

BioProcess Insight

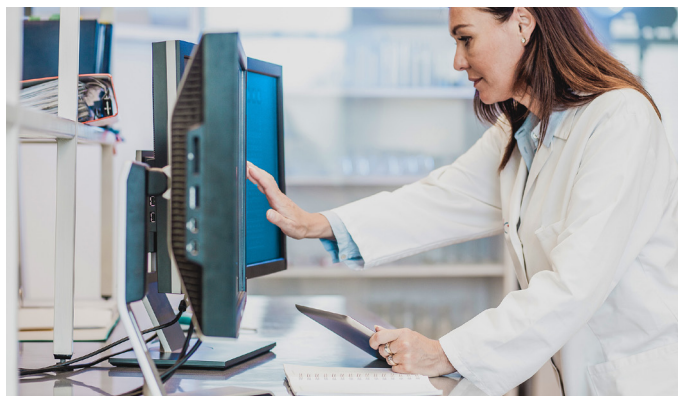
How to avoid bioprocessing risks when using cable ties?

Overcome the challenge of leaks in your bioprocess workflow

Biopharmaceutical manufacturing often uses cable ties to connect single-use assemblies. Despite their availability, cable ties present several significant challenges that hinder efficiency, reliability, and productivity:

- **Incomplete sealing and leakage:** Cable ties fail to provide a full 360° seal, increasing the risk of leakage and compromising process integrity. The pressure points on the fastening mechanisms can lead to uneven tubing compression, causing leaks and connection failures, particularly in high-stress areas such as tubing bends.
- **Damaged tubing:** Excessive force used to secure cable ties can damage tubing, restrict movement, and hinder future adjustments. Additionally, cable ties can break under constant strain or high pressure, leading to potential process failures or contamination.
- **Operational delays in unwrapping protective bubble wrap:** Preparing single-use assemblies with cable ties involves unwrapping protective bubble wrap, which prevents the sharp edges of clipped cable ties from damaging the assemblies. In high-volume environments, this preparation can cause substantial delays, adding hours to the process.

These challenges collectively contribute to inefficiency and increased costs in bioprocessing. The risk of leaks and tubing damage compromises the reliability of single-use assemblies. Additionally, the need to repeatedly protect and then remove bubble wrap slows down the entire process and reduces overall productivity. Therefore, finding a more efficient and reliable alternative to cable ties is crucial for improving overall operational performance and productivity in bioprocessing workflows. The case for moving away from traditional cable ties is clear.



To illustrate, the following case study highlights the challenges faced by a manufacturing facility due to the use of cable ties and demonstrates how adopting a more efficient solution can overcome these obstacles.

Situation

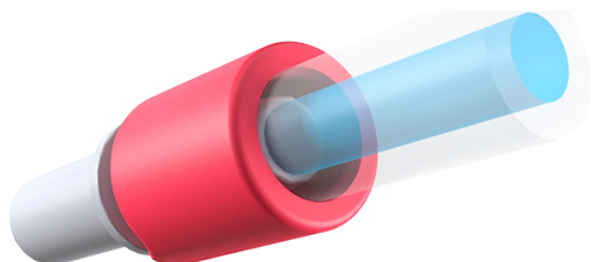
At a large-volume liquid (LVL) manufacturing facility in Grand Island, NY, the preparation of single-use assemblies for production was labor-intensive and time-consuming. Each single-use manifold required manual unwrapping of hundreds of sheets of bubble wrap. With as many as 350 or more individual fluid transfer connections secured with cable ties, the process was cumbersome and lengthy, involving hours of preparation time each day.



Common Cable Tie

Solution and results

Seeking a more efficient solution, the LVL manufacturer switched to the alternative single-use connector: Thermo Scientific™ BioTitan™ Retention Device. The BioTitan Retention Device is a novel solution to secure connections on single-use assemblies, fluid transfer tubing, and fittings. It delivers superior performance over cable ties by applying uniform force around the tubing like a collar, providing a 360° complete seal to help prevent leaks and improve overall operational efficiency. Unlike cable ties, the BioTitan Retention Device does not have sharp edges, eliminating the need for additional bubble wrap as protection. This change significantly streamlined the preparation process



BioTitan™ Retention Device

The switch to the BioTitan Retention Device had immediate and profound effects. The time required to unpack a single manifold was reduced from 13 minutes to just 7 minutes, saving 6 minutes per manifold. Given that the facility handles multiple manifolds per job and multiple jobs per day, these time savings were significant. The LVL manufacturer estimated that the new process saved them up to an hour or more of production time each day.

- **Time Savings:** BioTitan Retention Devices reduced the time to unpack a manifold by 46%, from 13 to 7 minutes.
- **Operational Efficiency:** With multiple manifolds and jobs, the cumulative time savings reached up to an hour or more a day.
- **Cost Savings:** Reduced labor time translates directly into cost savings, improving the overall efficiency and profitability of the manufacturing process.

References

1. <https://www.bioprocessintl.com/single-use/disposable-components-in-biomanufacturing-a-regulatory-perspective>
2. A Review of Sterile Connectors
3. <https://acuityprocess.com/how-to-select-tubing-for-bio-process-applications/#:~:text=There%20are%20several%20options%20when,and%20over%2Dmolding%20over%20fittings.>
4. Discover the Future of Tubing Retention: A Comparative Analysis

The BioTitan Retention Device effectively addresses the common challenges of cable ties in bioprocessing by providing a 360° complete seal, preventing leaks, and eliminating the need for protective bubble wrap. By applying uniform pressure, it helps prevent uneven compression and connection failures, supporting secure and efficient bioprocessing workflows. This innovation can help reduce preparation time, increase productivity, and minimize the risk of tubing damage and contamination. Learn more about BioTitan Retention Devices at thermofisher.com/biotitan

Learn more at thermofisher.com/bioprocessinsight or [request a BioTitan sample kit to evaluate](#)

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