Integral Plant Maintenance
Maximum performance from your assets
Aligning asset management strategies with business targets is key to improving profitability

**International markets increase the need for productivity and efficiency**
The continuing globalization trend opens up new markets for companies everywhere. This leads to new opportunities for both procurement and sales and, in turn, creates huge new potentials for increasing revenues and reducing costs. However, as economic boundaries disappear, global players, smaller multinationals, and regional companies alike are faced not only with opportunities but also with growing competition and relentless cost pressures.

These market mechanisms – which cannot be directly influenced – also have a major impact on the price of shares and costs of raw materials. In this market environment, a company’s productivity and efficiency play a key role in the achievement of their goals – and this we can influence!
Asset performance improvement

<table>
<thead>
<tr>
<th>Steps</th>
<th>Awareness</th>
<th>Analysis and feasibility</th>
<th>Implementation</th>
<th>Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Improvement potential is identified</td>
<td>A concept is developed based on an in-depth analysis</td>
<td>Systematic realization of the defined concept</td>
<td>Continual improvement</td>
</tr>
<tr>
<td>Benefit</td>
<td>Qualified foundation for the next step decision</td>
<td>Comprehensive implementation concept supported by a feasibility analysis (payback calculation)</td>
<td>Improvement of processes and achievement of the potential defined in the previous phases</td>
<td>Sustainable and manageable improvements</td>
</tr>
</tbody>
</table>

**Much more than just a cost factor**

Many companies still view maintenance as simply a cost issue. Nevertheless, factors directly influenced by maintenance performance, including uptime, speed, and quality, have a considerable impact on profitability. Production losses are “hidden costs” that need to be understood and controlled in order to ensure maximum performance from a company's assets. Improving plant performance means achieving the right balance between maintenance resources and processes to ensure optimized maintenance costs and the required production levels, which will at the same time maximize profits.

In addition to increased output and cost efficiency, best-in-class maintenance leads to a reduction in capital expenditures by extending the lifecycle of the equipment and optimizing stock levels of spare parts. In other words, it is possible to benefit from producing more at lower costs and over a longer period. This is the best way to avoid further investment and to generate a higher return on the company's capital.

**Our solution: Asset management solutions for industry**

Siemens Customer Services addresses the customer's need to access the potentials in this area through consulting services and long-term partnership, with a well-proven approach that keeps companies profitable today and into the future.

Our step-by-step approach helps you align your asset management strategies with your company's goals. At each stage in the improvement process, we provide you with the facts you need to make your decision to move on to the next phase. The result is a clear focus on the right strategies for your company.

Implementing the prioritized measures, derived from your business targets delivers the following benefits:

- Improved performance of your assets,
- Increased production capacity, and higher quality of the finished product
- Improved reliability of assets
- Improved efficiency of your maintenance processes with lower production costs per unit
- Extended equipment lifecycle and reduced investment requirements
- Optimized spare-part stocks
- Minimized health and safety risks
- Integration of risk management and contingency planning
Improved processes for better profitability

A solid foundation for best-in-class asset management

<table>
<thead>
<tr>
<th>Equipment uptime</th>
<th>Cost efficiency</th>
<th>Capital employed and investments</th>
<th>Safety and environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset management policy</td>
<td>Performance control</td>
<td>Organization and resources</td>
<td>Spare parts management</td>
</tr>
</tbody>
</table>

Change management and continuous improvement
We help you identify potential...

We use a standardized assessment methodology step to measure and benchmark the performance of your asset management processes. By identifying the gaps between your actual performance and the improved state that can be achieved in a given time frame, we estimate the improvement potential and the expected payback periods. Our benchmark database also provides you with powerful insights into how other companies in your industry are performing. The experience we’ve acquired in projects all over the world and across many industries confirms the valuable improvement potentials in maintenance costs and production performance that we can help you to achieve.

Average values are:
- Cost reduction potential: 7.5 – 10 percent
- Improved equipment availability and therefore overall equipment effectiveness (OEE): 2 – 4 percent

...and achieve it!

By improving the maturity of your asset management processes during the implementation phase, and ensuring continuous improvements with the right degree of management attention in the sustainability phase, you are on track to making asset management a success factor in your company.

Examples of improvement measures are:
- Alignment of the business strategy and the asset management targets
- Effective utilisation of maintenance management systems (CMMS)
- Development of preventive and predictive maintenance plans
- Training and coaching of maintenance managers, planners, and reliability engineers
- Implementation of a performance control system based on key performance indicators (KPIs)
- Warehouse optimization
Asset management solutions

A stepwise approach for improving the performance of your company’s physical assets.

**Step 1
Awareness**

**Paving the way to optimized asset management**

The goal of this step is to give you a clear idea of the maturity and performance levels of your processes before you decide to proceed with an asset management project.

The standardized Health Check assessment is a two-day on-site analysis performed by our most experienced consultants.

The results are:
- Overview of the maturity of the asset management processes
- Identification of the primary strategies for driving improvement
- Rough estimation of the improvement potential
- Agreement on the next steps

**Step 2
Analysis and feasibility**

**In-depth review, risk analysis, and estimated investments and payback**

The objective is to develop a comprehensive concept for the implementation. The main steps are:

**Asset management review**

An in-depth assessment that will investigate the improvement measures needed across all asset management processes and the interaction between maintenance, production, and other functions such as purchasing and finance. We deliver a comprehensive report with all findings and recommendations, a benchmark study on the maturity of your processes, and an accurate calculation of the improvement potential.

