Saving in Unexpected Places: The Sterile Processing Department
Client Overview and Goals

An Ohio-based hospital was looking to renovate its Sterile Processing Department (SPD) to accommodate a 10 OR expansion over a 10-year period—five initial ORs and five to follow—without the need for continuous system add-ons. Additionally, it was interested in automated technology to streamline workflow and increase throughput.

After assessing proposals from its two preferred market vendors based on expandability, contributions to patient and employee safety, workflow, ergonomics and lean design, the hospital realized Belimed was the best choice for the renovation.

Project Challenges

In the next ten years, the hospital will increase its OR count from 14 to 24, with five ORs initially and five ORs to be added later. Each additional OR will add four surgeries per day with approximately six trays per surgery—an overall tray volume increase of 240 units per day. Off-site volume could be funneled through the system, so the SPD needs to be prepared with extra capacity.

Six years prior to the expansion, the hospital implemented a rigorous patient safety policy with a goal of zero preventable harm. Already reducing accidental deaths from one every 13 days to one every 112 days, the hospital was confident that renovating the SPD would bring it closer to its goal.

The 3-Zone System

Belimed introduced the hospital to a 3-zone system: decontamination zone, a clean zone, and a sterile storage zone. The zones work together to reduce the potential for cross-contamination, promote proper processes, and enhance throughput, all towards a complete system—decontamination and clean side. But after the design’s advantages were explained to the SPD Manager, he realized “it was the right thing to do.”

Evidence-Based Design and Project Management

The hospital worked with Belimed’s Project Planning Group (PPG) to optimize the space and create a balanced workflow throughout the department, even during peak hours, and to ensure that the same environment would be possible through and after the OR expansion.

Challenges:

- The Sterile Processing Department must accommodate a 46% increase in volume to support a planned two-phase, 10 OR expansion over the next decade
- SPD renovations could not negatively impact day to day OR operations

Goals:

- Augmenting sterile processing capacity to support the increase in OR volume
- Increasing patient and employee safety
- Creating streamlined and flexible workflow
- Future-proofing the SPD for the second phase of OR expansion
- Building in advanced ergonomics
- Incorporating lean design principles

Solutions:

- Belimed’s design group used evidence-based tools to optimize the processing throughput of the allocated space
- A phased renovation approach was used to ensure continuous support to the OR during the SPD construction
- A 3-zone SPD equipped with ergonomic equipment reduced risk of cross-contamination and improved the overall work environment

Results:

- Belimed’s layout and equipment technology gave back nearly 400 sq. ft. to the SPD (equates to supporting 5.5 ORs producing 132 trays per day)
- The design utilized the saved space to support the second phase of the OR expansion without additional SPD construction costs (equates to supporting 5.5 ORs producing 132 trays per day)

With benchmarked, evidence-based design, PPG relies on Belimed’s forty plus years of experience in the industry to analyze a space by size, layout, staff movement, and instrument process-flow, and design a floor plan that supports clinical best practices.

Employing the latest design technology, such as Revit and specialized in-house software packages—PPG is equipped to adapt Belimed’s system to existing floor plans and new construction.

Darwin, Belimed’s site survey tool, allows PPG to analyze bottlenecks in the current layout and predict traffic patterns in the new design. Full Capacity Planning software forecasts how much equipment will be needed to effortlessly handle additional throughput volume.

For the hospital, PPG was able to customize a design according to its unique requirements, including scaled instrument drop offs from vendors, clean drop offs for hospital ancillary sterilization processing, and sterile pickups from ancillary departments. Additionally, the anticipated expansion needs were reflected in the design.

Furthermore, Belimed’s design allowed flexibility for the department to determine its most appropriate sterilizer-loading model. The chosen sterilizer size allowed for smaller batches, resulting in a leaner workflow and quicker turnaround times.

The Phased Approach: Saving Transition Costs and OR Disruption

During the transition, the hospital needed a way to continue reprocessing in a safe and cost-effective manner. One of the competitors suggested a mobile sterilization center—a trailer set-up off-site for the processing of instruments.

Mobile sterilization center costs run high and transporting instruments outside of the facility can increase the risk of cross-contamination, and, ultimately, patient safety events, expose staff to outdoor safety issues (i.e. weather elements, personal safety), and create long transport paths. Multiple sterilization center costs run high and transporting instruments outside of the facility can increase the risk of cross-contamination, and, ultimately, patient safety events, expose staff to outdoor safety issues (i.e. weather elements, personal safety), and create long transport paths.

With the temporary SPD, equipment is installed in phases, allowing the SPD to continue operating without downtime. The temporary SPD would decrease cross-contamination risk, erase longer turnaround times, and mitigate other issues associated with taking instruments outside of the facility.

“The temporary SPD just worked,” says the SPD Manager. “We will have more capacity with the temporary SPD than we would have with the mobile sterilization center, and we will be able to service the OR more effectively with phasing.”
Assessing Results and Building a Continuing Partnership

Belimed’s staff was responsive and communicative, and PPG strived to deliver exactly what the hospital needed: a customized system built for expansion, a flexible automated work environment, and an efficient operation to ensure staff safety and positive patient outcomes.

With Belimed’s enhancements, the five initial ORs would be completed in five years and five additional ORs would be completed five years later, increasing the SPD’s throughput by 240 trays per day, and setting up the department for success over the coming decade.

“The design allowed us to future proof whatever comes our way,” the SPD Manager says. “Knowing that a department will be able to last for 30 years is important.”

The relationship between the hospital and Belimed extends beyond the design/build process. Belimed continues its assistance with on-site training and sustained support as the new SPD gets off the ground. As each phase is rolled out, Belimed is there to ensure a successful outcome.

“Professionalism is what comes to mind with Belimed,” the SPD Manager says. “They came out on top in every interaction we had.”

Proven Space-Savings

Stacked up against its competitors, Belimed’s equipment and design gave back nearly 400 square feet of additional usable space (Fig. 2). With the increase in usable square-footage, Belimed was able to build in space for two future washers and a sterilizer, without additional SPD construction costs.

A combination of smart design and equipment with optimized footprints contributed to space-savings and an improved throughput-to-workspace ratio.
Belimed is headquartered in Zug, Switzerland with U.S. headquarters in Charleston, South Carolina. With 12 Belimed companies throughout Europe, North America and China, Belimed is represented worldwide by a strong network in over 80 countries.