

Special report: LED lights and hybrid rooms populate the OR sector

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by **Joanna Padovano**, Reporter

More and more, technologically advanced hospitals are implementing hybrid operating rooms — a mixture of catheterization lab and traditional OR suite. And advancements don't come cheaply.

In today's market, a typical general surgery table is going to set a hospital back around \$40,000, estimates Charly Dalbert, director of vocational services, stable business and business development for TRUMPF Medical Systems. Depending on the complexity of the table's functions, the price could be closer to \$120,000, says Cynthia Jefferson, marketing manager of lights and booms for MAQUET Medical Systems USA. Typical LED operating room light systems cost between \$25,000 and \$27,000 on average, says Steve Palmer, TRUMPF's director of marketing.

According to "Operating Room Equipment - Global Opportunity Assessment, Competitive Landscape and Market Forecasts to 2017," a report published by Global Data in September 2011, the global operating room equipment market, valued at more than \$770 million in 2010, is predicted to reach nearly \$990 million by 2017. The U.S. operating room equipment market, which is the largest, was valued at \$288.8 million in 2010. It is expected to increase at a compound annual growth rate of 3.9 percent to hit \$377.2 million in 2017.

Much of this growth is driven by interest in hybrid ORs, the report says. But specifically, the market for OR tables will be fueled by rising demand for specialized surgical tables used for complicated operations, such as hip replacement surgeries. And the market for OR lights will see slight growth due to the transition from halogen to LED lights.

LED outshines halogen

As has been the case for some time now, the preference for halogen lights in the OR equipment has dimmed considerably since the technology's heyday.

"Halogen is being phased-out," says TRUMPF's Palmer, who estimates that 95 percent of all major acute-care hospitals purchasing surgical lights are buying LED. "Probably in about four, five years, you'll be hard-pressed to see a new halogen surgical light being sold to the major hospitals."

"For the past five years or so, we've seen a preference for LED surgical lighting, especially

as LEDs have become more efficient as the technology has evolved," says Jake Isley, the product manager of Chromophare for Berchtold. "Surgeons appreciate the cool properties LEDs provide."

There are several advantages to LED lights, with less heat generated being perhaps the most appreciated by those working under their shine. Older halogen lights, according to Palmer, generate more heat and have to filter out ultraviolet and infrared radiation, which is not always 100 percent effective. "LEDs by nature do not have UV or IR characteristics to them," he says. Another benefit to LED lights is that they have an extremely long life cycle. Halogen lights tend to last around 1,000 hours, meaning they typically need to be replaced on a monthly basis; LED lights, on the other hand, can last for more than 30,000 hours. "You're going to get probably up to 10 years of life out of an LED, so you get rid of that reoccurring cost, which is always something that you have to take into consideration," says Palmer.

A third favorable feature of LED lights is their ability to adjust color temperature in order to achieve superior visualization based on the type of procedure being performed and/or what the surgeons prefer.

"When you talk about the surgeon's preference for a certain color temperature, you really have to put yourself in the position of the OR manager," says Dave Rector, TRUMPF's director of marketing communications. "The OR manager is trying to satisfy different surgeons and obviously all the hospitals are competing for the best surgical talent. You can't expect that all the surgeons at a given hospital are going to agree on what color temperature they prefer; it's a subjective thing and it also has to do with what kind of surgery they specialize in. So the ability to change color temperature just changes the life of the OR manager in that now you have a light that every one of your surgeons can be happy with."

Additionally, LED lights use lower power consumption, making them a more environmentally friendly alternative to halogen.

Although LED lights are taking over on the new equipment side of the spectrum, halogen lights still have some shine in the refurbished market. "LEDs really haven't hit the used market in a big way yet," says Jerry Burton, director of sales and marketing for refurbished surgical equipment dealer Beacon Surgical. "They're starting to, but it's slow and as they do, there's a lot more cost involved, obviously. They're still in high demand, so it's at a premium when they do hit the market." Burton approximates that 98 percent of the

refurbished lights he sells are still halogen.

The prices of refurbished OR lights, naturally, are significantly less than those of new. “[For] around \$1,000 you could probably get a set of OR lights if they’re older and not in the best condition.”

Some refurbished halogen lights could cost upwards of \$8,000, he says, and refurbished LEDs are typically twice that amount.

“Even though the halogens may not be quite what LEDs are, they’re still good lights that doctors have used for years,” says Burton. “If they can maintain those and keep them in good working order, then they can use that money for other areas of their budget that have been constrained.” Burton says that most of his customers shopping for refurbished OR lights are initially looking for LEDs, until they discover the cost; at which time they then decide to buy halogens instead.

