



CRITICAL SPARES CHECKLIST FOR THE
Aggregate Industry

Your Strategic Guide to Parts Management
to Prevent Production Disasters

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Introduction



The aggregate industry faces unique challenges that make critical spares management both essential and complex. Harsh environmental conditions, such as pervasive dust, constant vibration and remote plant locations, often make it difficult or impractical to store sensitive spare parts on-site.

Due to these constraints, many aggregate plants continue to operate until equipment failure occurs. When key machinery breaks down during production, having immediate access to the right replacement parts is crucial for minimizing costly downtime and extended shutdowns.

This checklist equips aggregate operations with a systematic approach to identifying, sourcing and managing critical spares without the burden of extensive on-site inventory. The difference between a quick, four-hour repair and a disruptive, four-day outage often comes down to strategic planning and establishing strong distributor partnerships before a crisis strike.

Section 1

Crushers, Conveyors and Screens: The Most Critical Equipment in Aggregate Plant Operations



Not all equipment failures impact aggregate operations equally. Crushers, conveyors and screens form the backbone of production, and a failure in any of these systems can cause a downstream impact that can halt the entire plant.

What Makes a Part Critical?

Four primary factors define critical spares in aggregate operations:

- 1. Production and Downtime:** Parts are deemed critical if their failure leads to significant downtime or interrupts core production processes, especially when there are no readily available workarounds or redundancies in on-site equipment.
- 2. Lead Time and Availability:** Components with long procurement lead times or limited market availability are crucial, as delays in sourcing these items can result in substantial downtime and increased costs.
- 3. Maintenance History and Failure Likelihood:** Parts with a history of frequent failure, whether due to harsh operating conditions, normal wear or recurring issues, are prioritized as critical. Maintenance records and mean time between failures (MTBF) are helpful for identifying these parts.
- 4. Sourcing Complexity:** Certain components demand specialized technical knowledge for correct specification or application. Unique operational needs or specific equipment configurations may further increase a part's importance, making it essential to proactively identify and manage these items.

Section 2

Defining Critical Spares for Aggregate Operations

Before developing a checklist of specific parts, it's essential to identify the spares categories that have the greatest impact on aggregate operations. The considerations below outline the types of parts that typically require the most urgent attention.

1. Parts that halt production

- Primary crusher bearings require time-intensive disassembly for replacement, and their failure stops the entire upstream process. Beyond the bearings, other components deserve equal attention and require swift delivery in the event of failure to avoid downtime—such as gearboxes, motors, sheaves, belts, couplings and even wearing compounds.
- Conveyor drive components are essential to material movement at every stage, so even a single failure instantly halts production.
- Shaker screen failure means the entire operation grinds to a halt. Vibratory bearings, agitators, motors, sheaves, belts and even springs that fail can stop plant output until replacements are in and repairs are complete.

2. Parts with long lead times

- Large crusher bearings or gearboxes typically have extended lead times and may need to be ordered up to 16 weeks in advance.
- Conveyor belt parts might be available, but proper installation is key. A knowledgeable and available crew makes all the difference for returning to full operations.
- Specialty bearings, larger drive assemblies for screens, banded v-belts, electromagnetic and electromechanical vibrators, and the various attachment options can complicate availability. These essential components may not be stocked locally, which can lead to longer delivery times.

3. Parts prone to failure and wear

- Replaceable backing and wearing compounds inside crushers are subject to ongoing abrasive impact and must be regularly inspected and replaced to prevent damage to the underlying substrate.
- Conveyor belts and their key components, such as idlers, pulleys and bearings, are exposed to constant abrasive forces, requiring recurring repair, maintenance and replacement.
- Screen media and liners are subject to constant impact and abrasion, requiring routine inspection and regular replacement as part of a planned maintenance schedule. V-belts and sheaves can be overlooked and break down unless properly maintained and adjusted.



Section 3 | Primary Spare Parts Checklist by Equipment Category

This checklist distills the most critical spare parts needed to keep crushers, conveyors and screens operating reliably in aggregate plant environments. Items are prioritized according to their potential to halt production, wear and failure history, and sourcing challenges. Using this checklist helps ensure fast, targeted decision-making, so essential parts are always available when they're needed most.

