APPLIED APF RTD® AND REPORTER

REAL-TIME DISPATCHING AND REPORTING FOR BUMP, ASSEMBLY, TEST AND PACKAGING

A flexible, product processing decision system that improves factory productivity and reduces variability by executing advanced rule-based, real-time dispatching and reporting strategies.

Applied APF RTD®

Industries
- > Wafer test
- > Wafer bumping
- > Package assembly
- > Package testing

Features
- > Ability to consistently drive shop floor processing using factory objectives
- > Easy-to-use rule-development environment
- > No coding or complex data modeling required
- > Consistent dispatching across tools
- > Real-time data interception

Benefits
- > Provides real-time response to production plan updates
- > Reduces setups
- > Increases profitability
- > Enhances customer satisfaction by meeting "deliver-to-promise" dates
- > Alleviates bottlenecks
- > Enables lower cycle-time and less cycle-time variability, leading to improved productivity

Challenges

Scheduling and dispatch tools do not scale well in bump, assembly and test environments where product, package and testing conditions evolve at a rapid pace. Most of these tools are snapshot-based, use stale data and provide only basic reporting and dispatching functionality. Such tools prevent production and planning personnel from reacting in real time and adapting to changes as they occur. Deploying even simple rule scenarios requires large amounts of custom IT development, and homegrown solutions fall short because they are unstable and cannot respond quickly to logic and factory changes.
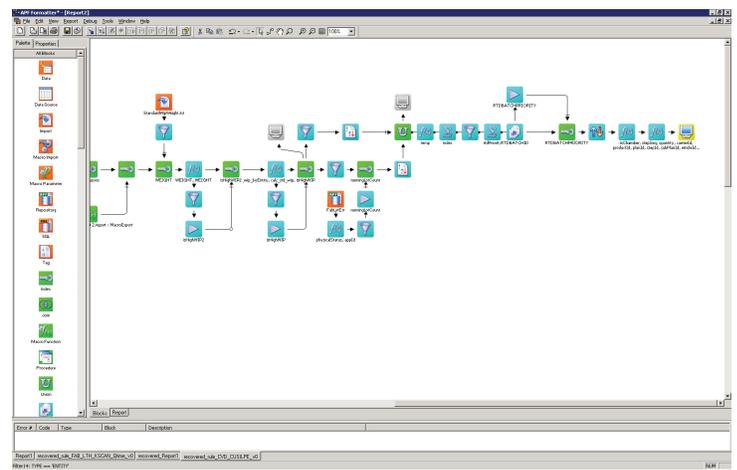
Solution Description

APF Real Time Dispatcher (RTD) and Reporter are the only real-time, high-performance dispatching and reporting solutions that help manufacturers identify and implement process improvements without complex application programming. RTD directs pre-staging, releases lots and adjusts load balancing of production equipment through "what next, where next and when next" rules to improve the use of product, carriers, equipment and labor.

As an out-of-the-box solution, RTD and Reporter can be deployed quickly in factories to enhance operations. Tight integration capability is provided to key factory data sources with standard offerings for well-known manufacturing execution systems (MES), as well as custom capability for integrating to in-house MES and database systems.

APPLIED MATERIALS EXPERTISE. With a deep knowledge base and a rich history of providing products and solutions specifically addressed to the semiconductor industry, Applied Materials experts provide services to deliver turnkey solutions for enhancing manufacturing value in a timely manner. These solutions are backed by strong development and support teams who are available to ensure continuous product growth, providing customers with low cost of ownership.

APF FORMATTER WINDOW

RTD uses an icon-based, drag and drop formatter for easily implementing dispatching rules and reports. Formatting tools help you define dispatching rules and report logic to evaluate factory data in the APF repository. No complex programming is required.

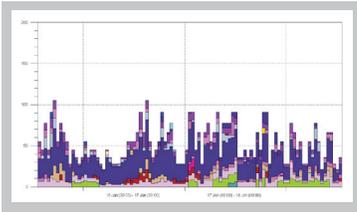APPLIED MATERIALS®

APPLIED APF RTD® AND REPORTER

REAL-TIME DISPATCHING AND REPORTING FOR BUMP, ASSEMBLY, TEST AND PACKAGING

In a medium sized test facility, what is the potential benefit of increasing tool capacity in bottleneck areas?

$600k to 1M Per Factory

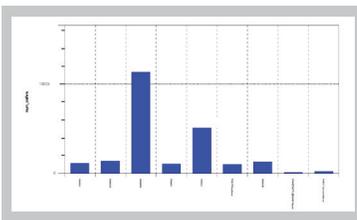Annual increase in profitability reported by one customer due to higher factory output

Sample Reports

Stacked temporal report showing the number of active recipes by tool over time.

GANTT chart representing different equipment states over time.

Bar chart indicating the movement of WIP across the flow.

Customer Results

Production planners using RTD can optimize dispatch decisions and improve asset utilization, which drive greater returns on investment and profitability. Fab performance increases, reported publicly by customers using RTD, include:

> **10%–15%** confirmed increase in wafer output per day
> **50%** reduction in cycle time and cycle time variability
> **$5 million** cost reduction realized in line WIP balancing
> **10%** increase in tool utilization

RTD and Reporter Capabilities for Achieving Enhanced Factory Performance		
✓	**Rules-based dispatching**	Provides the ability to enhance product workflow in areas with constrained manufacturing resources while ensuring adherence to factory global objectives. Rules are infinitely flexible, can contain multiple criteria and can reference the dynamic state of any entity in a fab.
✓	**Real-time reporting**	Offers tools for real-time and historical analysis and reporting; provides standard text-based and graphical reports as well as the ability to output in multiple formats (HTML, PDF, XLS, XML and so forth). Reports are automatically executed and distributed according to event- and time-based functionality.
✓	**Data integration and storage**	Integrates with production, material control and quality applications. APF RTD collects data from multiple sources using extraction technology that intercepts, filters and copies relevant information to a high-speed, **temporal repository**. This temporal repository provides quick access to historical data for analysis as well as protection against production problems.
✓	**Rule formatter**	Provides high performance and proven dispatching and reporting functionality with a **no-code, easy-to-use rule formatter.** Complex code is not required to develop dispatch rules and reports; all APF RTD rules and reports are icon-based.

Package Contents

Designed around best known methods for improving bottleneck capacity and cycle time, the RTD solution offers proven technology in one package that includes:

SOFTWARE

> Real Time Dispatcher (RTD) module
> APF Reporter
> Automation module for automated reporting
> MES Adapter
> Formatter for custom rules and report development

SERVICES, TRAINING AND SUPPORT

> Pre-configured rules for standard global dispatch rules and tester specific rules
> Dispatch compliance monitoring and reporting
> On-site deployment, provided by an experienced RTD team
> One year software maintenance
> User training

APPLIED GLOBAL SERVICES

APPLIED MATERIALS®