

Reliable Vacuum Packaging Performance at MBRF through Condition-Based Service and Controlled Maintenance Planning

Evacuation performance defines packaging stability in high-throughput food production

JARINU, BRAZIL, August 3, 2026 /EINPresswire.com/ -- Immediately before sealing, a packaging chamber must be evacuated within a defined cycle time. Air and residual gases are removed until a target pressure level is reached. This pressure level determines the residual oxygen content, while the evacuation time directly affects line throughput. Both parameters must remain consistent across all cycles to ensure stable production.



: In large-scale food processing environments, residual oxygen content and evacuation time must remain consistent across all cycles to ensure stable production. Source: Busch Group/ AI-generated.

This requirement becomes more complex in large-scale food processing environments with varying products and operating conditions. The application described here is implemented at MBRF, one of the world's largest producers of animal protein, within its production network in Brazil, covering 27 production sites.

From a process perspective, this step is highly sensitive. If the required pressure is not reached consistently, product quality varies. If evacuation takes longer than expected, cycle times increase and line performance is affected. Vacuum is therefore not a secondary utility but a parameter that directly determines process stability across a large number of installed systems.

Consistent evacuation depends on controlled system condition

The technical demand in this application does not come from maximum pumping speed alone. The more important requirement is repeatable behavior under changing operating conditions. Product type, moisture, vapors, and process variation influence the gas load seen by the equipment. That means the system must deliver the required pressure level reliably even though

the operating point is not always the same.

In this context, vacuum is a process-relevant parameter because it defines whether evacuation takes place within the required time window and at the required pressure level. If pump condition changes, the process changes with it. Wear, contamination, or incomplete maintenance do not remain isolated equipment issues. They show up as instability in evacuation behavior and therefore in packaging performance.

Reactive maintenance created variability and planning uncertainty

MBRF's vacuum systems were supported by Busch mainly through spare parts supply, while [field service](#) played a much smaller role. The customer carried out many maintenance tasks internally or used third-party providers.

Technically, this setup had clear limits. The actual state of the pumps was not assessed systematically across the network. As a result, performance degradation could remain unnoticed until it affected operation.

Maintenance and repair tended to be reactive and executed without the involvement of the manufacturer Busch.

A service concept built around diagnostics, shared responsibility, and availability

MBRF and Busch addressed the issue by shifting from a spare-parts-driven model to a structured service contract aligned with the way the customer actually operated. The concept was built around the installed base of R5 rotary vane vacuum pumps, [MINK](#) claw vacuum pumps, and vacuum boosters and included predefined parts and service structures, regular [vacuum checks](#), coordinated field service, and availability of spare pumps.

The technical logic of the concept is straightforward. Routine tasks such as oil and filter changes remain with MBRF's own maintenance teams. Busch verifies these activities through regular inspections and diagnostics. More demanding work, including overhauls, is then performed either in the field or at Busch's facility, depending on the case. Spare parts are positioned at the customer site in advance, and spare pumps are available when needed.

In operation, the system follows a condition-based service loop. Pumps are checked at defined intervals and their condition is documented. Critical units are identified by site, and maintenance actions are planned together with the customer. This creates a direct link between equipment condition, service execution, and production planning.

Predictable operation and a model for distributed production networks

The main improvement for MBRF is better control over system condition and therefore greater predictability in operation. Because pumps are inspected regularly by specialists, unstable performance can be identified before it leads to unplanned interruptions. This supports higher availability at plant level, as maintenance can be planned and supported with replacement

units.

Another key effect is improved transparency. Based on regular diagnostics, MBRF can forecast maintenance and operating costs with a higher level of accuracy. This enables structured budgeting and coordination across multiple production sites.

“The partnership has proven to be both solid and strategic since the very beginning of the contract, characterized by a collaborative and transparent approach to both the drafting of the agreement and the execution of activities. We have observed a strong alignment with the business needs across our various units, responsiveness in service delivery, and consistent improvement in the processes involved.” says Everton Bernardi, responsible for Engineering and Maintenance at MBRF.

This approach is applicable to industrial environments with distributed production systems and variable operating conditions. Wherever process performance depends on the condition of installed vacuum equipment, combining diagnostics, planned service, and coordinated execution supports stable operation and predictive maintenance.

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