Asset maintenance as a strategic function for high performance in agribusiness
By its nature, the asset-intensive agribusiness industry is extremely sensitive to asset availability and productivity. Most agribusiness companies are looking for greater raw material processing from their plants and equipment but should do so in a sustainable manner. After all, running equipment until it breaks down may provide short-term savings but can end up eroding operating efficiency and destroying value.

In fact, asset maintenance can be a critical lever for becoming more cost competitive given the significant proportion of operating costs it represents for agribusinesses. During economic booms, a powerful maintenance approach is vital to achieve high production and low cost per unit, maximize margin and drive shareholder value. Difficult economic times magnify this need as asset-intensive organizations feel greater pressure to reduce both capital and operational expenditure.

Agribusinesses can dramatically improve their operating performance by taking a more strategic approach to asset maintenance. Doing so requires a broader view of asset reliability and performance that spans the entire company to develop stronger maintenance strategies as well as enhance, plan and schedule work execution processes supported by capable people and technology. With this approach, agribusinesses can drive higher productivity, control costs and become high-performing asset managers.
Around the globe, many companies are facing a host of maintenance issues—particularly given the legacy of commodity boom and bust, growth and consolidation, and acquisition and investment.

The main challenges include:

**Maintenance strategy and sponsorship**

For too long, agribusiness boardrooms saw maintenance as a low priority, merely a function of operations. Many of these companies have had weak strategies in place that do not allow them to prioritize their maintenance based on equipment criticality. The reactive approach can lead to a permanent state of “fire-fighting” rather than a culture of proactive planning. Similarly, at many companies, the leadership may be uncommitted to asset maintenance excellence, preventing incremental results from being sustained over time.

**Aging equipment and workforce**

Many agribusinesses are lumbered with old equipment that proves difficult and inefficient to operate. In addition, with aging workforces in mature markets and a battle for resources in developing economies, finding a capable workforce to maintain the equipment has grown increasingly challenging.
Rapid growth

Particularly in emerging and developing economies, many companies have grown exponentially and can find themselves now competing on a global scale with a comparative gap in productivity. For instance, Brazil, a former leader in sugarcane ethanol production, now finds it difficult to outpace U.S. corn ethanol production—despite sugarcane ethanol production efficiency being seven times higher, on average, than corn ethanol. Improved asset maintenance could have a big impact on increasing productivity.

Asset maintenance may pose significant challenges for agribusinesses—but it also offers compelling opportunities. High performers know they cannot outperform competitors with disparate, reactive maintenance. In good times or bad, high-performing agribusinesses approach maintenance in an organized, concerted manner, adopting a holistic, proactive mindset to help achieve optimum asset performance. They recognize that not only can improved asset maintenance have an impact on the bottom line by decreasing operating costs, but it could generate top-line growth with improved equipment reliability and availability.¹

Lessons from the leaders

In charting a course to help achieve asset maintenance excellence, agribusiness companies are well-advised to benchmark maintenance performance not just against fellow agribusiness enterprises, but against other asset-intensive industries (See Figure 1).

Although agribusinesses have their own unique challenges, companies can learn a great deal from the discipline and focus of energy companies, in particular. In the agribusiness industry, centralized, powerful organizations dedicated to maintenance are rare. But in energy companies, such structures are commonplace—and vital to helping ensure safety.

Figure 1: Asset management: Cross-industry sophistication

<table>
<thead>
<tr>
<th>Pillars</th>
<th>Agribusiness</th>
<th>Steel / Pulp &amp; Paper</th>
<th>Chemicals</th>
<th>Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Maintenance Strategies</td>
<td>• Knowledge of assets</td>
<td>• Standardized processes</td>
<td>• Standard data</td>
<td>• Performance targets</td>
</tr>
<tr>
<td></td>
<td>• Optimum strategies</td>
<td>• Optimized processes</td>
<td>• Transaction automation</td>
<td>• Empowered organization</td>
</tr>
<tr>
<td>Processes &amp; Practices</td>
<td></td>
<td></td>
<td>• Information analytics</td>
<td></td>
</tr>
<tr>
<td>Information &amp; Automation Technologies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asset Performance Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governance, Organization &amp; People</td>
<td></td>
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</table>

More Sophisticated

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Compared to their agribusiness counterparts, energy companies score well against the five core pillars of asset maintenance. For many energy companies, their asset maintenance investments have paid off in the form of innovative approaches and greater effectiveness across the key asset maintenance pillars. (See Figure 2).

