

FFH (FINAL FINISH HOST)

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CTI's Final Finish Host is a software suite developed specifically to manage data for a tire factory's final finish area. It was designed to be easily customized to meet the product, manufacturing, and business needs of an individual company and/or factory.

FFH communicates with your final finish tire testing machines.

Of course, when you install a Poling Group uniformity tire testing machine or upgrade your controller to a TTOC, your machine is already fully integrated with FFH. But you may be surprised to learn we also interface FFH with a wide variety of uniformity, geometry, and balance machines from multiple vendors.

We develop communication strategies based on the machines you have. Examples of successful strategies include:

- ▶ Serial ▶ Ethernet ▶ OPC- or PLC-based ▶ XML-messaging

Each FFH server can download recipes to and receive test results from up to 64 individual test machines; and we can easily increase this number if needed.

FFH is web based.

Users access setup and reporting applications with a web browser. This zero-footprint architecture lowers the cost of ownership by eliminating the need to install client software on each user's workstation computer. FFH only requires a relatively recent version of web-browser (IE or Firefox) and Acrobat Reader for reports, software that requires no additional licensing cost.

Because FFH is web-based, corporate quality personnel view consistent data from global locations and your IT department controls access to the application suite. You can even customize menus for individual users or user groups. For example, some users require access to modify recipes, while other users only need to generate reports.

Need a standalone or network solution to meet your QA reporting goals?

- Spending too much time managing and downloading test recipes to a variety of machines?
- Need an audit trail for recipes, limits, and results?
- Having problems collecting and managing data from tire test machines provided by a variety of vendors?
- Want to direct tire flow based on manufacturing data?
- Consuming too many IT and engineering resources to implement out-of-the box solutions?



The basic system includes:

Automated Data Collection

FFH collects, summarizes, and stores test results for tire uniformity, geometry, and balance machines.