Crusher System Critical Spares

Immediate Priority (Red Alert) Components:

- *Main shaft bearings*
- *Drive system motors*
- *Gearboxes*

High Priority Components:

- *Backing/Wearing compounds and liners*
- *Coupling systems*
- *Drive belts and sheaves (if worn)*

Standard Priority Components:

- *Lubrication system components*
- *Electrical components (starters, e-stops, controls)*

Conveyor System Critical Spares

Immediate Priority (Red Alert) Components:

- *Conveyor belts*
- *Pulleys*
- *Drive motors and gearboxes*
- *Conveyor bearings*

High Priority Components:

- *Idlers and rollers*
- *Impact beds*
- *V-belts*
- *Belt fasteners and emergency repair kits*
- *Belt cleaners and alignment tools*
- *Wearing compounds*

Standard Priority Components:

- *Take-up systems and tensioners*
- *Maintenance tools*
- *Lube system*
- *Skirt board*
- *Speed switches*

Screen System Critical Spares

Immediate Priority (Red Alert) Components:

- *Specialized vibratory bearings*
- *Screen media/panels*
- *Vibratory motors*

High Priority Components:

- *Tensioning hardware and replacement frames*
- *Drive belts and sheaves*
- *Isolation systems (springs, mounts, grommets)*

Standard Priority Components:

- *Screen cleaning systems and accessories*
- *Access panels and safety guards*
- *Tools and general hardware*



Section 4

Strategic Equipment Enhancements: Leveraging Technology to Increase Reliability and Profitability

The aggregate industry's conservative approach to equipment often means plants continue running with outdated technology long after better solutions become available. The most successful rebuild seasons aren't just about replacing worn parts. They're about strategically upgrading to newer technologies that reduce maintenance requirements, increase energy efficiency and prevent unexpected failures.

The Case for Technology Upgrades

Modern component technology offers significant advantages over systems installed 10-15 years ago. These aren't expensive overhauls—they're targeted replacements during rebuild season that pay for themselves through reduced maintenance, lower energy costs and increased uptime. High-impact enhancement opportunities include:

Condition Monitoring Systems

- Know before failure occurs through bearing temperature monitoring, vibration analysis on motors and gearboxes and belt wear tracking
- Identify root causes of recurring issues rather than repeatedly replacing failed components
- Plan maintenance during scheduled downtime instead of responding to emergency failures
- Establish preventative maintenance schedules (greasing bearings/motors, changing lube filters, re-tensioning v-belts and belt cleaners)

Motorized Gearboxes

- Eliminate maintenance requirements of traditional belt drive systems
- More energy efficient with a lower total cost of acquisition
- Reduce downtime from belt adjustments and replacements

Positive Drive V-Belts

- Eliminate re-tensioning requirements
- Increased energy efficiency compared to traditional v-belts
- Longer service life reduces replacement frequency

Auto-Tensioning Motor Mounts

- Maintain optimal belt tension automatically
- Extend belt and bearing life
- Reduce maintenance labor



Auto-Tensioning Belt Cleaners

- Longer service life with consistent performance
- Reduced maintenance requirements and adjustments

Conveyor Bearing Upgrades

- Replace double-row tapered bearings with spherical bearings for increased life
- Upgrade bearing seals to extend service intervals
- Significant reduction in bearing failures and replacement costs

Advanced Skirtboard Technology

- Easier maintenance and adjustment
- Increased material containment and recovery
- Reduced cleanup and material loss

Gearbox Oil Filtration Systems

- Dramatically extend gearbox life
- Reduce oil change frequency
- Prevent contamination-related failures

Shaker Screen Bearing Repair/Exchange Programs

- Reduce replacement costs through refurbishment
- Maintain inventory of ready-to-install units
- Extend screen deck reliability

Spray Truck Additives

- Regenerate ground moisture to reduce dust
- Lower maintenance requirements for dust suppression systems

Conducting a Comprehensive Plant Survey

Before rebuild season, conduct a thorough plant survey to document:

- Current component specifications and locations
- Incorrect or substandard parts installed during emergency repairs
- Enhancement opportunities where newer technology can replace aging systems
- Production changes that require different component specifications

Many plants unknowingly operate with incorrect components installed during emergency repairs. Operators often install whatever gets the line running fastest, not what the application requires. These mismatched components create recurring failure patterns that a proper survey would reveal.

