

Automatic tracking of KPIs keeps drives alive and thriving On-line indicator analysis assists in addressing issues early

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Drives are a key force behind a plant's production, and an unexpected drive failure can stop a plant dead in its tracks. Finding cost- and time-effective ways to identify and mitigate potential drive issues before they happen can be the difference between a plant making money, or losing production, money and customers. Finding a successful problem identification and mitigation solution can keep production moving and produce a higher overall return on capital employed (ROCE) for the plant.



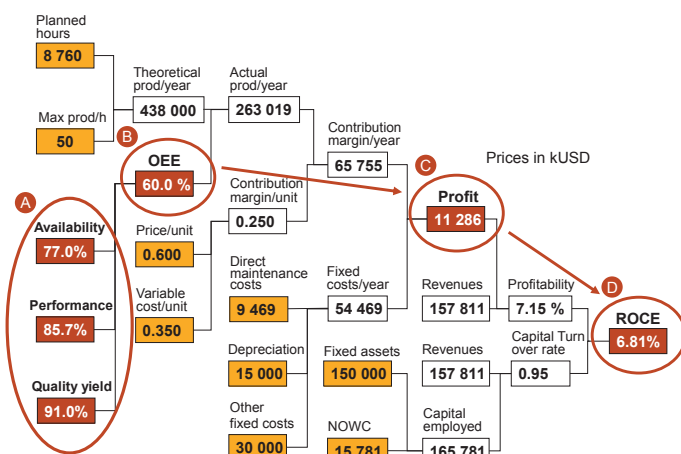
A smooth-running drive system provides industrial plants with benefits that range from increased equipment availability to lower energy costs.

In industrial plants, ROCE can be measured in improved availability, faster process speeds, better quality and higher yields. A drives system that performs reliably supports each of these elements.

As any plant manager knows, preventing problems is much less expensive than fixing them. In a 24/7 production environment, it is critical to solve potential issues before they drive up costs and reduce ROCE. Drives problems may begin with signs so subtle they are difficult to detect, though consequences can be far-reaching. Unplanned downtime, costly repairs and reduced equipment life are just a few of the repercussions if a plant's drive system performs poorly or fails.

Drives keep production moving

Motors are essential in a wide range of industries, including chemicals, metals, minerals, mining, oil & gas, power, pulp & paper and water treatment. Many industrial plants rely on large numbers of rotating equipment to keep production moving. This complex equipment is a major capital investment, in most cases is the biggest energy draw, and requires the specialized control of a drive system. Ensuring a high return on this capital is critical.



Motors and drives make up a significant portion of a plant's capital assets. So stable, efficient drives operation is critical for plant productivity and profitability. Since drives are what keeps a production process moving, smooth drives operation is critical for process availability, process speed (or performance), and even quality as inconsistent drive operation can be reflected in product quality. For many production processes, drives downtime means a complete production halt, which greatly impacts a plant's return on capital employed (ROCE). Services that identify potential drives problems before they occur will ensure drives stability, improve process performance and increase a plant's ROCE.

Performance Services powered by ServicePort



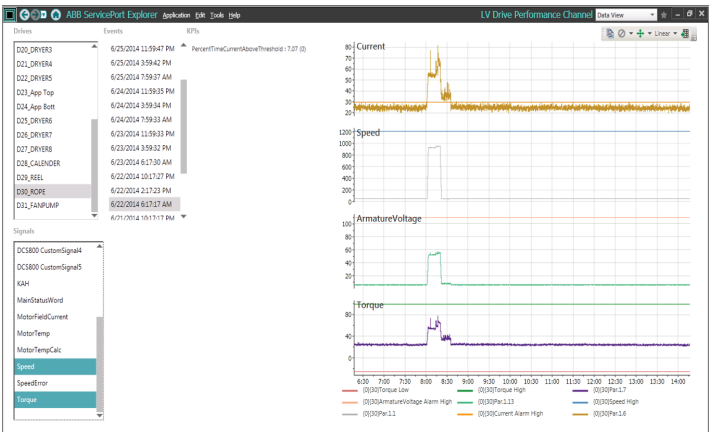
The LV Drives Performance Service tracks the health of drives systems continuously to diagnose performance issues. Users can obtain clear views of drive KPIs and signal data to ensure precise analysis.

So safeguarding drive health and performance is important. Conditions such as heat, moisture and vibration can jeopardize drive systems. To guard against failure from these or other factors, producers must be able to understand when something bad is about to happen to a drive. Measuring a drive’s electrical, motion and temperature characteristics and looking for deviations from desired performance is an effective way to determine if issues are arising.

Many drives problems start out small and nearly undetectable before growing into larger difficulties. By collecting data over long periods of time, and evaluating it for trends, plant operators and engineers can see long-term patterns of how the system functions and responds, and they can use this information to understand where and how potential drives failures occur.

