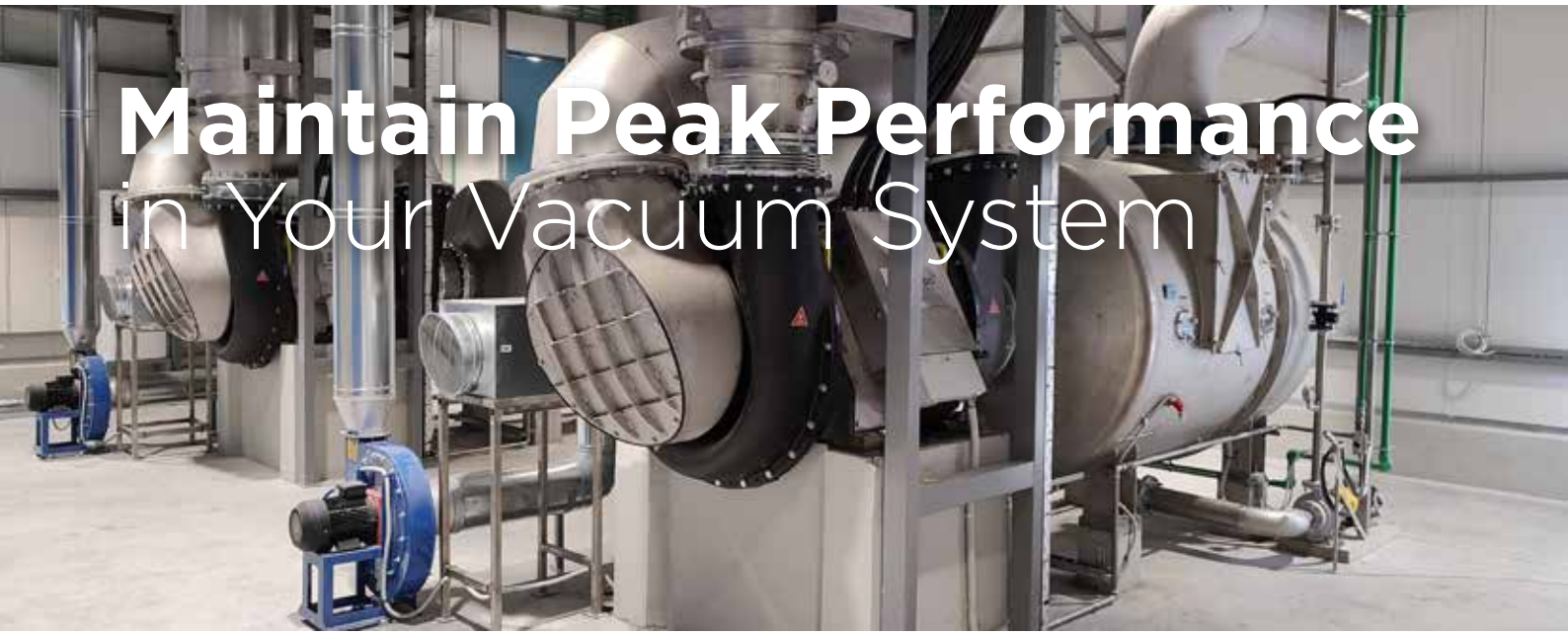
Runtech Systems
An Ingersoll Rand Business





