



THE GREAT LIGHTING DEBATE – Part 2

Thinking of re-lamping your arena? Here is our experience at East Calgary Twin Arenas. Last year (2008) we decided to upgrade the lights in the arena. We had the typical 400w metal halide fixture with metal reflectors. They were getting old, therefore the lighting level was less than we wanted and there was getting to be more shadows.

As with all upgrades, we wanted to install the best product available, looking at not only replacement cost but operating and maintenance costs. To this end we asked Alta-West Group Ltd. (Alta-West provides energy management for our facility) to “show” us what was available. We installed the following fixtures into the arena as a test:

- new 400w metal halide (magnetic coil)
- T5 fluorescent 6-lamp fixture
- 320w ROM Light metal Halide (electronic ballast)

By having these fixtures installed, it was very easy to test and compare in the arena and allow everyone involved a chance to actually see the differences.

Here are our test results.

- 400w metal halide light operated at 4.2 amps, 120 v = 504 kW, the light measured 39 foot-candles, this would be the cheapest replacement cost
- T5 6-lamp fluorescent fixture operated at 2.9 amps, 120 v = 348 kW, the light measured 50 foot-candles, more money for the fixtures and more work to install, but provides 30+% operating savings.
- 320w ROM Light electronic ballast operated at 2.5 amps, 120 v = 300 kW, the light measured 50 foot-candles, ballast more money but easier installation than the T5s, provides 40+% savings over 400w and 14% over T5s.

The operating information provided the basis for our analysis.

Light Quality:

- We wanted more light and better pattern than provided by the 400w.
- The T5 provided good light to the ice surface, but we would have to be careful that the pattern of the fixtures didn't allow for shadowing.
The ROM Lights provided good light and in combination with the polycarbonate reflector, shadows were eliminated and the arena “space” became much brighter and “cheerier”.

Maintenance:

- 400w bulbs lose 35% lumens by 8,000 hours and should be replaced every 12,000 hours of operation.

- T5s have good bulb life, but there are 6 times as many bulbs and T5 are getting a reputation of more failures than expected. Also dust collection on the bulbs would be very difficult to clean.
- 320w ROM Light lose 10% lumens after 8,000 hours and should be replaced every 18,000 hours.

Operating Cost

- 400w operating cost unacceptable
- T5 operating cost is very attractive compared to existing system. If we operate our lights 5,000 hours per year, the payback from electricity alone would be about 5 years. These lights have the benefit of instant on/off.
- 320W ROM Light became very interesting as we looked at them. At full power they were more efficient than the T5s, but we have many different user groups and not all of them require 100% light level. The ROM Lights have control capacity and therefore greater savings can be achieved.

In the end, it was a very simple decision for our board. We were fortunate to have a grant for half the installation cost, so operating cost savings and maintenance became the most important factors.

When we looked at 10 year operating cost it was:

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| ▪ 400W | \$128,111 |
| ▪ T5 Fluorescent | \$ 96,910 |
| ▪ ROM Light | \$ 60,141 |

The ROM Lights were installed in June, 2008 and the results have been tremendously successful. The arena is very bright and customer satisfaction is high. The lights are controlled within our energy management system, so they adjust automatically to the activity. Our average light level is 70%, so our savings compared to the original 400w is 65+% and 40% over the tested T5s.

We replaced the Red rink last year and will replace the Blue rink this year. If any of you are in Calgary and interested in lighting options, please drop around to ECTAS and have a look.

Article by Jim Kelly, General Manager
East Calgary Twin Arenas
Article taken from Leisure Lines