

# Optimize<sup>IT</sup> Real Time Production Intelligence

Tune your Factory





Companies constantly strive to optimize plant productivity to meet their business objectives. Yet, it is estimated that plants still waste up to 40% of their productivity through unplanned stops and interruptions, speed losses and quality defects. In today's fast paced, collaborative business world, this wasted effectiveness can be the difference between a company's success and failure. Why then, do these productivity objectives so often miss their targets? The fact is that despite investments into manufacturing planning and control systems, most plant managers still do not know the true performance of their factory.

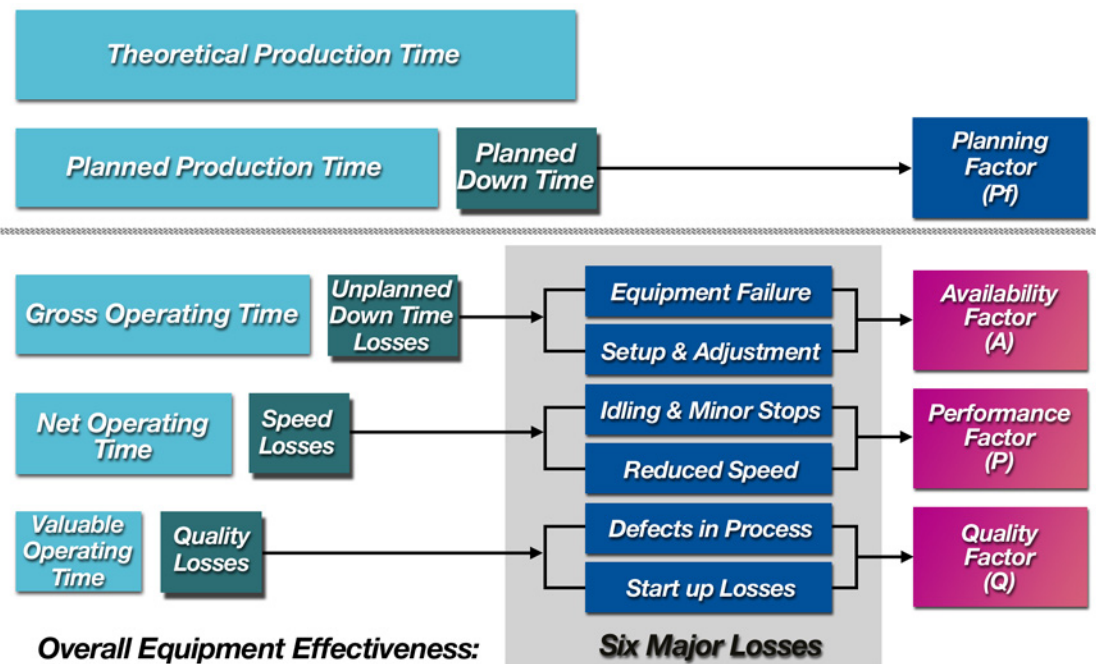
Only through consistent, real-time measurement, analysis, and improvement of their business's Key Performance Indicators (KPIs), can plant managers determine the true performance of their factory and identify ways to improve it. As part of the award winning Industrial IT enterprise optimization productivity suite, Optimize IT Real Time Production Intelligence (Real-TPI) provides

you with the technology needed to achieve a sustainable, competitive advantage in your marketplace by enabling your plant to perform smarter and better at substantial cost savings.

## What Is the Real Performance?

Determining the real effectiveness of a production line is far from simple. It is even more difficult to calculate production line effectiveness on-line, based on real time signals from the production process or business processes. But operators and supervisors need such up-to-the minute information in order to optimize production.

OEE (Overall Equipment Effectiveness) is a Key Performance Indicator of how machines, production lines or processes are performing in terms of Availability, Speed (Performance) and Quality. In equipment improvement activities, OEE is one of the best measures of performance. Equipment effectiveness is maximized through efforts to control or eliminate the "six major losses" indicated in the diagram below:



**Overall Equipment Effectiveness:**

$$OEE = A * P * Q$$

$$Total Productivity = OEE * PF$$

## Optimize<sup>IT</sup> Real-TPI: the Software Solution

Optimize IT Real-TPI is a real time performance measurement and analysis software program that improves plant productivity by identifying ways to increase OEE. This user-friendly software automates data-collection and analysis, and provides customized reports tailored to plant management's needs.