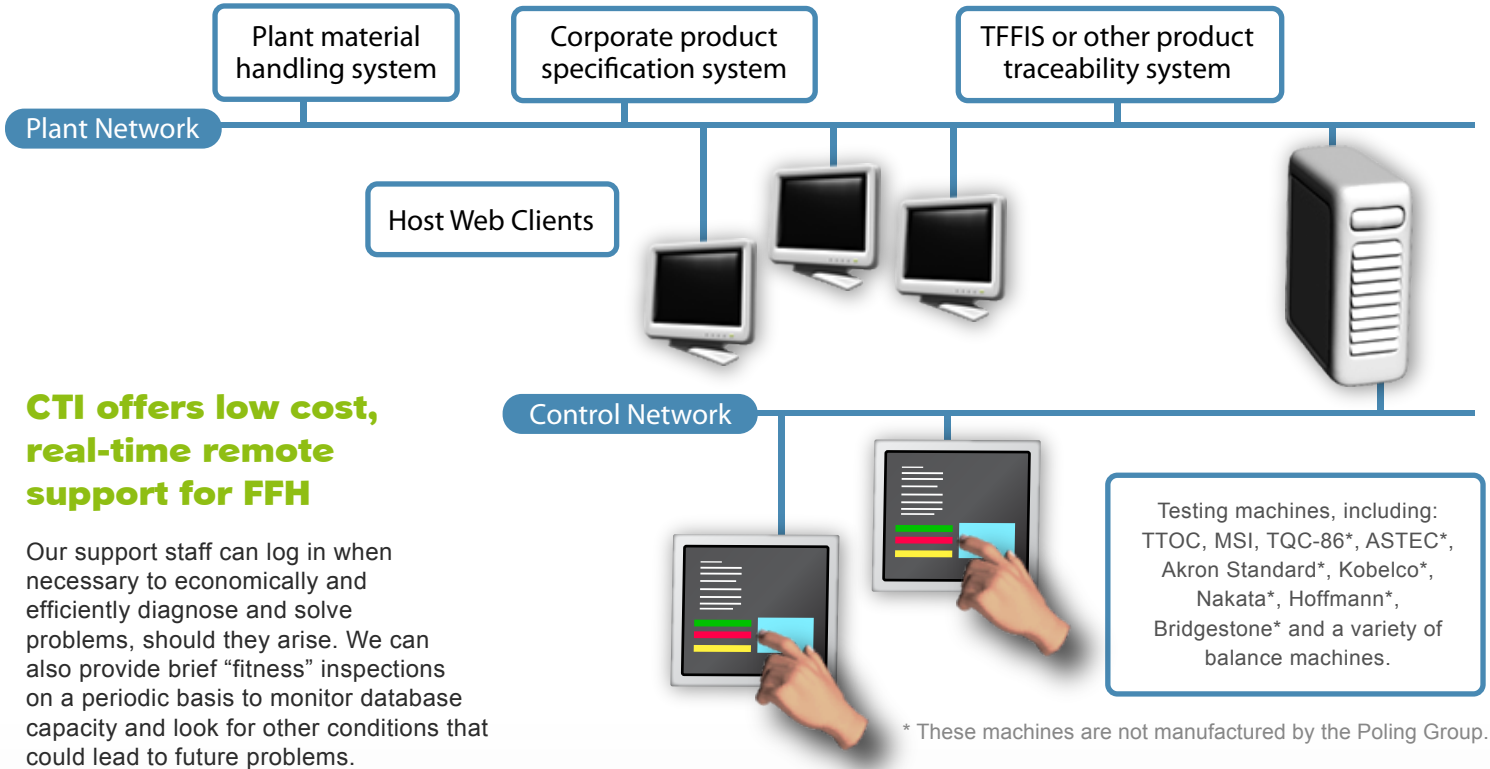
Centralized Recipe Maintenance

Use a web browser to design recipes that include test sequence, grading limit, and machine setup parameters (such as servo positions), then download the recipes directly to the final finish machines.

Production and Uniformity Reporting

A variety of graphic and tabular reports display uniformity, repeatability, and machine utilization in PDF format.

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CTI offers low cost, real-time remote support for FFH

Our support staff can log in when necessary to economically and efficiently diagnose and solve problems, should they arise. We can also provide brief “fitness” inspections on a periodic basis to monitor database capacity and look for other conditions that could lead to future problems.

CTI has the expertise to customize FFH for your operations

Our software engineers understand your data and reporting needs and know that every facility has special requirements based on specific customers, tire types produced, and management priorities. While FFH already addresses some of these needs with an ad-hoc reporting tool that allows you to turn SQL queries into HTML-based reports, we also understand you may have a special report you want to implement in multiple plants, or collect/send data to your own proprietary applications. We are capable of implementing these and other enhancements for a reasonable price.

Learn More Today

Learn more today by contacting a qualified representative of CTI, a Poling Group company.

