

Outfitting the inner sanctum:

Trends in surgical suites

by Susan Cantrell, ELS

The operating room (OR) has experienced a tremendous transformation in recent years. Technology reigns, and technology needs its space. In fact, some experts say that size is one of the main differences between ORs now and a few years ago.



An HD360° integrated surgical suite, STERIS Corporation

Bigger is better

Kevin Gilroy, senior director of business development, [MAQUET](#), Bridgewater, NJ, believes that size has become a major element in the current OR: "The biggest difference in ORs now and 5 or 10 years ago is size. The ORs are being built larger to accommodate the new imaging and robotic technology, because the equipment in the ORs is changing, too."

"While some ORs are gaining larger dimensions, they are being filled with more and more equipment," noted Stephen Heniges, vice president, sales and marketing, [CompView Medical](#), Beaverton, OR, "so, consequently they feel smaller."

Gilroy noted that ORs once were an average of 400 square feet, which is Lilliputian by today's standards. Randy Tomaszewski, RN/BSN, MBA, vice president, marketing, [Skytron](#), Grand Rapids, MI, told [Healthcare Purchasing News \(HPN\)](#) that he now sees "overall square footage of 2,400 square feet and greater," and "ceiling heights of 10' to handle today's advancements in integrated room design, taking advantage of booms, lighting, and high-definition (HD) flat-panel display systems." Tomaszewski also noted that it's common to see "at least four monitors in the most advanced ORs, to support advances made in minimally invasive surgery (MIS) and because rooms are not being dedicated, as they once were, but are being designed to be multifunctional, capable of handling a variety of surgical procedures to enhance overall flexibility, throughput, start times, and efficiencies of each and every room."

Advances in OR equipment have spawned other trends, too. Whereas the square footage of the OR is growing, much of the equipment is decreasing in size. "Equipment today and in the future must maintain a small footprint and be multifunctional," observed Heniges.

Tomaszewski expounded: "Equipment is getting smaller and lighter, from MIS equipment to the HD flat-panel displays these images are projected upon, not only for surgeons but also for anesthesia, perfusionists, and surgical teams on the whole. Monitors are getting larger, to handle advances in increasing precise formatting capabilities and the quality of images surgeons require for MIS, picture archiving communication systems (PACS), fluoroscopic images, and more. Flat-panel technology has kept much of the weight issue down to a minimum to support the larger screens. If the screens become too large, they can be mounted on a wall and still be seen. Multiple image inputs and outputs have also become very important to support digital, PACS, 3-D navigation, physiological, fluoroscopic, hospital information systems, electronic medical record (EMR), internet, C-arms, microscopes, robotics, ultrasound, video streaming, digital-image capture, video conferencing, and more."

*NuBOOM,
CompView Medical,
delivers more space
to your OR in 48 hours.*

Industries' answers to enhancing efficiency

Larger space and more technological equipment beg for streamlined efficiency and organization. Chad Bittner, product manager, equipment management systems, [STERIS Corporation](#), Mentor, OH, talked to HPN about where equipment in ORs is headed and what has fueled these changes. "Trends are consistently focused on improving OR flexibility and efficiency. This is important to facility staff, but it also has a great impact on manufacturers as we design future product solutions. We frequently hear from doctors about the need to continue improving circulating nurse efficiency and response time. Circulating nurses are tasked with multiple OR responsibilities and many times are stationed in a remote corner of the OR without a direct line of sight to the surgical field."

STERIS's answer to improved patient safety and room efficiency is the Harmony EMS Circulating Nurse Station. "This solution uses a ceiling suspension system to provide a work station that has the flexibility to be positioned in multiple locations around the surgical field, in the same way as an equipment boom. This solution improves the line of sight to the doctor and patient, while also closing the workspace distance between the circulating nurse and the surgical field. Nurses can monitor patients more closely and anticipate the doctor's needs better, which improves total room efficiency. The Harmony EMS Circulating Nurse Station also centralizes all patient information and room controls to one location, which maximizes functionality."

At [CompView Medical](#), the focus is on improved imaging, safety, and efficient use of space. "NuBOOM is a revolutionary equipment and visualization management system complemented by the DOCS Touch Panel control system," said Heniges, "which enables simple-to-use connectivity to all interoperative imaging modalities: PACS, radiology information systems (RIS), EMR, internet, and video conferencing to remotely located meeting participants. NuBOOM is an HD, open-architecture platform that comes in a two-monitor or four-monitor configuration and can be installed in 48 hours. By removing cords and clutter off the floor to improve safety, allowing the ergonomic positioning of up to six monitors and offering a touch-screen panel that requires minimal staff training, the NuBOOM creates more usable space in the same OR."

