KAISER PERMANENTE®

LED Surgical Lights – Improve OR Light Quality with Reduced Energy Consumption

Environmental and Human Health Impact: 33 percent reduction in energy consumption, 34 percent reduction in heat generation (hotter temperatures require more energy to cool the Operating Rooms), 30 times longer bulb life.
Business Impact: 6 percent cost savings.

Challenge

While we know a surgeon requires the right training, equipment, and support to perform effectively, one thing we don't often think about is a surgeon's comfort in the operating room (O.R.). However, this in fact is critical in maintaining focus and sustained energy throughout the course of a case. Gowns and operating lights have a significant impact on the comfort of surgical staff. Dominant surgical lighting technology was based on halogen bulbs which use significant quantities of energy, radiate heat enough to substantially raise the temperature of an O.R., and require frequent replacement. Due to the discomfort that these characteristics cause surgical staff, the Surgical Core Group was interested in pursuing new technology.

Aim/Goal

To evaluate new LED surgical light technology that could offer improved clinical performance and lower energy consumption and heat emission.

Team

Dr. Mitchell Ross, General Surgeon
Surgical Core Group
Donna Schmid, National Facilities Services
Robert Gotto, Senior Sourcing Director, Procurement & Supply Broadlane

Actions Taken

- ✓ Evaluated marketplace for penetration of LED technology.
- ✓ Performed clinical trials to evaluate the performance of six suppliers; eliminated three suppliers in this process.
- ✓ Compared operating costs associated with direct energy consumption and air conditioning due to bulb heat emissions among supplier's products.
- ✓ Evaluated total cost of ownership for surgical lights that included the upfront, operating costs, and surgeon comfort or clinical acceptability.

Results

- ✓ There are several advantages of LED bulbs over halogen:
  - ✓ consume 33 percent less energy
  - ✓ emit 34 percent less heat (hotter temperatures require more energy to cool the ORs)
  - ✓ last 30 times longer than halogen before needing replacing
- ✓ RFP responses showed no change in content of chemicals of concern by changing from halogen to LED.
- ✓ The LED lights scored higher for performance in clinical trials over the existing halogen lights.
- ✓ The Surgical Core Group eliminated halogen lights from consideration and awarded a new National Standard for LED surgical lights in the last quarter of 2009.

At completion of the product conversion, KP will avoid the consumption of 3,848 KW of energy per year.

Lessons Learned

- ✓ The new RFP disclosure form that requests environmental data from suppliers yielded information about manufacturing processes that demonstrated that the product's environmental benefits extended far beyond energy conservation.
- ✓ Remember that technology improves over time and to revisit new-entrants every so often to evaluate improvements.

Next Steps

- ✓ Installation of LED surgical lights at all new ORs.
- ✓ Gradual conversion of existing halogen surgical lights aged over five years to LED.

For More Information Contact: Environmental-Supply-Chain@kp.org