Real-TPI software harnesses the analytical power of three standard production evaluation processes: OEE, Root Cause Analysis (RCA), and Total Productive Maintenance (TPM).

When OEE indicates poor plant performance, RCA is utilized to determine what the problem is and where it is located so the corrective action can be taken. TPM is a process to adjust production equipment procedures with the aim of improving efficiency.

### Real-TPI benefits:

- Provides solid performance data and advanced tools for analysis
- Complements many other systems, including production planning, production tracking and financial systems, with real time production efficiency data
- Easy to track the daily progress and identify and react to possible problems in the production line
- Eliminates inaccurate, inconsistent, defective, and laborious manual logs

### Main functions:

- Detect and record automatically and/or manually all losses in production
- Calculate and show on-line Key Performance Indicators
- Analyze the production data and identify improvement opportunities
- Help identify root causes of losses
- Create reports or export data to other systems
- Enable easy installation in different types of production processes



# Measure

## System Architecture

Real-TPI is a specialized software tool developed for plant engineers and production managers for use in determining the on-line OEE of production equipment and processes. By automatically collecting machine data in real-time, Real-TPI is able to record, analyze, and present the individual machine and combined process availability, performance, and product quality factors that determine overall production efficiency. The resulting information is invaluable in efforts to remove process bottlenecks and thereby improve overall manufacturing throughput and product quality.

Real-TPI is compatible with the latest software standards. In addition to the Client/Server architecture, a web-based reporting module is also available. Users can access the performance indicators anywhere in the world with their mobile WAP phone.

The system has a modular, distributed structure and includes components such as:

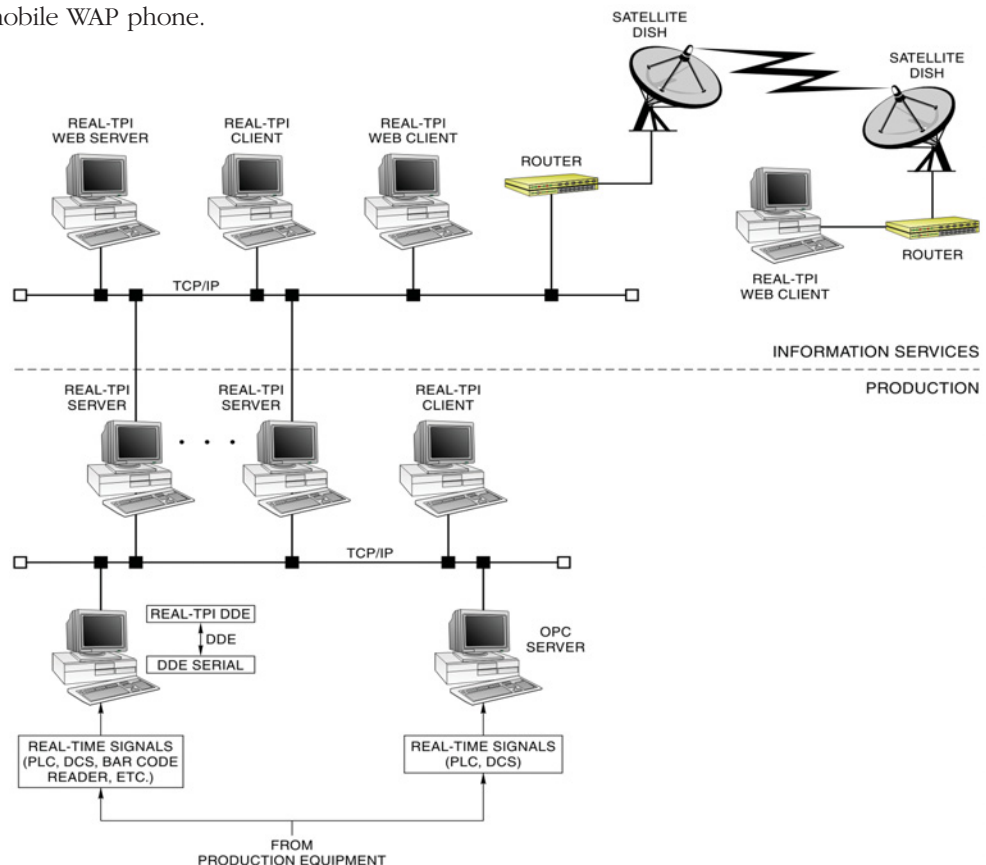
- data acquisition
- data manipulation and storage
- visualization
- reporting
- web interface

Collectively, these components can be easily adapted to plant equipment, standard plant communication networks, and a multitude of machine and operator topologies to provide fast and accurate operations efficiencies.