Figure 2: Energy industry distinctive characteristics

<table>
<thead>
<tr>
<th>Pillars</th>
<th>Energy</th>
<th>What energy companies do well</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Maintenance Strategies</td>
<td></td>
<td>- Visibility of safety-critical elements across all global operations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Asset life cycle management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Optimized trade-offs between reliability and costs</td>
</tr>
<tr>
<td>Processes &amp; Practices</td>
<td></td>
<td>- Highly standardized, lean and optimized processes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Clear cross-function integration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Optimized supporting services</td>
</tr>
<tr>
<td>Information &amp; Automation Technologies</td>
<td></td>
<td>- Standardized asset management information systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Performance dashboards and advanced analytics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- High use of automation and vertical integration of information</td>
</tr>
<tr>
<td>Asset Performance Management</td>
<td></td>
<td>- Standard performance indicators across all the operations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Powerful analytics (e.g., performance dashboards)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Benchmarking mentality with focus on continuous improvement</td>
</tr>
<tr>
<td>Governance, Organization &amp; People</td>
<td></td>
<td>- Clearly defined governance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Lean, central organization reporting at VP level, responsible for global standards and performance improvement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Operations are accountable for asset performance</td>
</tr>
</tbody>
</table>

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Over the past few years, energy companies have invested in new technology and processes that integrate asset management and production processes, analyze asset performance data, and transmit the relevant information to users consistently and in real time (See Figure 3). The digital oil field technology and processes bring the production plant information into the office and allow faster access to detailed information for technical and managerial professionals.

The new approach has brought energy companies a number of benefits and prepared them for the future:

- Increased focus on quality, health, safety and environment
- Reduced losses and improved production
- Reduced logistics and maintenance costs
- Knowledge sharing and collaboration

By following the example of their energy industry counterparts, agribusinesses can similarly achieve high performance in the form of lower costs and better results.
With Accenture's help, Petrobras moves toward high performance with digital oil field technology

Petrobras, a US $89 billion integrated petroleum corporation, is Brazil’s national petroleum company. As one of Brazil’s largest government-controlled businesses, it is the world’s sixth largest petroleum company.

Facing the costly challenge of managing oil and gas production, Petrobras envisioned the many benefits of enabling its Fazenda Alegra oil field professionals to manage production remotely. The company wanted to use pioneering digital oil field technology to create a common data repository and common business processes across the company’s workforce, incorporating portal technology.

Working with Petrobras, Accenture delivered its proprietary production optimization solution, an integrated management solution that helps professionals working in different locations to use real-time data and various kinds of special software to improve oil and gas production. Using systems that capture and transmit synchronized data from wells, plants and offices, the geographically dispersed teams worked remotely with access to more timely information. Accenture delivered a strong business case study, designed and implemented collaboration rooms, and revised the processes for managing oil and gas production, as well as the IT infrastructure, systems specification and development.

The company developed a web-based portal solution with seven modules available on the company’s Intranet that could be used in the collaboration rooms or by any other computer in the network. Business processes were redesigned considering the new portal available, matching the processes to the new technologies. For example, every three minutes users now have access to updated figures on oil volume production and well operation status—allowing teams to verify issues and act quickly, resulting in fewer interruptions to oil production—and cost savings.

By teaming with Accenture to use innovative technology to create and act on business insights in real time, Petrobras is pioneering the use of digital oil field technology—setting the company on the path to high performance.
To seize upon these opportunities, asset reliability and maintenance should be viewed as a core business discipline, not one that the maintenance department has to resolve on its own.

Companies need to make asset maintenance an essential component of an asset-intensive business strategy to get the appropriate financial, safety, environmental and quality benefits. Based on experience and research, Accenture has developed a holistic view of maintenance that provides a strategic framework encompassing all of the technical, assisting and sustaining processes and supporting elements required for world-class maintenance.

The five pillars representing the core elements of an effective approach to asset maintenance embody these processes:

**Asset maintenance strategies**

Asset strategy definition is one of the most important pillars of asset maintenance, determining how the maintenance team should plan routine maintenance and equipment shutdowns to guarantee availability, reliability and optimized costs. It aligns the maintenance strategy with the company’s business objectives and goals. If the company needs to improve production capacity to meet market demand or grow market share, the maintenance strategy can help to increase availability and reliability. If, on the other hand, the company wants to reduce costs, then the strategy could rationalize its maintenance program in line with service level agreements.

Whether preparing for production upturns or downturns, asset strategy definition aims to provide low total-cost equipment maintenance while averting critical failures and possible equipment defects. The strategy should:

- Be linked with equipment criticality
- Attain a balance between planned versus unplanned and preventive versus corrective maintenance
- Provide condition-based, usage-based and breakdown maintenance definition
- Develop purchasing and investment strategies
- Offer design-out engineering

Many companies across a variety of agribusiness segments are using a risk-based methodology to develop strategies for equipment usage, focused on reducing costs and equipment downtime. Equipment failures are evaluated to determine strategies to minimize the impact and prevent future failures, breaking the cycle of reactive maintenance. (See Figure 4).