Skytron also focuses on improved space and workflow. "Skytron provides leadership with innovative efficiencies for the OR and turn-key solutions for state-of-the-art light-emitting diode surgical lighting and small, efficient surgical booms that are easy to move, providing maximum flexibility with fewer mounting structures," said Tomaszewski. "Additionally, Skytron provides OR integration via our hybrid SkyVision system, which provides multi-level routing and networking control within and outside the OR; in-room and room-to-room communication; bi-directional teleconferencing for teaching, education, and training; and remote diagnostics. The SkyVision system's modular design delivers flexibility to meet the clinical imaging needs of present and future technologies with the easiest-to-use touch-screen control on the market."

MAQUET has a solution for the OR that's a horse of a different color. Their system, VARIOP, is a prefabricated modular wall system that has been used in Europe for over 25 years. It recently was launched in the United States. "An advantage to the modular wall system is that it can accommodate changes without major disruption to the OR, while also allowing for quick and easy access to utility lines and electronics," said Gilroy. "Panels are removed from the walls or ceiling to make modifications or upgrades as newer technology becomes available. Using the system cuts down on the need for remodeling, because the OR doesn't have to be taken down to make changes," noted Gilroy. "The walls are constructed similar to standard construction using a tubular stainless steel support system. The room can be built in as little as 6 months and, once delivered, can be installed in as little as 2 weeks."



MAQUET's prefabricated VARIOP operating suites offer easy installation and flexibility.

The rooms are built in MAQUET's factory in Germany, shipped to the United States in wooden crates, and assembled onsite. "There is less cost, less waste, and less clean up," claimed Gilroy. "The walls are sealed for improved infection control. The cabinets and nurses' stations are built-in and all are completely sealed, so it's easier to clean the rooms. The system allows for more natural daylight, and the window blinds are motorized. Sliding doors produce less air turbulence than swinging doors and, when closed, create a perfect seal. The doors open only half-way for staff but fully for patients, to reduce the amount of contaminants entering the OR."

Spending money to make money

Some of the newer equipment is pretty pricey. What arguments can be made to justify the purchasing expense as a cost-effective move? As Heniges, CompView, commented, "Given the current economic climate, it is imperative to demonstrate a clear return on investment for each hospital acquisition."

Tomaszewski added: "That's a very interesting question that requires both a dollar-and-cents analysis as well as consideration of present and future increased revenue generation and support for growth for surgical programs to better meet the needs of the community and to remain competitive with other hospitals within their region. Much is squandered in the way of costs with inefficient ORs that are outdated and ill-equipped to perform the surgical techniques available today. Hospitals must consider several factors in their purchase decisions, inclusive of immediate cost savings, increased revenues, life-cycle savings, improving quality, improving patient outcomes, retention and recruitment of skilled surgeons and staff, patient safety, and more."

Tomaszewski offered an illustration: Imagine that a hospital could save \$50,000 off the purchase price of an equipment package, but the package is ill-equipped, by limited function or room design, and cannot drive more cases or improve program growth. Compare it to a hospital that spends \$50,000 to equip the OR with the necessary technology needed to be optimally flexible, to generate more surgical cases per day, with a resulting increase in case load that increases cash flow, producing more revenue per year. "For example, if a hospital's efficiency could add a case per day and drive a net positive cash flow of \$3,000 per day, over a year's time (52 weeks times 5 days/week), the hospital would have generated \$780,000 of additional income per year (260 times \$3,000/day). Which is the better financial decision to make, \$50,000 in initial purchase savings or \$780,000 in additional income per year in OR efficiency? Let's be conservative and reduce additional revenue by 50%, \$50,000 versus \$390,000. Which is the smarter investment?"



Integrated operating room, Skytron

David E. Johnson, product manager, Harmony OR Integration Systems, STERIS Corporation, also believes "the purchasing expense can be justified if the new OR technologies can demonstrate an increase in overall productivity, quality, and safety in the perioperative environment. For example, equipment booms and flat-panel monitor arms help to minimize OR turnaround times by eliminating the need to wheel equipment and monitors into and out of the OR. Cables are not lying on the floor, causing a potential safety hazard, because the equipment boom provides power and video connectors near the surgical field. Touch-panel control of all the various audio, video, and data sources in today's OR can be accomplished from the traditional nurse station or one mounted on a motorized arm. This gives a central point of control and assures quick, easy, and ergonomic access to anything that might be needed during the surgical procedure, including easy access to the patient."

Gilroy explained how MAQUET's pre-fab system compares cost-wise to more traditional approaches to updating the OR: "It is cost-effective compared to remodeling or new construction. Initially, it could be an investment of 10% to 15% more, but, when changes in the OR environment need to be made, there is less down time; new technology can be added quicker. Some changes can be made overnight or on weekends; so, there is less disruption and less revenue lost. Down the road, it actually saves costs in remodeling. The panels are easily removed and are taken elsewhere to make the changes; so, no dust or soil is introduced into the OR. When the changes have been made, the panels are brought back in and screwed into the wall. There is minimal waste compared to a construction site." [HPN](#)