The Real-TPI solution complements ABB's other innovative Industrial IT products and services in providing fully integrated platforms and products for the automation and asset optimization of your factory.

*“When you can measure what you are speaking about and express it in numbers, you know something about it; when you can not measure it your knowledge is meager and unsatisfactory.”*

- Lord Kelvin



# Data Provided in Asset Context

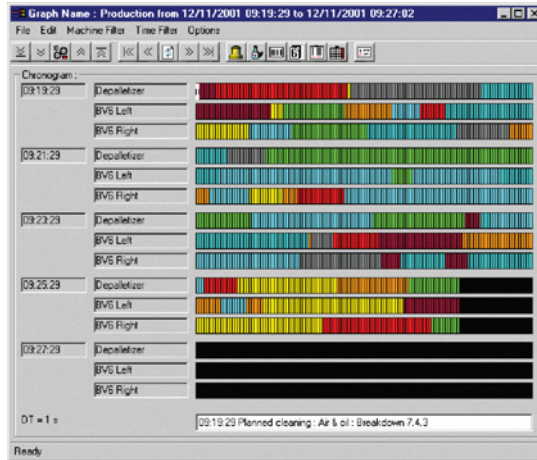
Real-TPI stores all necessary context data at every event, allowing for meaningful analysis and identification of the weakest link in the production line. Real-TPI calculates the OEE values and other Key Performance Indicators for the selected period and machines. All screens are updated on-line. You are free to define the number of failure categories and their names in different languages.



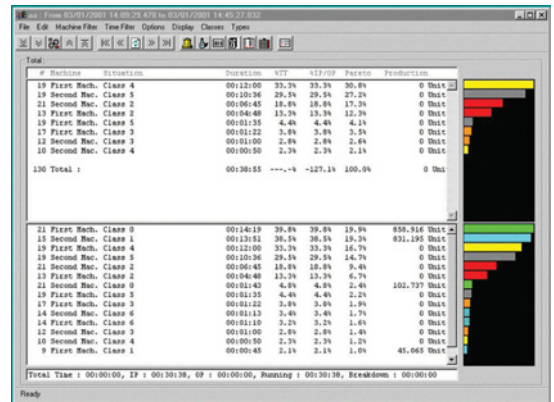
# Analyze

Any time period, such as the previous night's shift, may be viewed with possible problems becoming immediately visible. Different analysis and reporting tools are used to identify typical problem types, when and where they occur and what impact they have on overall OEE. This is where Real-TPI provides its greatest value.

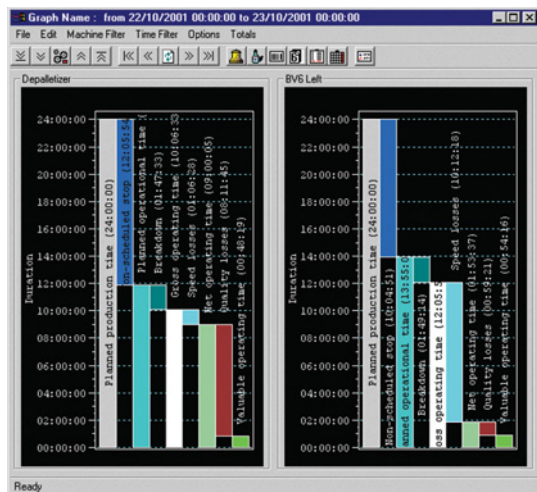
These reports include Chronograms, OEE Displays, Pareto Charts, Waterfall Diagrams, Penalty Charts, and Production Reports.



Chronograms identify the state of the machine and provide reasons for machine stoppages (i.e. planned downtime or breakdown) during a sequence of events.



Dynamic PARETO charts report the cumulative breakdowns by category, type and/or machine during the selected time period. It gives the ratios between the different causes of breakdowns in the line and classifies them in descending order by cumulative time. For each breakdown, the chart shows cumulative time and number of breakdowns, as well as percentages of the category and of the total time period.



