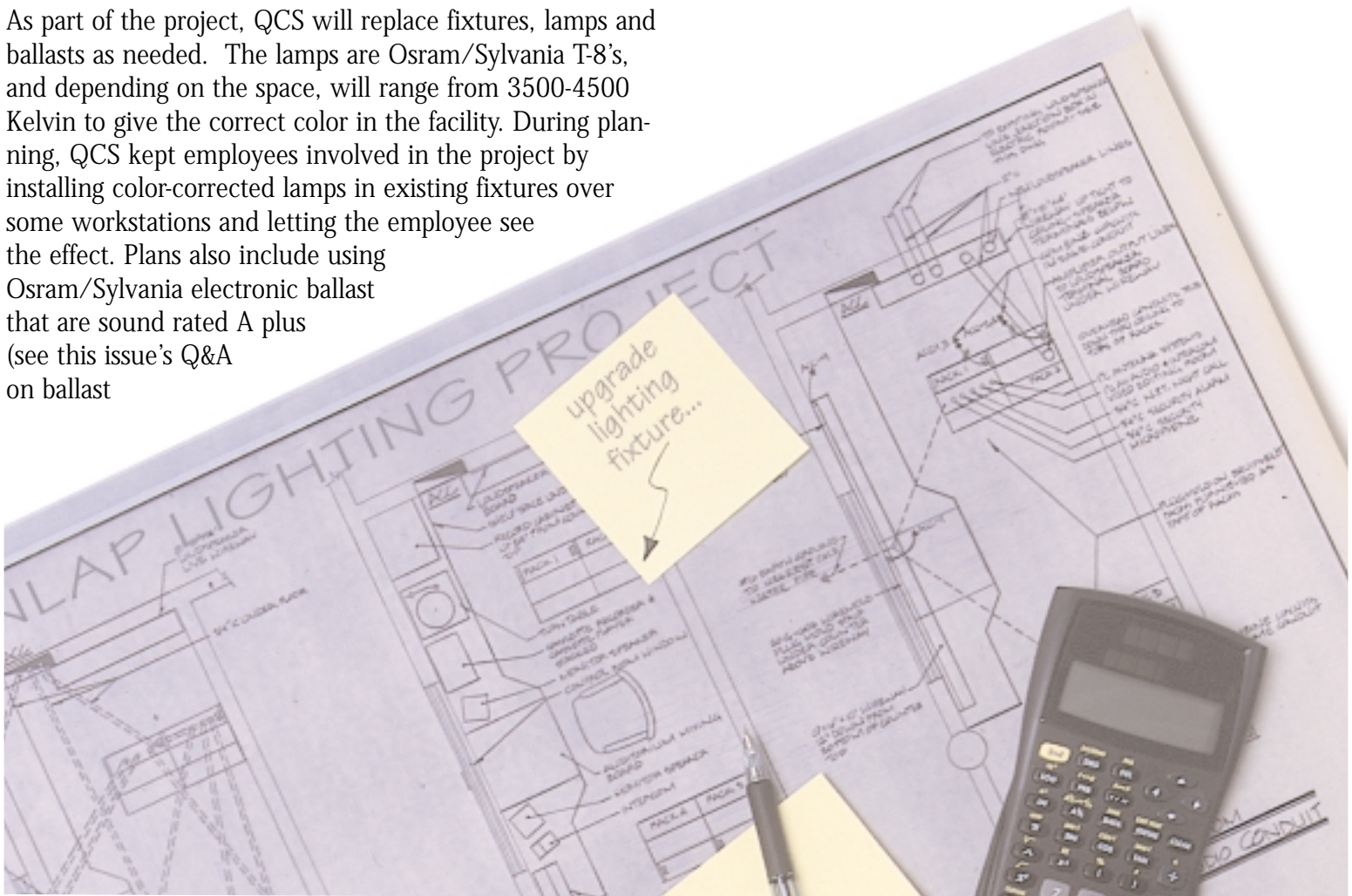
noise), which will keep things quiet.

Look for greater productivity from lighting upgrade

In our follow-up article, we will find out about the effects of quality lighting on office morale, productivity, and safety, and how the job progressed. The intent of the follow-up is to demonstrate the importance of quality lighting. We want you to know how to go about upgrading: what to do, what to look for, and what results to expect.

If you are considering a lighting project, call CMP for a free consultation.

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Quality of light important to environment

We talk a lot in this newsletter about light quality. In this issue we'd like to take some time to review the basics of light and color: why we see what we see and why variations in light are so important in our environments.

Our visual impressions of the world are 100% dependent upon light. We are able to see objects because light hits them and then reflects back to our eyes. Visible light is made up of a spectrum of different colors, or wavelengths, which, together in balance produce pure white light.

The colors we see depend upon how light wavelengths are absorbed. Due to their chemical makeup, the surfaces of objects absorb all colors except the intended color — which is what you see. This applies whether we are looking at a tree, a person, or a couch!

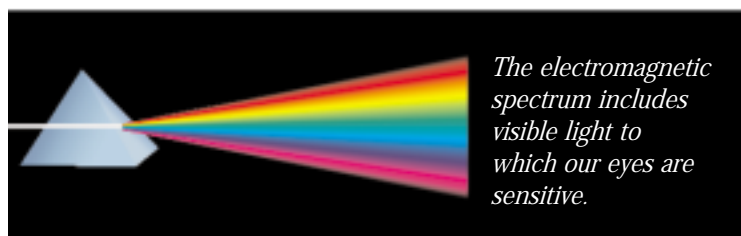
Change a light and you change color and mood — and maybe sales!