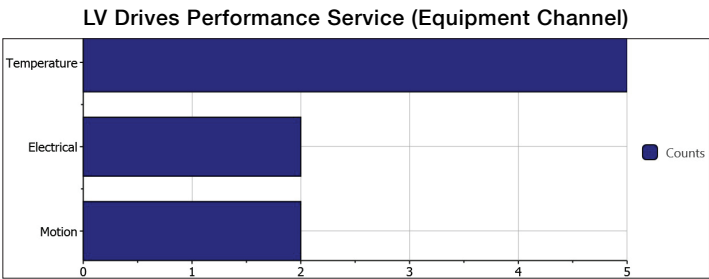
Find and fix faults fast

ABB’s new drives diagnostic and monitoring service was developed to improve low-voltage drive system performance. The ABB LV Drives Performance Service, powered by ABB ServicePort™, automatically gathers large amounts of data (including motor current, motor temperature, speed error and DC voltage) and quickly analyzes it to identify trends related to electrical, motion and temperature characteristics. This trend data is compared to pre-established thresholds to identify areas that have a high enough delta from the threshold to warrant attention and possible mitigating actions.



With ABB’s LV Drives Performance Service, a Southeast Asian paper mill improved drives efficiency and reduced energy costs. The service calculates Key Performance Indicators by comparing the signals to thresholds specified for motor-drive combinations such as speed, DC voltage and torque, to provide accurate problem diagnosis.

LV Drives Performance Service software resides on ServicePort, ABB’s secure, remote-enabled service delivery platform. ServicePort displays trends visually as Key Performance Indicators (KPIs) that are categorized and prioritized, so users know which areas most likely need to be investigated first. This helps plant or ABB service personnel to swiftly assess and address the health of each drive.



To optimize the performance of low-voltage drives, the LV Drives Performance Service conducts periodic analyses called “Scans,” generating “Scan Reports.” In a Scan, ServicePort is used to gather and compare data to pre-determined benchmark Key Performance Indicators (KPIs). For LV Drives, the areas of motion, electrical and temperature are benchmarked to find trends that predict potential issues. In an LV Drives Scan Report generated for a Southeast Asian paper mill, findings included that two drives had problems with motion, two had problems with electrical, and five had problems with temperature, as indicated by Scan Report figure above. Typically, the larger the horizontal bar, the higher the priority to investigate the root cause of indicators and resolve issues that could adversely affect drive performance.

Conclusion

Because the service uses ServicePort to continuously gather and analyze data, trends can be regularly viewed to stay on top of potential issues, so they can be fixed before production or equipment performance issues occur. ServicePort also provides regular scans of performance, and with the help of an ABB advanced services expert working on-site or through ServicePort's remote-enabled interface, a report is generated with detailed recommendations for actions that may be required to prevent problems from occurring, and to improve overall drive performance.

To help users take action on issues that need immediate attention, any KPI that tracks outside predetermined parameters triggers an alert that is delivered via email or text message to designated company or ABB service personnel. Users can store drives data and KPIs, and later retrieve and chart them to visualize drive health and performance in greater detail.

The LV Drives Performance Service can monitor one drive or several on the same network, and track the status of all drives together. For example, a plant with drives that control dozens of motors may have a problem with equipment overheating that isn't noticeable after restarts. With the LV Drives Performance Service, the plant can set temperature thresholds customized for their operation, and if parameters are exceeded, plant or ABB personnel will be notified so they can take corrective actions.

Southeast Asian paper mill serves drives health through ServicePort

When managers at a major Southeast Asian paper manufacturer learned that ABB was offering a service that would automatically collect and analyze drives information, and provide proactive notifications on emerging issues, they were immediately interested. Managers knew that by gathering and analyzing Key Performance Indicators from their drives, they could reduce the risk of equipment failure and ensure maximum uptime. Today, the mill uses ABB's LV Drives Performance Service, powered by ServicePort, on one of its paper machines.

Shortly after the LV Drives Performance Service was implemented, the mill had the information and analysis needed for reducing potential drives issues. The service evaluated the performance of 21 drives based on electrical, motion and temperature readings. Specific issues were identified that could potentially have a negative impact on drives performance. For example, five different drives were found to have temperatures above a desired threshold.

ABB reported on all findings and benchmarks, and provided corrective recommendations. With drives issues clearly identified and corrected, the mill can increase throughput, maintain high production efficiency and attain greater ROCE.

Conclusion

With ABB LV Drives Performance Service helping industrial companies identify and resolve drives issues, producers have a better chance of achieving their target availability, process speed and first-pass quality. Reducing potential drives failures further increases productivity and reduces unplanned maintenance costs. By diagnosing data for decision-making, accepting alerts of impending issues, and receiving recommendations for rectifying actions from ABB experts via ServicePort, producers can achieve the ROCE that they expect from their substantial investment in motors, drives and associated equipment.



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