Using Reliability Centered Maintenance, agribusinesses can apply mathematical models to show the probability of machinery failure and predict potential problems. The information can reveal how and when the equipment might fail to aid the development of preventative contingency or maintenance plans. The approach can also help to incorporate training into the maintenance plan and shed insight into the machine’s inner workings.

For instance, an agribusiness company working with Accenture was able to extract greater value from its automotive equipment by applying Reliability Centered Maintenance. The company achieved a 30 percent reduction on preventive and corrective maintenance hours and increased asset availability, which helped to improve production results.
Processes and practices

A robust asset maintenance strategy should define and pursue the best-in-class reliability aspirations and execute programs to help achieve them. High-performing agribusinesses create a structured approach for identifying improvement opportunities that yield an excellent return on investment while increasing safety and regulatory adherence.

Technical processes are necessary to better define, organize and execute activities for enhanced asset reliability. Accenture has identified two key focus areas that should be addressed at the start of every major reliability improvement effort:

- Work management: Well-executed planning and scheduling can reduce maintenance costs and downtime by optimizing the resources required. They also help in organizing the effort, thereby eliminating waste in conducting reactive and proactive maintenance activities.
- Supply chain management: More effective management of spare-parts inventory helps minimize capital investment without affecting service levels. Implementing leading-practice procurement processes can drive continuous improvement and re-evaluation of purchasing activities.

As much of the work in attaining asset maintenance excellence involves implementing processes, companies will need to develop a roadmap to verify that they reach their final goal. Putting in place a structured, phased approach will verify that the company gets the basics right and makes sustainable, long-term improvements.

Figure 4: Evaluating equipment failures to determine appropriate strategies

* "Planned" refers to the existence of prework (e.g., materials and labor required), not the actual timing or scheduling of work.
Information and automation technologies (Enabling processes)

Information or automation technology should be used as key enablers to optimize the processes and deliver excellent performance.

- Systems and data management: Through effective work-order closeout and data input and compilation processes, agribusinesses can help verify that their enterprise resource planning systems are delivering timely, efficient management reporting.

- Technology and analytics: Optimizing how they apply instrumentation, technology and analytical software can empower agribusinesses to improve input to analysis of performance information. Remote diagnostics and smart monitoring technology are key to help establish a proactive maintenance approach that minimizes maintenance by correcting root-cause deficiencies. Integrated with a management system, the technology can make maintenance planning and execution processes faster and more efficient. In addition, with historical data and knowledge about an asset’s behavior model, agribusinesses can improve their maintenance strategy and plans.

Using technology as a key enabler presents a very different approach to maintenance in agribusiness. In the past, employees would develop a maintenance plan based on information from the equipment manual, with corrective actions occurring on a day-to-day basis. Now, with reliability applications, employees can be alerted when something is about to break down so they can perform essential maintenance activities.

Asset performance management (Enabling processes)

As with any strategic initiative, agribusinesses need to manage asset maintenance effectively to reap the potential benefits. Having a system in place that measures the performance and outcomes of initiatives is critical to becoming a world-class maintenance organization.
A robust performance management system assists agribusinesses in evaluating the return on investment of their maintenance initiatives. It links asset performance management processes and metrics to core business strategies and objectives. Technology will have a role to play in capturing and reporting insights and achieving greater visibility into real-time maintenance information, all of which can influence decision-making for future investments.

Implementing a performance management system will also help verify that the company achieves continuous improvement. Performance management and analytical information can help agribusinesses identify, evaluate and recommend improvement actions through root-case and defect-elimination techniques.

**Governance, organization and people (Sustaining processes)**

Finally, agribusinesses should address the workforce culture and attitude toward maintenance—not just systems and processes. The workforce culture plays a large role in embedding these improvements and is supported by the company leadership.

It establishes the leadership and cultural elements necessary to motivate people with the right skills to make the right actions at the right time. Three essential areas underpin this pillar:

**Governance processes:** Such processes encompass the necessary decision-making frameworks, authorities, structures, metrics and oversight to manage the processes, policies and people driving maintenance transformation.

**Change management and communication:** As improvements are made, companies will need to assess, monitor and address issues within the organization to encourage employees to implement the improvements.

