RIS: The right move – a strategy for getting the most out of assets

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Strategic thinking when facing a tough challenge requires recognising how to make optimal use of all available assets. A chess player, for example, who chooses to exclude some of his chessmen from his strategy, is inherently disadvantaging himself. This is no different in manufacturing processes.

No matter how good a company’s other strategies are, it cannot, for example, afford to ignore the consequences of unplanned equipment downtime when it is seeking to maximise efficiency and productivity.

Companies are dealing with global competition, rising energy prices, fast-changing market requirements, shorter lead times and a shifting labour pool. Market dynamics mean they must make optimal use of their installed base. Although automation is a substantial contributor to increased plant profitability, the return on investment (ROI) of the installed assets has yet to achieve its maximum. ABB’s reliability integrated solution (RIS) helps plant operators achieve this – optimisation by making better use of their assets.

Unavailable and underperforming assets are production drains and missed profit opportunities and often lead to a lower quality product. Unscheduled and often unnecessary maintenance leads to the underutilisation of operational assets and moreover limit the lifecycle profit and financial returns of the installed capital.

To tackle these losses, a balancing act between high asset availability and low-cost demand is required, supported by a proactive business strategy with clearly defined metrics. RIS delivers the path to implement a successful asset optimisation strategy using advanced technology. It uses a consultative maintenance and production-oriented approach to drive sustainable results (see Factbox 1).

Positioning

The introduction of an asset optimisation solution into a company is more than a one-project exercise, and can certainly not be achieved overnight. Consequently, executive commitment is crucial in bringing the various maintenance and production teams to adopt the common goals and metrics required.

Factbox 1: Benefits of reliability integrated solution (RIS)

The target of RIS is to enable maximum production at minimum cost. The production yield of sellable products is represented as overall equipment effectiveness (OEE) and is one of the main key performance indicators (KPIs) that reflect the real utilisation of production and automation assets. OEE is not only limited to the shop floor but is an important KPI for all levels of the company from operations to plant management. Availability and performance of the installed assets and their resulting product quality have direct impact on the ROI of assets. When these assets are not operational or not contributing to the production of a sellable end product, capital is being wasted.

An increased OEE also opens the opportunity to reduce maintenance cost because higher asset availability results in a better control over the assets and production process. The use of advanced maintenance practices can drastically reduce unnecessary and unforeseen maintenance activities and optimise workforce utilisation.

RIS combines OEE improvements with reduced maintenance expenses to provide a solid return on assets by:
- Extending the useful life and reducing total life-cycle cost of plant assets
- Increasing plant asset availability and performance while reducing maintenance cost
- Mitigating downtime, risks and consequences
- Reducing time to achieve operational results
- Converting data to decision-making information for continuous improvement
- Evaluating the financial impact of maintenance

RIS’s asset stewardship focuses on cost reduction, productivity and several aspects of the asset life cycle:
- Increase and ensure asset availability
- Reduce the life-cycle cost and extend the asset's life span
- Drive productivity by advanced maintenance strategies
- Aligned business and production goals through improved usage of installed base

To achieve these targets, RIS is built on a combination of ABB’s asset optimisation automation solutions and extended industry knowledge, expertise and maintenance methodologies. RIS is deployed in both a focused and continuous way. Three main phases are distinguished:
- Allocation of critical assets under assessment against the performance indicators of the world’s best reliability performers. Further implementation of asset optimisation strategies are deployed from these findings
- Introduction, implementation and integration of real-time asset optimisation technology to support advanced maintenance strategies
- Sustainable profit growth by cross-functional and continuous improvement strategies

RIS in action

RIS is applicable in a wide selection of industries, ranging from chemical plants to mining, and presents a scalable and incremental solution for asset optimisation.

As a starting point in the implementation of RIS, a process, an item of equipment or a group of assets is selected. Within any such selection, the components to be focused on when seeking improvements are those that have an impact on the plant’s productivity as reflected in key performance indicators (KPI) such as the overall equipment effectiveness (OEE). The expansion of this process area and the inclusion
of additional assets can be engineered in an efficient way, using ABB’s System 800xA platform as a backbone.

Phase 1: Criticality analysis, benchmarking and assessment

A criticality analysis, benchmark and loss-opportunity assessment are critical process steps in the successful selection of the best asset optimisation strategy. These steps all deploy technical and service-oriented components of RIS. The criticality analysis is performed to prioritise the assets that affect the major asset life-cycle costs and productivity. This classification of critical assets also forms the basis for defining loss opportunities and potential OEE improvement.

The plant-performance benchmark focuses on a series of maintenance KPIs, reflecting the actual situation, and comparing these against “world class” standards. This positions the company or process relative to the globally best maintenance and production performance metrics and sets a baseline for improvement targets. The performance of most companies falls well short of this “world class” improvement targets. The performance of most companies falls well short of this “world class” standards. The performance of most companies falls well short of this “world class” standards.

The loss-opportunity assessment is built upon the findings of the plant-performance benchmark and reflects the targeted business value of this performance gap. The basics for deploying the asset optimisation strategy are technology, maintenance, change-management processes, and continuous improvement programs.

Footnote:
1) See also “Making reliability sustainable” on page 54 of the ABB Review Special Report.
maintenance programs can include, for example, workload balance, implementation of an advanced maintenance program such as reliability centred maintenance or total productivity maintenance. Also, specific expertise of equipment may not always be available in the plant. The remote diagnostics services application uses the RIS technology to remotely support, evaluate and troubleshoot equipment at anything from periodic time intervals to round-the-clock vigilance.

An advanced solution

The reliability integrated solution includes technology supported by advanced maintenance strategies to fully deploy a successful asset optimisation strategy. Equipment availability and production rate improvement is achieved by providing insight into the asset health and the related actions.

Throughout the enterprise, accurate and actionable information on critical assets is made available to the right people at the right time. Operations and maintenance people can thus work together to maximise productivity – basing their decisions on common goals. The target is to provide maximum production output at minimum cost. By combining OEE improvement with reduced maintenance expenses, the primary benefit of RIS is the achievement of a solid and sustainable ROI.

References


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Footnotes

2) See also “Prevention is better than cure” on page 50 of the ABB Review Special Report.
3) See also “Remote optimisation” on page 13 of the ABB Review Special Report.