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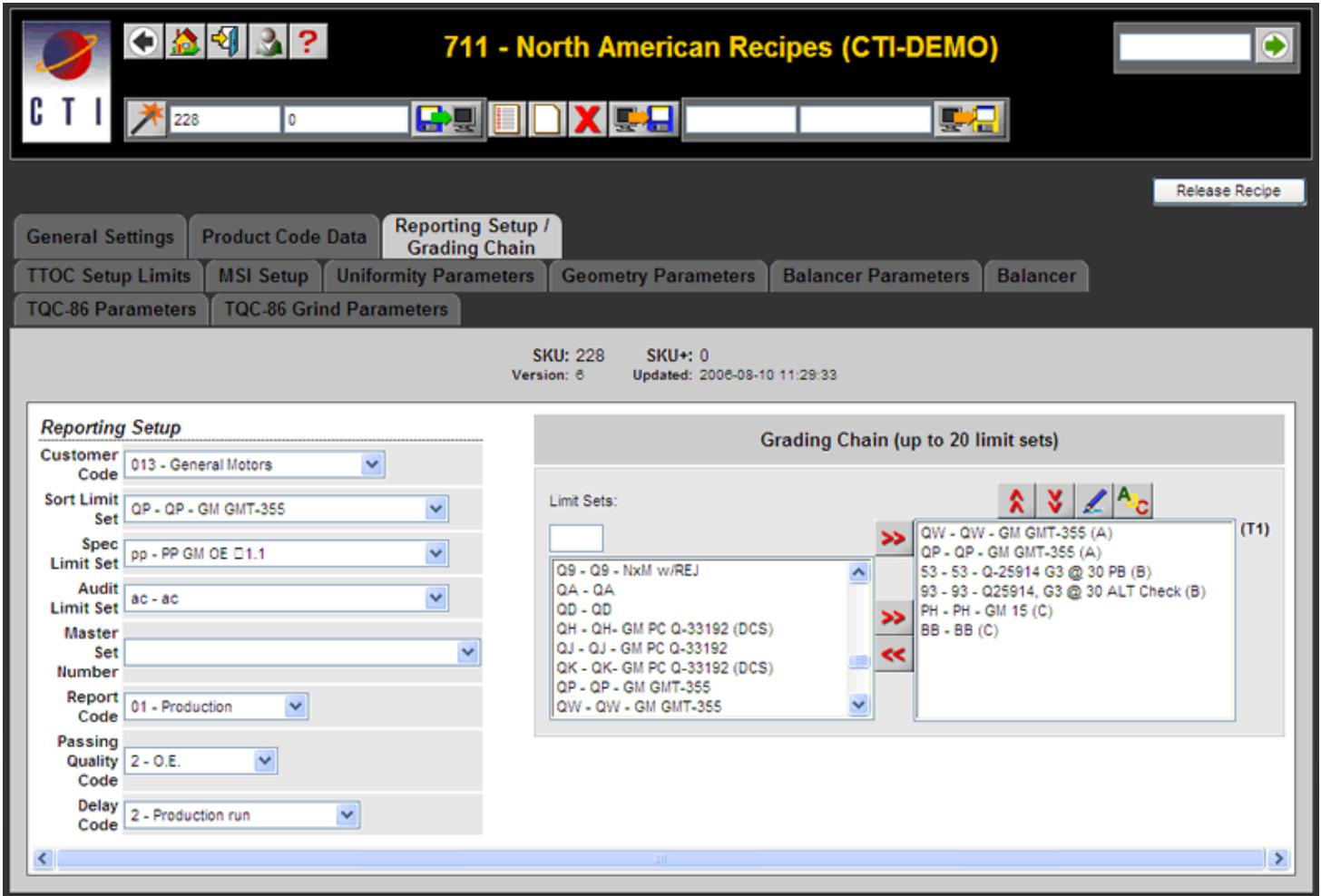
Selected Features

- Completely integrated with Poling Group's TTOC uniformity machine controller, FFH also supports a variety of other final finish testing machines.
- Supports bar coded material handling.
- Zero footprint architecture using a Linux server.
- View, save, and print PDF reports at any PC.
- Summary data compiled across many machines.

Field Proven

- FFH has been customized for and successfully implemented at several global tire companies. It provides a single access point to control customer specs, analyze data, view machine performance, and schedule machine preventive maintenance.
- FFH easily collects a high volume of test results with a proven methodology that insures chronological insertion to the database in the event of plant network disruptions.

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The FFH offers centralized recipe management.

Does your quality engineer have to manage recipes at individual test machines? The repetitive task of entering the same recipes into each test machine controller is a time-consuming task within a highly interrupted, distracting environment that often leads to human error.

With FFH, your quality engineer can modify a recipe from a desktop computer and directly download it to one or all machines in the final finish area. This methodology minimizes error and allows your quality engineer to spend more time identifying and correcting quality problems.

If multiple personnel manage recipes in your final finish area, you'll appreciate the recipe versioning feature FFH provides. This tool enables the quality department to easily and accurately track recipe changes, adding an extra level of accountability to your quality operations.

The picture above features the grading setup for a typical recipe. We accommodate different methodologies for tire grading and can supply the methodology your personnel are most accustomed to using. We can also add "tabs" on the screen to include any setup parameter a machine in your facility can receive.

Controls at the top of the recipe screen allow the user to list all recipes, copy an existing recipe to a new one, create or delete recipes, or release a recipe. The release mechanism allows the quality engineer a controlled way of directing edited recipes to machines for grading purposes.