A detailed plant survey enables:

- Faster ordering during emergencies (accurate part numbers on file)
- Elimination of recurring failures from incorrect component selection
- Strategic planning for enhancement opportunities
- Accurate rebuild season budgeting



Working with Distribution Partners for Enhancement Planning

The most effective enhancement strategies come from collaboration with distribution partners who understand both your specific equipment and available technology improvements. During rebuild planning, work with your distributor to:

- Identify components suitable for technology upgrades based on failure history
- Calculate ROI for enhancement opportunities (reduced maintenance, energy savings, increased uptime)
- Source appropriate alternatives when production changes require different specifications
- Plan for phased implementation of enhancements over multiple rebuild seasons

Balancing Enhancements with Budget Reality

Not every enhancement opportunity makes sense for every rebuild season. Prioritize based on:

- Equipment with recurring failure patterns
- Systems with high maintenance labor requirements
- Components with significant energy consumption
- Critical path equipment where failures cause extended downtime

The goal isn't to upgrade everything at once—it's to strategically improve your operation over time, turning each rebuild season into an opportunity to increase reliability and reduce operating costs.

Section 5

Maintenance Planning Strategies to Keep Your Plant Prepared

Routine Equipment Review and Condition

Monitoring: Schedule regular plant walkdowns and equipment surveys, with timing and focus adjusted according to production cycles and equipment risk. Pay extra attention to fast-failing or high-risk components during the production season and use slowdowns or shutdowns to conduct thorough inspections across all critical systems.

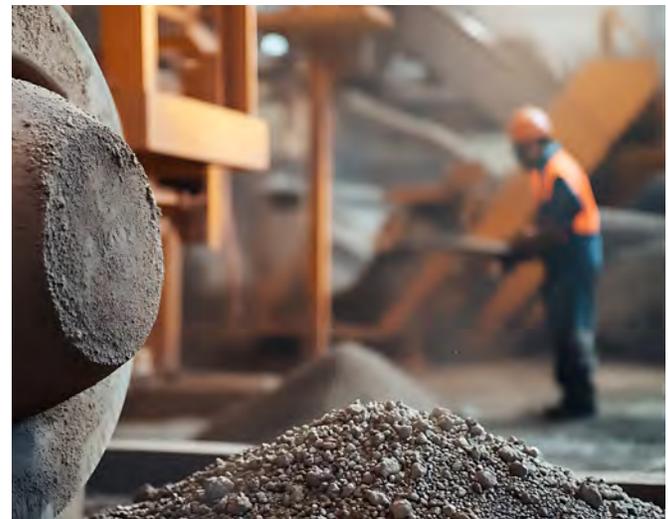
Modern condition monitoring systems transform these walkdowns from reactive inspections into predictive maintenance opportunities. Implement monitoring for:

- Bearing temperature and vibration patterns on critical motors and gearboxes
- Conveyor belt wear and tracking issues
- Belt cleaner degradation and adjustment requirements
- Drive system alignment and component wear

Use survey findings and condition monitoring data to establish preventative maintenance schedules:

- Greasing bearings and motors at optimal intervals
- Changing lube filters before contamination causes damage
- Re-tensioning v-belts and belt cleaners before failure
- Addressing minor issues identified through monitoring before they escalate

Generate an actionable, prioritized parts list based on both visual inspections and condition monitoring trends, ensuring critical components are available when needed rather than only during emergencies.



Smart Inventory Coordination: Instead of on-site stocking, work closely with distribution partners to ensure rapid access to critical spares, especially for fast-moving, high-turnover items. Rely on regional warehouses or supplier-managed inventory programs for both low- and high-value components, minimizing plant storage needs while maintaining readiness for unscheduled repairs or failures.

Collaborative Team Communication:

Encourage ongoing communication and coordination among operations, maintenance and procurement staff. Capture walkdown findings and team observations using simple tools like spreadsheets or field notes, and then translate these insights into proactive orders, maintenance tasks or supplier requests to prevent minor issues from escalating.