New products at AORN Congress

During the 2012 Association of periOperative Nurses’ Annual Congress being held in New Orleans March 26-29, TRUMPF is going to launch the TruSystem 7000 mobile general surgical table. As mentioned by Rector, during the development stage of this product, the company collected a significant amount of clinician input for feedback on the design. “When this table is introduced, it is very much going to meet the market needs not because we say so, but because we let the market dictate it; the market says so,” he says.

Also at this year’s event, Berchtold will introduce the



BERCHTOLD CHROMOPHARE

F 628 LED lights

Chromophare F Class Surgical Lights, which use 104 customized LEDs and multiples that produce more than 650 overlapping beams in the surgical field, according to Isley. “The F Class Surgical Lights use an energy efficient light source to power the light, while using reflection to create the depth of field and homogenous column of light that LEDs cannot produce on their own,” says James Townsend, Berchtold’s manager of research and development.

Homing in on hybrid ORs

Nowadays, more and more medical facilities are offering hybrid OR solutions.

"More complex procedures, hybrid procedures — involving several medical specialties, each with their own equipment and imaging needs — have given rise to the hybrid OR, where each specialty can perform their part of a complex procedure in a single room with all the products and functions that they would have in their own dedicated specialty room," says Walt Hoffman, group marketing manager of hybrid OR therapy for MAQUET.

There's a lot that goes into a hybrid OR installation; for starters, a facility needs to allocate a great deal of space in order to accommodate all of the bulky equipment that it requires. Dick Werner, product manager of vascular X-ray for Toshiba America Medical Systems, says that a hybrid OR is almost always bigger than a conventional OR and that it should be at least 900 square feet in size (traditional ORs are usually around 600 to 800 square feet). Once a large enough room is designated for the construction of a



*Saint Mary's E. L. Wiegand
Endovascular Surgery Suite,
photo courtesy of STERIS*

hybrid OR, its infrastructure must be altered. "They have to put lead in the walls and ceiling, depending on what is in the adjacent spaces," says Werner. "For instance, if there are offices above the room, then they have to protect the people sitting above that room from radiation just as they would adjacent wall space. So it makes the real estate more expensive because you have to prepare for the environment, not to mention the usual laminar airflow and clean surfaces [standards] that any OR is held to these days."

Not only does a hybrid OR need to be big; it also needs to have a well-conceived floor plan and easy-to-move equipment in order to maximize workflow efficiency.

"The criticality is not room size, but the layout of the room, so that you create those paths for what we call 'circulation,'" says Palmer.

"The most important things in any hybrid OR are patient access, anesthesia access and

room for operating,” says Sudhir Kulkarni, segment director of hybrid OR for Siemens Healthcare. “When necessary, the systems should be getting out of the way very quickly and very easily.”

There are many upsides to building a hybrid OR, one of which is that it allows a hospital to attract high-end clinicians, who, in turn, bring in more patients.

The downside, of course, is the depths at which hospitals must reach into their pockets to fund the project. “The cost of equipping a hybrid OR suite can vary from as little as \$150,000 to up to several million, depending on how modern the surgical and imaging equipment is at the hospital,” says Hoffman. “New construction can easily double that.”

According to Hoffman, although a hospital will need to dish out a large lump of cash to construct a hybrid OR, they will most likely break even on their investment within the first few years. “By providing one operating room where more medical specialties can perform procedures with all the specialized equipment and products that these surgical procedures require, the hybrid OR can actually reduce the demand for multiple specialty OR rooms,” he says. “By allowing medical specialty teams to treat the patient without the need to transport the patient, complications can be reduced and outcomes improved.” **Hybrids will continue to evolve**

The popularity of hybrid ORs will continue to increase in the future, marrying the surgical and radiographic specialties in hospitals across the globe. “I believe that the hybrid operating rooms [are] not only here to stay, but I think that’s going to grow,” says Siemens’ Kulkarni, noting that the company continues to see an increasing number of installations. “The future of the OR suite sector is undoubtedly going to focus on integration and innovative technology,” says MAQUET’s Jefferson.

Jefferson says hospitals desire universal operating rooms to be utilized by all disciplines and surgery types. To make this happen, facilities want a versatile surgical workplace with products that can provide any type of surgeon with the lights, tables and devices they need. The goals of forward-thinking hospitals will be to incorporate the most advanced technologies, improve OR efficiency and improve patient outcomes.

Robert Popilock, manager of strategic alliances and hybrid OR for Steris gets to the heart of the matter. “The potential of hybrid ORs is still in its adolescence,” he says.