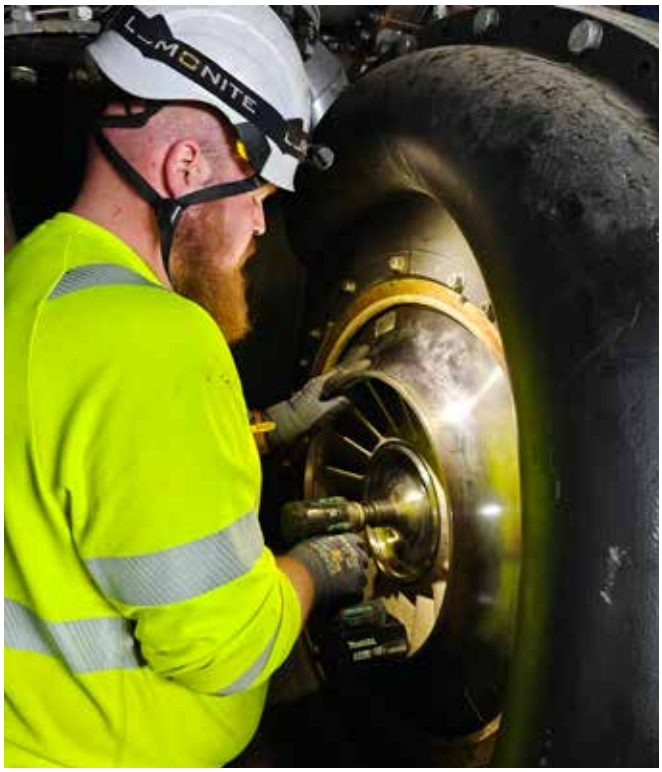
# Maintain Peak Performance in Your Vacuum System

Vacuum systems in paper mills often offer significant opportunities for energy savings, as many installations operate below their optimal efficiency. While some machines may require a complete system overhaul, in many cases relatively minor adjustments can deliver substantial improvements. One commonly underestimated factor affecting performance is insufficient or poorly timed maintenance.

Consistent and properly scheduled maintenance plays a critical role in sustaining system efficiency. Well-maintained vacuum systems operate at optimal performance levels while minimizing the risk of unexpected downtime. It is equally important to ensure that supporting equipment is serviced regularly.

Vacuum generation is a fundamental part of the papermaking process, yet it is inherently complex and energy-intensive. Over the lifetime of a vacuum system, energy consumption costs typically far exceed the initial investment. For this reason, operating the system at its optimal settings is essential for cost-effective mill performance. Without regular attention, both system availability and efficiency gradually decline, leading to increased operational expenses.

Proactive maintenance helps preserve system efficiency, ensures stable operation, and supports consistent production performance.



## Maximizing Efficiency Through Proper Turbo Blower Maintenance

RunEco EP Turbo Blowers are designed for cost-efficient operation, but like all mechanical equipment, they require routine servicing to maintain performance and reliability. Over time, the impeller may accumulate deposits, leading to imbalance and reduced efficiency.

Standard maintenance procedures for EP Turbo Blowers include replacing the bearing unit and cleaning the impellers approximately every 18 months. Additionally, oil and oil filters should be replaced at four-month intervals. Regular cleaning of EcoDrop water separator lamellas and replacement of cooling air filters are also recommended to ensure smooth operation.

Runtech offers a range of service options, from basic maintenance to advanced predictive services such as vibration monitoring of bearings. Comprehensive maintenance packages include all critical inspections and components required to keep turbo blowers in optimal condition.

Extended maintenance can typically be completed during a two-day shutdown. Following the service, a detailed report and spare parts recommendations are provided. After such maintenance, standard servicing at 18-month intervals is advised, with more extensive maintenance performed every 5 to 7 years.


## Long-Term Service Partnerships

Planned maintenance not only enhances operational reliability but also improves cost control and system efficiency. Tailored service agreements are available to meet specific operational requirements.

The RunCare Agreement offers a comprehensive service solution based on long-term collaboration. It includes extended warranty coverage as well as detailed reporting and performance feedback, ensuring that equipment consistently operates at optimal levels.

Service agreements for turbo blowers typically span 5 to 10 years. All maintenance activities are planned and scheduled in alignment with production requirements, minimizing the need for internal coordination and effort.