**Alignment workshop**

Once the improvement concept is clear, a workshop is held with your key employees to evaluate it along with the primary risks, and the challenges associated with implementing the measures.

The results are:
- Detailed technical and financial feasibility study
- Estimation of the investment and payback periods
- Implementation roadmap
- Overall risk management plan
Realizing the improvement potentials

This step is based on our improvement program, which provides you with a systematic approach to implementing all of the recommended measures and realizing the identified potentials.

Typical activities during implementation are workshops to develop new procedures as well as resource planning, training, and coaching of your employees.

Our project management and professional support ensure that you reach your targets by implementing the necessary improvements and guiding you through this change management process.

The results are:
- Professional and improved asset management processes
- Organizational and behavioral changes in the workforce
- Implementation of new and improved strategies, procedures, and tools
- Realization of the improvement potential, including:
  - Equipment uptime and OEE improvement
  - Cost efficiency
  - Warehouse optimization

Ensuring long-term continuous improvement

To secure the true benefits of the investment over time, it is necessary to address the issue of ongoing improvement.

If, for example, maintenance management is not considered a core competence of your company, assigning this task to a trusted partner could be your next step.

Within the scope of a performance-based contract, this step can result in additional benefits as well as bring about ongoing improvements.

In this case, Siemens can take care of your asset management processes and resources and actually manage and perform all maintenance activities.

It goes without saying that we apply the comprehensive approach and tools explained in this brochure to ensure best-in-class asset management and continued improvement in all our contracts!

The results of this agreement include:
- Improvement in maintenance performance
- Long-term sustainability and continuous improvement
- Contractual assurance of the agreed-upon KPI
- Optimized spare-parts stock
Our solution for long-term continuous improvement

Long-term contracts are an important and strategic decision for your company. With our proven experience, we can advise and support you to ensure that this is the right decision for both parties. The contractual model will be created to meet your specific requirements in accordance with your specific business goals. Mutually derived key performance indicators form the basis of this type of partnership. At Siemens we pride ourselves on jointly developing and working in win-win partnerships with clear benefits for all involved.
Outsourcing

Outsourcing with the Siemens IPM concept has only one goal, which is the very same goal that you have defined for your business in general: to improve the efficiency and effectiveness of the organization and reduce operational costs.

This is independent of whether or not you see asset management as a core competence or prefer to concentrate on the production process and allocate the responsibility for asset management to an external partner.

In both cases, the experts from Siemens IPM will analyse the actual status of your asset management as described previously, in order to derive the improvement potential and show the path forward for change. The result: Maintenance becomes a sustainably reliable partner for production.

If the decision is made to actually outsource the asset management organization the contract will include the full improvement program to bring about the cost reductions and increase uptime. The steps to OPEX improvement are:

- Analysis of the current status of the maintenance organization (due diligence) and evaluation of the condition of the assets
- Evaluation of the potential for process development, improved asset reliability, future asset management organization as well as spare parts and contractors’ management

- Offer provided on the basis of expected improvements, state-of-the-art predictive maintenance techniques and equipment, experience from other contracts and proven implementation processes
- Negotiation and signing of contract

Close cooperation is key to achieving the above-mentioned goals.

The important objective in this case is to achieve a true partnership as an essential basis for providing an integrated and competitive solution. By working closely together with you, we increase the value for both parties: Best practices of all kinds and proven technical solutions are the basis for continuous improvement, sustainable OPEX reduction and increased uptime which are shared across our contracts.

For customers investing in a new site and production facilities, on a green field, Siemens IPM ensures state-of-the-art asset management processes, tools and organization right from the start.
Asset management solutions – sustained optimization with a long-term partner

A successful approach to asset management combines the necessary one-time improvements with implementing standard processes and tools that provide long-term gains. Inherent to all improvement projects is the “people factor”: This means change management, and requires the attention of top management. The risk that “old practices and habits” will return and efficiency will fall off again needs to be addressed. Siemens has both the experience to competently address these concerns and the willingness to enter into long-term partnerships so that improvements are sustained.
In the spirit of “beginning with the end in mind,” we take all of your long-term considerations into account as we work closely with you through the phases described in this brochure.

Here is a summary of the benefits that we can offer:

- Improved overall utilization of your physical assets to increase the uptime of your production plant and therefore your marketable production output
- Implementation of new and improved asset management processes to optimize and achieve higher utilization of human resources. This increases your overall cost efficiency
- Improved quality of the maintenance activities to ensure better reliability and longer useful life of your equipment. This reduces your overall investment
- Reduction of spare-parts stock, the total cost for spare parts, and increased stock reliability by addressing the maintenance issues of critical parts
- Risk mitigation and sound decisions at each stage of the overall improvement process
- Continuous improvement integrated into daily work routines
- Increased motivation and competence of the maintenance staff
- Better maintenance cost control and reporting, increased transparency, and improved budgeting and forecasting
- Better maintenance planning, improved production planning, and improved supply chain processes which are connected to the asset management processes

By increasing your asset utilization and cost efficiency in combination with our energy and environmental services, we can support you in increasing your energy efficiency and reducing your overall CO₂ emissions as well.

Let's work together to make asset management one of your company's competitive advantages!

Asset management – from a cost factor to a value adding success factor!