

CASE STUDY: Running Agitators with DuraPack® System Using Air as Flush Media

Overview

Application: Lightning Agitators – Tissue Machine Agitator Service

Industry: Tissue Manufacturing

Product: SealRyt DuraPack® System with SLR® (Structural Lantern Ring)

Media: Air Flush

Background

At a tissue manufacturing facility, operators experienced excessive water usage during curtailment periods, resulting in tank overflow and process inefficiencies. The existing agitators—sealed with OEM Micarta bushings and bulk packing—were unable to maintain effective sealing without continuous water flush. This not only led to unnecessary resource consumption but also complicated shutdown procedures and environmental compliance efforts.

Challenge

The primary challenge was to develop a sealing solution that would:

- Eliminate the reliance on water as a flush medium.
- Maintain a reliable seal during continuous and intermittent operations.
- Operate under low or no-water availability conditions without leakage.

Conventional bushings and packing arrangements could not provide adequate shaft stabilization or maintain the required pressure differential when air replaced water as the flush media.

Solution

SealRyt engineers proposed the DuraPack® System featuring a custom SLR® (Structural Lantern Ring) design optimized for air flush operation. The lantern ring was engineered with internal tapered linear grooves terminating approximately 0.25" from the end of the bearing. This geometry improves air distribution, ensuring sufficient flow to the shaft surface and creating a high-pressure differential where sealing performance is most critical.

Installation Summary:

April 2023 – #8 Tissue Machine

- Four DuraPack® Systems installed on Lightning 35VSA 30/40/50 Agitators
- One DuraPack® System installed on Lightning 25VSA Agitator
- All five agitators remain leak-free with minimal packing adjustments.

March 2024 – #7 Tissue Machine

- Two DuraPack® Systems installed on Lightning 30VSA 30/40/50 Agitators
- Both units running leak-free with identical air flush setup.



June 2024 – #6 Tissue Machine

- Two DuraPack® Systems installed on Lightning 35VSA 350 Agitators
- Running leak-free with optimized air flush configuration.

Results

The DuraPack® System has demonstrated exceptional sealing performance in applications without available water flush or where water conservation is a top priority. All nine agitators across three tissue machines continue to operate leak-free with virtually no maintenance or packing adjustment required.

Measured Results:

- Water Savings: ~6,200 gallons/day per agitator (based on standard bushing clearances and water-flushed operation).
- Total Annual Savings: ~20,367,000 gallons across nine agitators.

Operational Impact: Zero leakage, reduced environmental footprint, and simplified maintenance schedule.

Summary

The SealRyt DuraPack® System has proven to be a highly successful and sustainable sealing solution for agitators in air-flush applications. Its precision-engineered lantern ring geometry maintains sealing reliability where water flush systems are impractical or environmentally costly.

By replacing water with air as the flush medium, the mill achieved both operational reliability and significant resource savings, demonstrating how innovative sealing technology can advance sustainability in pulp and paper manufacturing.