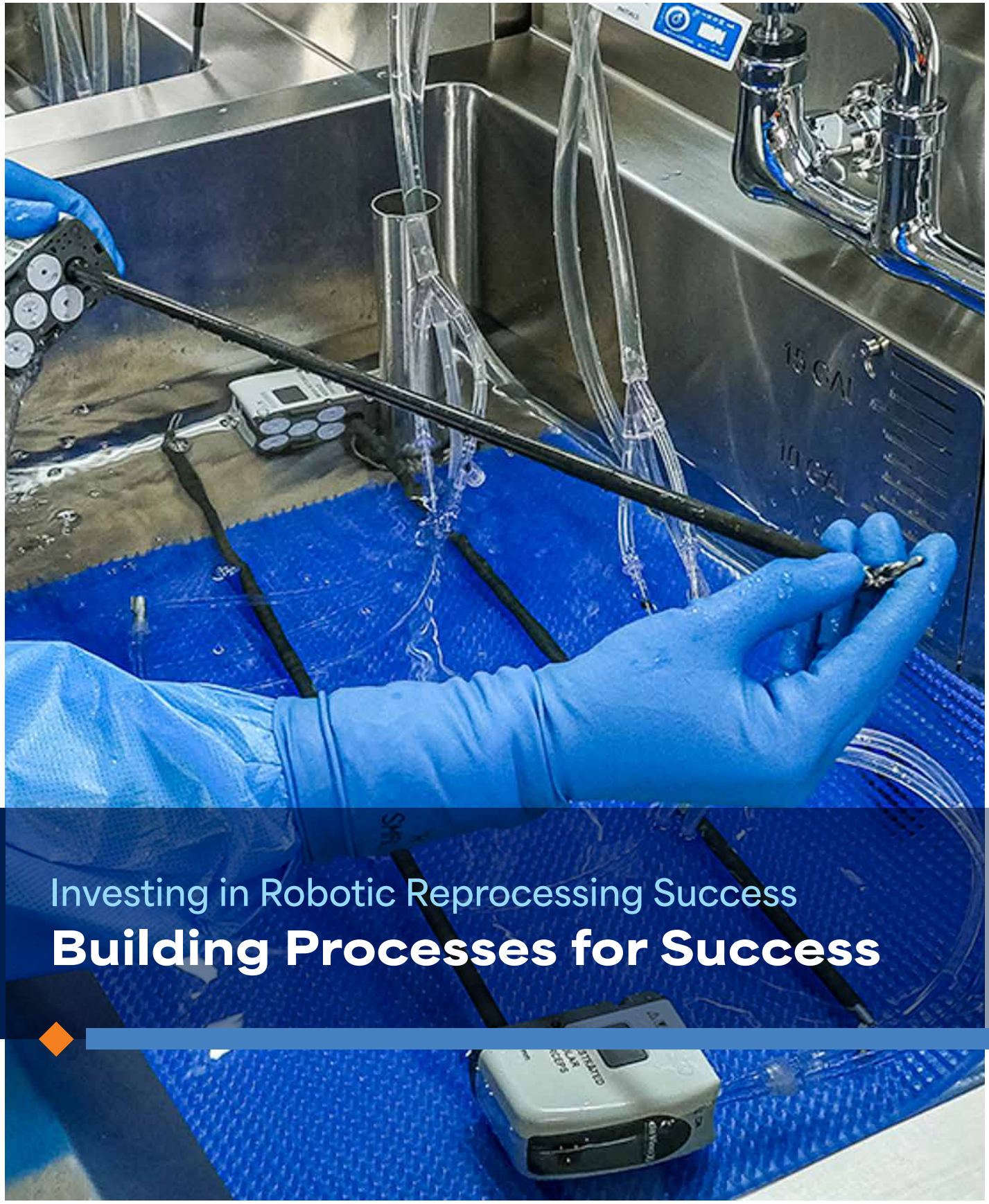
WHITEPAPER

PURE PROCESSING™



Investing in Robotic Reprocessing Success

Building Processes for Success

"The company reports that about 2.63 million surgical procedures were performed in the U.S. last year (2024) using da Vinci systems — a 17% increase from 2023."

- AHA, 2025

Robotic programs have matured from niche to mainstream, expanding across soft-tissue specialties and beginning to expand into several other surgery types. This growth directly increases SPD volume of complex devices that can require meticulous manual cleaning, soaking, flushing, and inspection before packaging and sterilization.

Since gaining the first FDA clearance nearly 25 years ago, da Vinci robots now are routinely used in many laparoscopic soft-tissue procedures, including cardiac, urologic, gynecologic and general surgeries. "The company reports that about 2.63 million surgical procedures were performed in the U.S. last year (2024) using da Vinci systems — a 17% increase from 2023." (AHA, 2025)

The unique cleaning requirements of robotic instrumentation demand reprocessing equipment capable of maintaining compliance and supporting the additional steps specified in the IFU. When these requirements are not adequately addressed, it can lead to challenges in sterile processing departments.