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910 - Production Monitor							
Last Update Time: 2008-01-16 09:02:26							
Machine	SKU/SKU+	Version	Mode	Last Communication	TU Shift	TG Shift	TB Shift
1	277 / 0	72	Batch	2008-01-16 09:02:13	143	0	0
2	273 / 0	20	Batch	2008-01-16 09:02:11	67	67	0
3	178 / 0	55	Batch	2008-01-16 09:00:41	97	97	0
4	277 / 0	72	Batch	2008-01-16 08:53:50	173	0	0
5	348 / 0	48	Batch	2008-01-16 09:01:46	144	144	0
6	60 / 0	13	Batch	2008-01-16 09:00:41	38	0	0
7	188 / 0	41	Batch	2008-01-16 09:01:56	119	119	0
8	190 / 0	39	Batch	2008-01-16 09:02:22	165	165	0
9	348 / 0	48	Batch	2008-01-16 09:02:13	167	167	0
10	196 / 0	41	Batch	2008-01-16 09:01:50	111	111	0
11	298 / 0	20	Batch	2008-01-16 08:36:15	67	67	0
12	348 / 0	48	Batch	2008-01-16 09:01:56	80	80	0
13	277 / 0	72	Batch	2008-01-16 09:02:18	179	0	0
14	374 / 0	46	Batch	2008-01-16 09:01:29	76	0	0
15	166 / 0	29	Batch	2008-01-16 09:02:05	54	0	0
16	206 / 0	24	Batch	2008-01-16 09:02:22	116	116	0
17	497 / 0	16	Batch	2008-01-16 09:01:20	46	0	0
18	320 / 0	15	Batch	2008-01-16 09:02:11	102	0	0
19	66 / 0	22	Batch	2008-01-16 08:53:22	52	0	0
Total					2682	3932	334
Projected					10473	15354	1304

Dynamic Production Monitoring

The report above provides a real-time, dynamic picture of process flow in the final finish area. It shows a line of data for each machine that includes the product being processed (SKU/SKU+), mode of operation (Batch or Mixed), a timestamp related to the last test results received from the machine, and shift production counts. The last line on the report shows projected counts for the shift, based on the current rate at which test results arrive at FFH. The counts automatically reset at end of shift.

You can color-code a recipe or groups of recipes for display on the screen. For example, you can make all SKUs for a particular customer the same color. Or you could use color to indicate non-production processing—i.e., when the machine is processing

experimental tires, processing master tires used for machine repeatability testing, or processing tires used to check upstream tooling changes.

FFH reserves the color red to indicate that a machine has not sent results to FFH for a configurable time. Machines that show red could be idle due to a lack of tires to process or because maintenance is being performed. Multiple red lines could indicate a plant network issue.