**Skill and talent development:** By defining and assessing skill requirements by role, companies can implement effective training and hiring practices. Developing a safety and continuous improvement culture are two key areas necessary for building strong skills and enhancing workforce morale.
World-class asset maintenance: Assembling the parts

Even when companies put in place the five core pillars of an effective asset maintenance approach, many organizations still fall short in their attempts to achieve world-class asset reliability (See Figure 5). To help agribusiness companies transform into world-class maintenance organizations, Accenture has identified four elements that are important to achieving overall program success:

**Develop a single, holistic program.** Initiatives specific to a geography or operation are fine—but on their own, will mean agribusinesses miss the opportunity to leverage leading practices across all operations. One strategy agribusinesses can adopt is to set up an umbrella program to cover any and all existing initiatives and to spearhead future projects. The program, spanning the entire enterprise, also could include a single plan/do/check/act (PDCA) center of excellence to integrate and oversee all improvement activities.

**Put maintenance on the executive agenda.** To reach the next level of maturity and performance, maintenance should gain executive-level focus to provide the authority and accountability to effect real change. The maintenance organization should be empowered to set goals, measure progress and take action as necessary. It also should serve as a guide, coach and supporter of operations across geographies, business units and other organizational boundaries.

**Achieve total mobilization.** When it comes to maintenance transformation, all business units should be involved and accountable. Every affected area should understand and support enterprise goals and objectives. In other words, participation cannot be optional.

**Focus on short-term results and long-term benefits.** Maintenance transformation does not occur overnight. Rather, it evolves through the development of maintenance strategies followed by the completion of hundreds of supporting steps and actions throughout an organization. It is about planning more effectively, optimizing the maintenance, repairing and overhauling (MRO) supply chain, and addressing issues around current processes and critical assets. This approach can yield measurable results in the short-term—and significant competitive benefits in the long-term.

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Figure 5: Maturity curve for becoming a world-class maintenance organization

<table>
<thead>
<tr>
<th>Level of Organization</th>
<th>Purpose</th>
<th>Roadblocks to next level</th>
<th>Some companies have effective maintenance programs</th>
<th>And &lt;3% operate at full financial optimization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Firefighting Mode (FF)</strong></td>
<td>Expedite repairs</td>
<td>Reactive mindset makes it hard to prioritize most pressing matters</td>
<td>&gt;90% of companies operate with excessive costs</td>
<td></td>
</tr>
<tr>
<td><strong>Weak Maintenance Organization (WMO)</strong></td>
<td>Expedite repairs with some planned maintenance</td>
<td>No immediate return on investment coupled with poor project management and little leadership support</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Good Maintenance Organization (GMO)</strong></td>
<td>Primarily performs planned maintenance with some repairs</td>
<td>Skill level and mindset to identify and address root-cause issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>World-class Maintenance Organization (WCM)</strong></td>
<td>Minimizes maintenance by correcting root-cause deficiencies</td>
<td>None. Completely proactive mindset</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Reaping the potential benefits

With its mix of short-term results and long-term benefits, a high performance asset maintenance capability can help agribusinesses achieve significant business imperatives that will help increase shareholder value and profits.

**Improved operating margins**

Higher asset reliability and better maintenance can improve operating margins—not just by reducing expenses but by increasing revenue. One reason is that higher equipment availability often increases production capacity for a “soldout operation.” Another (more common) scenario is improving profitability by maximizing the most profitable and productive units.

Optimizing equipment reliability can lead to increased operational efficiencies and agility, as well as provide additional capacity, enabling an agribusiness to economize in the downturn and drive greater throughput in the upcycle.

Despite these potential benefits, reliability and maintenance are often overlooked levers for improving shareholder value (See Figure 6). Instead, they are viewed as costs of doing business. Yet the return on invested capital (ROIC) made possible by these initiatives is frequently reflected in operating margins and capital efficiency. Key ratios that may be positively impacted by effectively managing assets include operating expenditure/revenue; net Property, Plant & Equipment (PPE)/ revenue; and (to a lesser extent) working capital/revenue.

**Greater capital efficiency**

Net PPE/revenue is the most strategic lever associated with improved reliability. By deploying a formal program for asset reliability and maintenance management, high performance businesses both help sustain the productive capacity of their equipment and extend the equipment’s life cycle.

Getting longer and more efficient use from equipment often makes it possible to defer capital costs for replacement. Improved reliability also affects working capital/revenue by allowing for reduced spare parts inventories. A focused effort in spare-parts reduction can be a high-impact, short-term initiative that can often pay for investment in reliability programs.

**Improved safety, compliance and quality**

While boosting profits is a very important aspect of high performance asset maintenance, it also has an important role to play in improving employee safety by preventing accidents, complying with environmental regulations by monitoring machinery waste and residues, and maintaining high quality products.

With a disciplined, holistic approach, agribusinesses can transform asset maintenance from a series of tactical chores into a strategic lever—one that has the potential to propel it to high performance.

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Figure 6: Value creation roadmap

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Interested in Learning More?

For more information on how Accenture can help your company achieve high performance in asset maintenance, please contact:

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