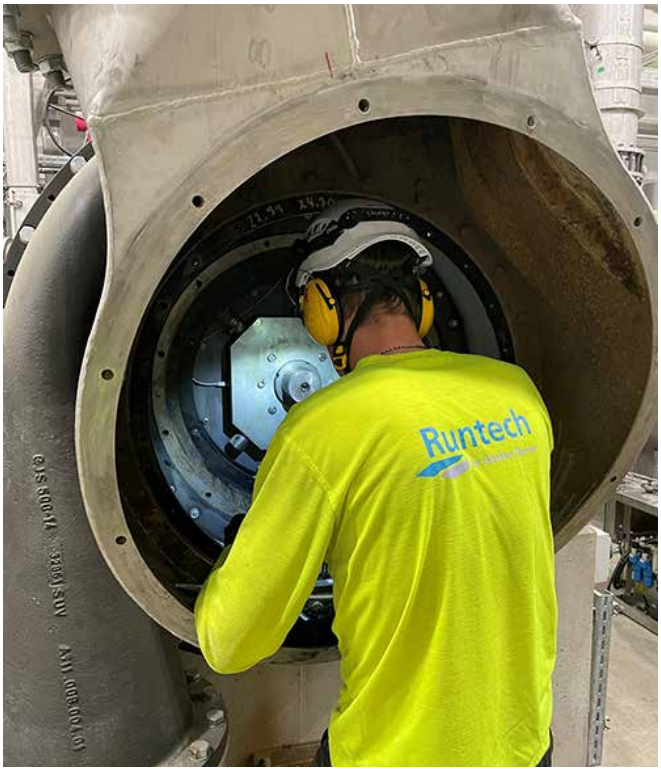
RunCare Services are categorized in four groups;

- Spare parts
- RunCare Standard
- RunCare Extended
- RunCare Agreement

## Planning for End-of-Life Equipment

When vacuum pumps or blowers reach the end of their service life, several upgrade paths are available. Equipment can be replaced with new units or upgraded to newer or alternative technologies, depending on process demands. In some situations, a complete system rebuild may be necessary to significantly improve energy efficiency or reduce water consumption.

Drawing on extensive experience from vacuum system audits and dewatering analyses in paper mills, it is possible to evaluate and benchmark existing system performance. This includes assessing vacuum systems, dewatering components, suction elements, and machine clothing. Based on these findings, a phased upgrade or rebuild plan can be developed to reduce operating costs while improving production efficiency and runnability.




## Comprehensive Solutions for Vacuum Systems

With a broad technology portfolio, solutions can be tailored to each mill's specific needs. This includes liquid ring pumps, dry vacuum systems, and hybrid configurations combining both technologies. Additional components such as doctors and save-alls further enhance the offering, enabling a complete approach to paper machine dewatering.

This flexibility ensures that the most suitable solution can always be identified, balancing performance requirements, operational goals, and budget considerations.

*For mills managing their own service work, our new RunCare Parts Agreement ensures reliable, just-in-time delivery of essential spare parts at fixed, discounted prices.*

## Turbo Blower & Vacuum System Maintenance Plans: Service Scope Comparison

# Turbo Blower & Vacuum System Maintenance Plans: Service Scope Comparison

| Maintenance services portfolio | RunCare Standard Every 18 months | RunCare Extended Every 5 years | RunCare Agreement |
|---|---|---|---|
| New bearing assemblies | X | X | X |
| Overview of turbo blower | X | X | X |
| Impeller washing and visual check | X | X | X |
| Labyrinth seals condition check | X | X | X |
| Temperature and vibration sensor change | | X | X |
| Auxiliary equipment condition inspection | | X | X |
| Condition check of rotor and stator | | X | X |
| Impeller crack test with a penetrant NDT and impeller analysis | | X | X |
| Oil line impurity and lubrication system check, oil hose change | | X | X |
| Cooling air fan and the cooling line inspections and recommendations. Filter and filter housing inspection and leaks. | | X | X |
| EcoDrop separator lamella pack inspection and water level switch check | | X | X |
| Ensuring the operation of stalling valve | | X | X |
| Motor insulation resistance measurement (with mill electrician) | | Option | Option |
| Frequency converter sinus filter capacitor (with mill electrician), frequency converter fans and filters | | Option | Option |
| System optimization visit (one process specialist visit 2 days at site and reporting) | | | Option |
| EcoFlow maintenance | Option | Option | Option |
| Planning – Annual clock | | | X |
| Report & recommendations | X | X | X |
| Extended warranty (first agreement: 2 → 5 years) | | | X |
| Remote monitoring | | | Option |
| NASH pump inspection | | | Option |