The Reprocessing Requirements

- **20-30 minute enzymatic soak time for robotic arms and endoscope**
  SPD operations must absorb longer cycle elements. Extended soaks and repeated flushing can tie up sink capacity and create decontamination bottlenecks if not planned for
- **Minimum 30 PSI and 20 second per port requirement during flushing**
  Manual syringe flushing is operator-dependent and difficult to validate for time-at-pressure per port, especially when ports must be flushed sequentially for set durations
- **4X magnification requirements for inspection**
  Complex wrists, joints, and lumens obscure soil; lighted magnification mitigates, but require training and time
- **Adequate real estate for soaking, inspection and packaging**
  Specifically, DaVinci robotic instruments can be larger than 24" in length require larger surfaces are for full reprocessing compliance. Sink basin dimensions are crucial to ensure instruments can be fully submerged for soaking and flushing.

The Challenges

Reprocessing challenges can increase risk of non-compliance, skipped steps and workarounds that leads to false assurance of sterile preparedness.

- **Bottlenecking**
  Thirty-minute enzymatic soaks for robotic arms and accessories are common in IFUs and can occupy sinks, slowing upstream instrument throughput.
- **Inadequate workspace for appropriate soaking, inspection and sterilization preparations**
  Dedicated soaking, timed alerts, and inspection/packaging stations compete for square footage; insufficient height adjustability and reach create musculoskeletal risks

- **Insufficient resources**
  Limited flushing and inspection resources can result in variability in compliance as processes cannot be verified and bioburden can go undetected
- **Complex design**
  Wrists, joints, pulleys and cables, and lumens obscure soil;

The Solutions

Building a successful robotic reprocessing program requires not only the right processes but also the right tools to support them. Addressing common challenges like bottlenecking, workspace constraints, and complex instrument designs calls for equipment that streamlines tasks, enhances compliance, and protects both technicians and instrumentation.

Robotic program implementation requires strategic planning and understanding of volume and impact. Though robotics is complex and onboarding the program requires new and additional workflows, the right process is obtainable.

Category	The job to be done	What compliance looks like	Pitfalls to avoid
Timer	Verify soak durations and step timing	Waterproof, chemical-resistant timers; audible/visual alerts; loggable timestamps	Ad-hoc phone timers or time estimation
Flushing methods	Deliver IFU-specified time-at-pressure flushing per port	Hands-free or assisted systems that with verified duration/ pressure and support multi-port workflows	Manual syringe only; no way to verify pressure or timing
Dedicated workspace	Prevent non-compliance, workarounds and ergonomic strain	Sinks or mobile stations sized for robotic arms; height-adjustable; chemical-compatible; defined flow from soak: flush: rinse	Inadequate basin and workstation size; no defined flow or ergonomics
Inspection enablement	Detect soil/damage not visible unaided	Lighted magnifiers with 4.0	“Naked-eye only” inspection; no documentation

Planning and Justification

Understanding volumes, results and outcomes to be anticipated or are presently being experienced help with planning for success. Using KPI metrics and risk analysis will aid in the decision-making process on what equipment and the right quantity for success.

Key Performance Indicators (KPI)

- % devices meeting soak duration (by model)
- % ports meeting flush time; where applicable, % meeting flush pressure spec
- Rework rate after inspection (fail/return to decon)
- Tray/Instrument repair spend for robotic sets
- Decon average turnaround time for robotic items (receipt: sterilization ready)
- Competency completion for staff assigned to robotic workflows
- Audit findings against IFUs and policy (monthly)

Risk Analysis Points: (with mitigations)

- Missed or shortened soaks: Timer/alert policy, spot audits, log review
- Under-flushing (time or pressure): Assisted/validated flushing and documented per-port steps
- Inspection gaps: Lighted magnifiers/borescopes, checklists, escalation path for damage/soil
- Sink congestion: Additional or mobile soak capacity; staggered case debriefs; priority rules

Reprocessing Solutions

Timer: PureSoak™ Waterproof Timer

The PureSoak™ Waterproof Timer provides a highly visible digital display for soaking stations, decontamination sinks and endoscope reprocessing spaces to monitor time-sensitive tasks.

The PureSoak Waterproof Timer can be programmed by seconds and minutes and counts down until an alarm indicates the end of the programmed time. Timers are large enough to be seen across reprocessing departments, and alarms are loud enough to be heard in even the busiest decontamination departments.

Timers can also be programmed with frequently used times; with the press of one button sterile processing technician can quickly re-run a preset time.