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260 - Universal Report (Summary Data) (CTI-DEMO)												Date: 2009-07-02 12:20:23
From: 2007-06-28												Tire Filter: All tires
To: 2007-06-28												Shift: All Shifts
												Machines: All Machines
Product Description	RFPP _{ew} (6) [lb]	RFPP _{ocw} (12) [lb]	RFH1 _{cw} (7) [lb]	RFH1 _{ocw} (13) [lb]	LFPP _{cw} (9) [lb]	LFPP _{ocw} (15) [lb]	CONY (25) [lb]	RRO mx (2) [ml]	LRO mx (3) [ml]	BUL mx (4) [ml]	SBAL (14) [oz-in]	
271 / 0	23.6	23.6	12.4	12.4	22.0	22.0	13.3	0	120	43	0	Sort Upper Limit
P265/70 R 16 (Nissan)							-13.3					Sort Lower Limit
P265/70R-16 Vulcatrak XLT (BSW)	38%	39%	58%	57%	98%	97%	93%	100%	100%	99%	100%	% Sort
	446	463	679	665	1153	1135	1096	1173	1173	1157	17	Sort Quantity
	23.6	23.6	12.4	12.4	22.0	22.0	13.3	0	120	43	0	Spec Upper Limit
							-13.3					Spec Lower Limit
	38%	39%	58%	57%	98%	97%	93%	100%	100%	99%	100%	% Spec
	446	463	679	665	1153	1135	1096	1173	1173	1157	17	Spec Quantity
	25.9	25.8	12.0	12.2	12.0	12.2	0.6	40	34	4	16	Avg.
	19.4	19.6	19.2	19.4	12.5	13.9	21.0	72	27	28	28	3 Stdv.
	-0.12	-0.11	0.02	0.01	0.80	0.71	0.60	-0.56	0.66	0.66	-0.57	CPK
	COUNT			1173 TU			1173 TG				17 TB	
348 / 0	45.0	45.0	12.3	12.3	0.0	0.0	16.9	0	120	33	40	Sort Upper Limit
P245/70 R 17 (General Motors)							-16.9					Sort Lower Limit
P245/70R-17 Relia-Tread (BSW)	99%	100%	47%	74%	100%	100%	100%	100%	100%	99%		% Sort
	4222	4230	1991	3153	4249	4249	4244	4249	4249	4211	0	Sort Quantity
	45.0	45.0	12.3	12.3	0.0	0.0	16.9	0	120	43	40	Spec Upper Limit
							-16.9					Spec Lower Limit
	99%	100%	46%	74%	100%	100%	100%	100%	100%	100%		% Spec
	4222	4230	1971	3129	4249	4249	4244	4249	4249	4230	0	Spec Quantity
	23.3	20.3	14.2	11.7	7.0	7.3	-1.9	41	5	1		Avg.
	21.8	20.0	22.6	20.3	6.6	7.4	16.1	108	33	18		3 Stdv.
	0.66	0.66	-0.08	0.03	-1.06	-0.98	0.93	-0.38	0.93	0.93		N/A CPK
	COUNT			4249 TU			4249 TG				0 TB	
406 / 0	70.0	70.0	45.0	45.0	40.0	40.0	30.0	0	120	43	0	Sort Upper Limit
LT235/85 R 16 (Trade)							-30.0					Sort Lower Limit
LT 16-Inch ValueRide	100%	100%	98%	98%	100%	100%	100%	100%	100%	99%		% Sort
	767	768	753	751	768	768	768	768	767	764	0	Sort Quantity
	70.0	70.0	45.0	45.0	40.0	40.0	30.0	0	120	43	0	Spec Upper Limit
							-30.0					Spec Lower Limit
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		% Spec
	0	0	0	0	0	0	0	0	0	0	0	Spec Quantity
	33.6	33.7	21.1	21.2	8.4	9.6	-0.6	25	31	5		Avg.
	28.9	28.9	30.8	30.7	8.1	9.4	11.1	19	31	25		3 Stdv.
	0.93	0.93	0.78	0.78	0.93	0.93	2.64	-1.30	2.64	1.51		N/A CPK
	COUNT			768 TU			768 TG				0 TB	