Building a Strategic Partnership with Your Distribution Supplier:

The difference between a smooth-running operation and one plagued by emergency shutdowns often comes down to the relationship with your parts supplier. The most successful plants treat their distributors as strategic partners, not just vendors. Engage with your distributor partner during planning, schedule regular equipment reviews and establish after-hours emergency procedures before crises occur. Leverage your distributor's technical expertise to learn about failure patterns seen across dozens of plants. Collaborate with them to identify root causes and implement technical enhancements to improve productivity. Utilize their inventory management capabilities to streamline your parts acquisition process. The goal is to transform your distributor from someone you call when something breaks into a planning partner who helps prevent failures in the first place.

Section 6 | How Applied Industrial Technologies Can Help

For over 100 years, Applied Industrial Technologies has been committed to focusing on safety, operational efficiency and the lowest total cost of ownership for the aggregate industry. Our Aggregate Industry Specialists keep you connected with our extensive supplier network and value-added services. Applied proudly offers:

Industry Expertise and Specialized Knowledge

Applied's aggregate industry experience extends beyond parts supply to comprehensive operational support. The company's background includes extensive field experience with crushers, conveyors, screens and ancillary equipment in aggregate plants. Technical specialists understand the unique challenges of run-to-failure operations and components. This expertise enables problem-solving support that extends beyond simple parts replacement to root cause analysis and long-term reliability improvement.

Regional Aggregate Centers

Applied's Regional Aggregate Centers are strategically located across key aggregate-producing regions, providing rapid access to vital replacement parts. Stocked with the most commonly used components for aggregate operations, these centers support urgent plant needs by offering same-day or expedited delivery, often within four hours. This approach is especially valuable for facilities with on-site storage limitations, ensuring that critical spares arrive quickly and reliably to minimize downtime and maintain continuous production flow.



Industry Leading Brands and Solutions

Strategic relationships with leading manufacturers ensure access to premium components designed for aggregate applications. Applied's long-standing relationships with key aggregate suppliers also provide access to advanced technical support and application expertise.

Comprehensive Plant Surveys

Applied's comprehensive plant survey creates a complete inventory of critical equipment and components, cataloged by location and system, and captures detailed specifications and replacement information for each item. This includes part numbers, key technical details and notes on visible wear or upcoming replacement needs. Notes and recommendations for upgrades and enhancement opportunities are also provided. As a result, plant teams can quickly identify and order the correct parts, proactively plan maintenance and act efficiently to reduce downtime and keep operations running smoothly.

Inventory Management Solutions

Applied offers comprehensive inventory management solutions that ensure critical parts are available when needed, without requiring customers to maintain extensive on-site inventory. Through vendor-managed inventory programs, consignment stock and a network of regional warehouses, Applied stocks and manages customer-specific items at strategic locations. These programs are supported by automated replenishment systems, technical support and rapid delivery options, all intended to minimize downtime and optimize working capital for industrial operations.

Repair, Rebuild and Industrial Rubber Services

Applied's Repair & Rebuild Services enable plants to extend the life of essential gearboxes, reducers and bearings, providing fast, cost-effective refurbishment and custom assembly when new parts are unavailable or delayed. Our Industrial Rubber Services deliver robust conveyor belting, specialized rubber components and 24/7 field support for emergency belt splicing and repair. These solutions help aggregate plants minimize costly downtime, ensure continuous material flow, and maintain high levels of productivity and reliability in demanding environments.



Conclusion | Strategic Critical Spares Management

A well-designed critical spares strategy is essential for maximizing uptime in aggregate operations, where hazards are prevalent and unplanned outages can be costly. By pinpointing essential components, organizing inventory by risk and lead times and creating plans for both everyday maintenance and rare emergencies, aggregate teams are better equipped to keep plants online.

Applied Industrial Technologies' deep expertise in the aggregate industry, comprehensive inventory solutions, and emergency response capabilities provide the foundation for an effective critical spares program. When equipment failures threaten production, having the right distribution partner makes the difference between four-hour repairs and extended shutdowns that devastate operational profitability.

Rely on Applied to transform spare parts management from a reactive expense into a strategic operational advantage, empowering aggregate operations to achieve higher reliability and optimal productivity.

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