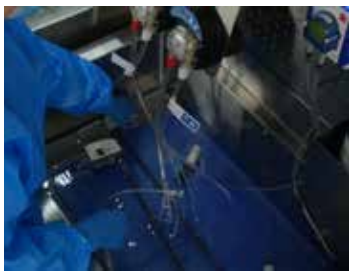
Automated Flushing: FlexiPump™ Independent Flushing System

The FlexiPump™ Independent Flushing System is a hands-free automatic flushing pump that replaces syringes and spray guns for manual cleaning. Unlike syringes and spray guns, the FlexiPump can clean up to three instruments at once and has pre-pro-

grammed flush cycles for consistent and standardized flushing. Every sterile processing technician and gastroenterology nurse follows the same cleaning process every time.

The FlexiPump tube sets come with built-in pressure-relief valves to protect delicate eye instruments, robotics, and suction tips from excess pressure, meeting specific pressure IFU guidelines. The FlexiPump also has a special Impact Cycle to safely remove tough soils and clogs from internal channels.

While the FlexiPump cleans multiple devices simultaneously, technicians and nurses are free to perform other tasks. With hands-free flushing, they also avoid the repetitive motion pain and injuries associated with using syringes or holding a spray gun.



Designated Soak Basin: PureSteel™ Mobile Soak

The PureSteel™ Mobile Soaking Station delivers dedicated spaces for soaking and cleaning surgical instruments and endoscopes. The Mobile Soaking Station is perfect for horizontally soaking robotics, endoscopes, larger orthopedic instruments or surgical instruments with longer soak times, as stipulated in IFU.

The Mobile Soaking Station is built on casters for mobile use and includes an organizational back wall to organize cleaning and soaking accessories, without taking up additional counter space. Mobile Soaking Stations can be outfitted with electrical, a PureSoak™ Waterproof Timer , PureChannel™ Flush Touchless Auto Dispenser, and FlexiPump™ Independent Flushing System to create secondary reprocessing sink.

The Mobile Soaking Station can be purchased with a faucet and hard-plumbed, when needed.

PureSteel™ Xi Reprocessing Sink

The PureSteel™ Xi Reprocessing Sink creates dedicated areas for endoscope and/or surgical instrument reprocessing to increase a department's sink space without expensive construction or renovation.

The Xi Sink has a small footprint that is designed to accommodate a variety of larger endoscopes, minimally invasive, or robotic instruments. The 8" basin depth minimizes deep back bending but still allows proper depth for soaking and instrument trays. The Xi Sink also features a back wall pegboard to organize tools for reprocessing at a convenient height. The pegboard adjusts up and down with the sink height to keep accessories at the most ergonomic height for technicians.

The Xi Sink is built with ergonomically friendly features recommended by OSHA and ANSI/AAMI guidelines. Slanted wrist edges at the front of the sink basin help to minimize pain and injury on the wrists during long hours of reprocessing. In addition, optional height-adjustment functions allow the sink to match the individual user to remove bending and strain.

The Xi Sink comes standard with integrated electrical outlets, so departments can seamlessly add powered accessories. In-built lighting options, automated flushing systems, timers, enzymatic dosing pumps & chemistry storage can be added to create a complete reprocessing sink.

Robotics Workstation & Accessories

PureSteel™ Robotics WorkStation: Boost productivity and compliance with specialty devices

The PureSteel™ Robotics WorkStation is a Specialty Impact Table that dedicates space and resources for robotics packaging areas. Ideal for departments who are integrating robotics reprocessing for the first-time, whose robotics program is increasing, or who wants to dedicate staff and resources to robotics packaging and inspection.

PureSteel Robotic WorkStations feature all the same benefits & features as the Ergonomic WorkStation, with specialized consideration for robotics reprocessing:

- The Hughes Seal 'n Stow Heat Sealer Shelf, which keeps bulky heat sealers off countertops, creating space for larger instrumentation and packaging needs.
- Side storage for large, robotic-sized peel pouches, making it easy for technicians to grab, pack, seal and process robotic arms in peel pouches. Easy to refill and change with other holder sizes.
- A backwall pegboard which adjusts as the table height adjusts, and integrates 4.75x task lighting, ST79 compliant overhead lighting, lighted shelves for printers, computers and tracking systems, and other key packaging tools.

Together, these solutions form a comprehensive foundation for robotic reprocessing success, helping departments improve throughput, maintain compliance, and protect valuable robotic assets.

PureSteel™ 4.75x Magnification Task Light: Enhanced magnification for sterile processing and endoscope reprocessing

The PureSteel™ 4.75x Magnification Task Light provides sterile processing and gastroenterology professionals with enhanced magnification capabilities for external visual inspection capabilities. The task light features 2 different glass lenses that are easily swapped to match the magnification to the task or IFU (a 4.75x and 2.25x magnification lens).

The task light features touch-sensitive brightness controls and a spring-balanced arm for easy adjustment & control.

References: https://www.aha.org/aha-center-health-innovation-market-scan/2025-03-04-3-ways-robotic-surgery-changing-health-care-year

Scan here to see these solutions in action