A Waterfall Diagram is a tool to visually describe the time spent by each machine in different states; as a waterfall, beginning from the total available time and down to the actual time the machine was productive.

# Improve

## Documented Performance Improvements



Real time feedback allows corrective action to be taken in shorter periods of time, thereby increasing OEE and developing a better understanding of the production potential of existing plant equipment. In turn, manufacturing costs, in terms of time, money and new equipment purchases decrease, providing a quicker return on investment.

Many of the leading companies in the automobile, food and beverage, metals, pharmaceutical, chemical, and pulp and paper industries have implemented Real-TPI solutions and have seen marked improvements in productivity. Here are a few examples:

### **“OEE is a must if you want to optimize your investments.”**

—Plant Manager, Fiat New Holland. Wanting to improve production but unable to make large investments immediately in new equipment, New Holland focused instead on the productivity potential of its existing equipment. Real time OEE analysis provided productivity improvements and a better understanding of production line needs. Ultimately, this resulted in the purchase of fewer machines than they originally had forecasted.

### **“The saving of two hours production paid for the installation of Real-TPI.”**

—Filling Assistant Manager, pharmaceutical industry leader. Realizing speed losses in their vial container filling process result in lost product, this pharmaceutical leader focused on improvements to process line efficiency. Historically a difficult process to determine main causes of losses, Real-TPI allowed this company to capture on-line machine data and analyze losses, and in turn, to eliminate bottlenecks, target monthly maintenance activities and report Key Performance Indicators to management.

### **“Real-TPI has enabled us to identify problems much quicker and to focus on real priorities.”**

—Maintenance Manager, Dow Corning. By identifying problems quicker, while increasing availability, output, and quality, Dow Corning, the leading manufacturer of silicon-based products, was able to gain an entire month of production.



## Enhance your Real-TPI solution with other IndustrialIT Products

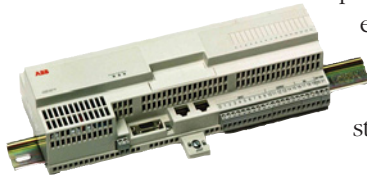
Industrial IT products link automation, information and collaborative business systems in real-time and across the enterprise to enable optimization of all company assets. These products can enhance a Real-TPI offering through the collection, analysis, and visualization of your performance information. These products include:

### ControlIT:

ABB controllers range from small, compact units to powerful controllers. They provide for a full



range of controls, scalability, redundancy options, the highest level of engineering efficiency and easy access to production data through standard office software.

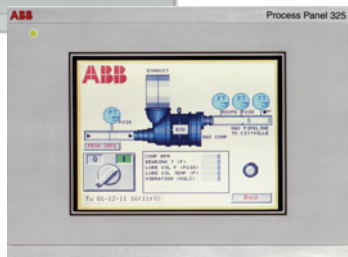


The range of I/O systems is similarly comprehensive with I/O options for both dedicated local and remote I/O applications, fieldbus communications, small footprints, DIN rail mounting, and a broad range of I/O types.

### OperateIT Process Panels:

Whether you need a small, text-based interface or one with advanced color graphics and touch

screen capabilities, Operate IT Process Panels address all your application needs. This family of Operator interfaces facilitates complex management and monitoring tasks across a vast array of applications. These panels can easily connect with each other, your PC or to other external units, such as bar code and card readers.



## ProduceIT Production Management Product Suite:

ABB's Production Management products provide the tools that give manufacturers the agility, speed, and control to respond to increasing production demands. These tools model, execute, and track information associated with material and control flow across the plant. Products include those that provide batch and procedural control production management, product tracking, and quality management.



## Stay Ahead of the Competition with Real-TPI

The flexible structure of ABB's Optimize IT Real Time Production Intelligence (Real-TPI) enables quick implementation. You can start with one machine or line and expand gradually to performance measurement of your whole factory. We provide all the installation services to get you going. We can even help you to analyze the data and set up improvement teams.

At ABB, we provide you with the tools to improve your Key Performance Indicators to ensure your sustainable advantage over your competition.

To find out more about how ABB can enhance your competitive advantage, contact us at [optimizeit-realtpi@us.abb.com](mailto:optimizeit-realtpi@us.abb.com) or visit us on the web at: [www.abb.com/processautomation](http://www.abb.com/processautomation)



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