Our indoor lives, at work and at home, involve artificial lighting. When electric lighting is manufactured, different color spectra are used to achieve certain effects. Color weighting will dictate whether things will look bright, dark, rich, dull, etc. in the glow of a particular lamp. (Experiment for yourself. Pick a simple, colorful object and look at it in daylight, under an overhead light in your office, under a lamp at home, and by flashlight. You'll easily see color differences.)

That's why it's important to know something about light characteristics yourself, and to put your trust in a lighting designer to achieve the sales and productivity results you want.

A little knowledge goes a long way

Color temperature and color rendering are two considera-



tions in choosing the best light source.

Color temperature refers to the color of the light produced. It affects the appearance of the objects the light strikes. Lighting sources are categorized as warm, neutral, or cool.

- Warm sources produce a red/yellow appearance
- Warm sources enhance reds and oranges and create a comfortable, cozy ambience for restaurant patrons
- Neutral sources have a white appearance
- Neutrals are used to achieve equal color enhancement, ideal in retail and food stores to sell more products
- Cool sources offer a blue/white appearance similar to sunny, summery daylight

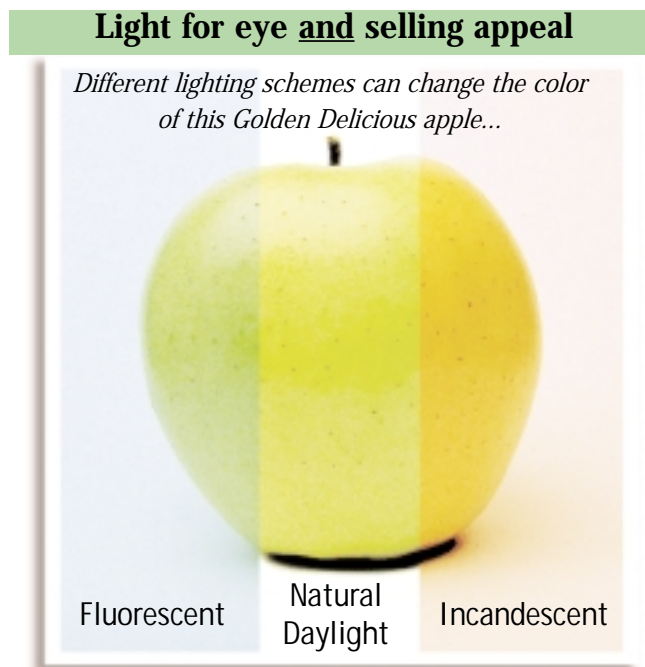
- Cool sources enhance blues and influence alertness. Hospitals and large offices use cool light to encourage safety and productivity

Color rendering indicates how a light source makes the color of an object appear and how well subtle color variations are detected.

- The Color Rendering Index, or CRI, measures the degree to which the lamp distorts colors
- This scale runs from 0-100; a 100 rating indicates best color rendering
- CRI comparison is accurate only when comparing lamps of

the same color temperature

Now you're a graduate of Basic Light & Color 101! Our thanks for information derived from *Understanding Light and Color* by Craig DiLouie. Please remember: lighting designers are experts. They're ready to use color temperature, color rendering, and other tools to help you achieve the lighting results you want.



ASK the LIGHTING EXPERT



I recently replaced some old 4' fluorescents with 8' single pin fixtures, and installed color corrected (CRI=90) tubes in place of my cool whites. I am very pleased with both the color and quantity of light, but the hum from the fixtures is driving me crazy. Is there any way of reducing the noise, or did I just buy the wrong type of fixture?

The hum you hear is coming from the ballast, a lamp part you don't usually see because it's behind the fixture reflector. All non-electronic ballasts make a noise. Here's what a ballast is, and an explanation of why it makes noise.

A ballast is a device used to start and maintain energy in fluorescent, Metal Halide, High Pressure Sodium, and Mercury lamps to produce optimum light output. The ballast heats up the filaments, provides the right voltage to start the arc, and then creates the impedance to limit the current to the proper amount. Ballasts are often large and boxy. Most are made of steel laminates wound with copper or aluminum wire. The laminate core vibrates from

the expanding and collapsing of the magnetic field. This is what makes the "hum" sound.

Let's move on and discuss what you can do about the hum. All ballasts are rated for sound. Interestingly, these ratings do not indicate the actual sound made by the ballast, but rather the amount of background sound needed to obscure it. The ratings are: A. <26 decibels B. 26-30 decibels C. 31-36 decibels D. >36 decibels.

The sound rating for fixtures is located on the face of the ballast. You would want to choose an A-rated ballast in a church or library, B would be suitable in typical offices; C in noisy offices or retail stores; and D outdoors or in a factory. So one option is to replace your ballast with one that has an appropriate sound rating for your workshop and noise tolerance.

That said, if you keep your fixture as is, there are ways to reduce the effect of ballast noise. If your fixtures are mounted solidly to a ceiling or a metal frame, the ballast sound may be amplified. You can sometimes reduce this by using rubber shims under the mounting points to absorb vibration and lessen the noise. You can also check and make sure the ballast is mounted into the fixture tightly.

I hope you find these suggestions helpful. Give me a call if you want to discuss lighting at your business.

Dick Bacon, CMP's Lighting Expert, has over 25 years of experience in the lighting business working for major electrical wholesalers and Central Maine Power Company. Dick is a member of the Illuminating Engineering Society of North Atlantic (IESNA). If you have a business lighting question, please contact our Lighting Expert: E-mail: lighting.expert@cmpco.com or call the Business Lighting Hotline: Toll-free: 1-800-649-1169

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