Data Collection & Reporting

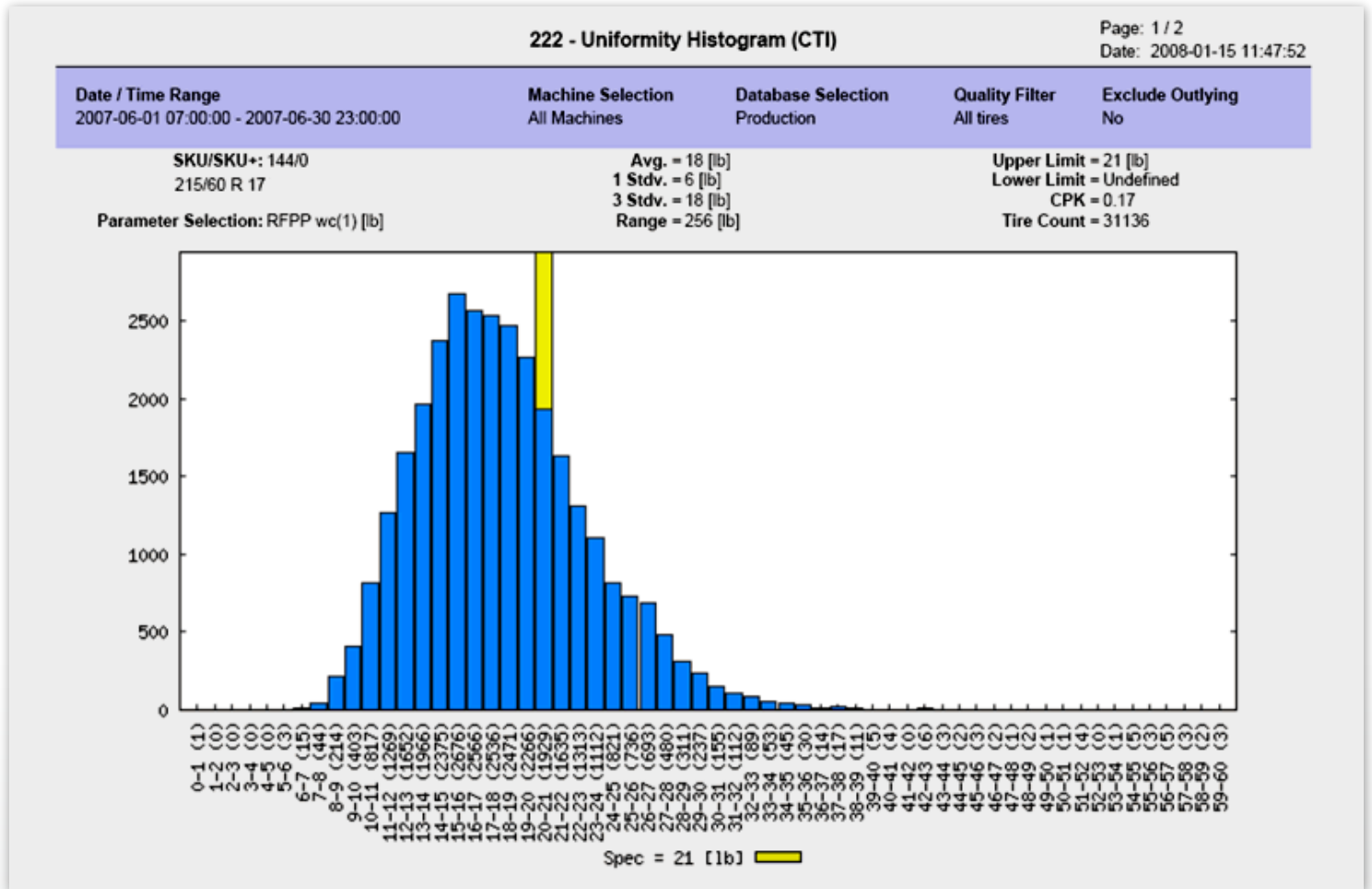
FFH relieves quality engineers of the tedious task of pulling test data from different sources associated with a variety of machine types. With FFH, the uniformity engineer can combine results from balance, geometry and uniformity testing machines in a single report. While FFH has the capacity to store hundreds of different measurements provided by testing machines, users have the ability to pick and choose which ones display on any report.

FFH stores test results in individual and summary form to allow analysis of a single test or identification of general quality trends. You can also configure an automatic deletion schedule based on the volume of data generated in the final finish area—typically plants retain individual data for up to 18 months and actively maintain summarized results for up to 5 years. We also work with your IT department to develop a backup and restoration scheme that works best for your storage media and transaction volume.

The report shown above provides typical quality statistics. You can choose different report populations based on time, machine, product, and processing. In addition, you can select different statistical calculations and group the output in different ways (for example, group by SKU or machine). While FFH consistently stores measurements in SI units (regardless of how a machine provides them), you control the specific units of measure to display on a report.

Because FFH uses recipe versioning, statistical calculations performed on historical results don't change with subsequent changes to a recipe. But if you need "what if" analysis, FFH provides it with a report that allows you to vary limits related to historical results so you can analyze the effect of proposed specification changes.

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Graphic Reports

FFH provides graphic reports to illustrate trends of interest to the quality engineer. The report above is an example of a graphic report that demonstrates the Weibull nature of the measurement distribution. The specification limit displays to provide a useful reference.

To generate a report, you select measurements, products, times, and machines of interest. After selecting report parameters, click a single button to display the report in PDF format on the screen. Once displayed, the report can be saved, printed, or emailed.

To save time selecting parameters for frequently used reports, FFH provides a report template feature. Once you create a template you simply retrieve the report settings, make minor changes (if needed) and then click a button to display the results. You can share report templates among users; they also allow you to

automatically generate and email reports on a daily, weekly, or other periodic basis. You can even configure specific report templates to generate automatically at the completion of machine repeatability check or when the last tire of an experimental or check tire group has been processed.

We know you can choose from many statistical packages, but consider this: can they collect and report test result data unique to tire manufacturing? When you choose FFH, you get an application suite designed for tire manufacturers and supported by software engineers with experience and expertise—we ask the right questions and ensure that you get the value from your tire data that you expect and deserve.

Give CTI, a Poling Group Company, a call today at +1.330.644.3059 to set up a consultation meeting.