FACTORY EXPLORER®

PRODUCT DETAILS

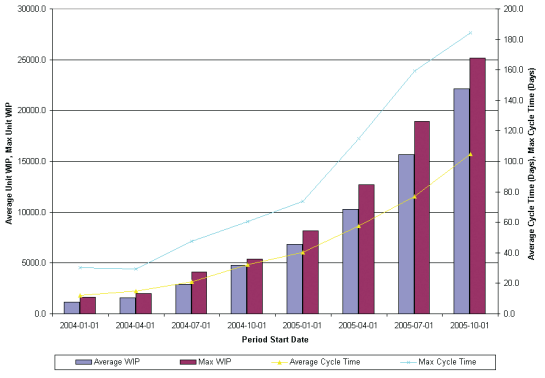
Manufacturing costs can make the difference between global competitors and second tier players. Now there is an easy-to-use, integrated capacity, cost, layout, and simulation analysis tool for manufacturing and assembly operations, Factory Explorer®. The capacity analysis engine uses an analytic model to predict system capacity, minimum equipment and staffing requirements, resource utilization, and bottlenecks. The simulation engine is a fast discrete-event simulator that provides estimates of cycle time, work-in-process (WIP) levels, and waiting times. The cost analysis engine leverages results from both the capacity and simulation engines to provide estimates of gross margin, activity-based product cost, and WIP value. The layout analysis engine uses results from capacity analysis to predict area-to-area lot transfer rates and distances.

DECISION POWER ON YOUR DESKTOP

All of the above described engines run on personal computers with Windows 98se or later. There is no need to invest in big-box workstations to harness the power of Factory Explorer®. The user interface is a Microsoft Excel 97+ visual basic application, providing access to run-time options, reports, and charts in a familiar spreadsheet setting. Factory Explorer® models can be stored as ASCII files or Microsoft Excel workbooks. When interfacing with other systems, Factory Explorer® can automatically translate models to and from the Test Bed data format as well as other commercial software platforms. Custom integration with Manufacturing Execution Systems (MES), Enterprise Resource Planning (ERP) systems, and other proprietary and commercial applications is also available through the FXtoolkit software interface.

MODEL COMPLEX ENVIRONMENTS

Factory Explorer's modeling capabilities include support for machines, operators, multiple product types, scrap and rework, splitting, binning, and assembly. Processing times can be specified as per-component, per-lot, or per-batch (restricted batch formation via batch codes is also supported) and alternative process steps can also be specified. Tools and/or resources can be held across multiple process steps (as in single-card Kanban cells). Machine and operator interruptions can be based on clock-time, busy-time, or units-of-work completed. Sequence-dependent setups are also supported.



Monitor WIP and cycle time trends.

CHANGE IS THE ONLY CONSTANT

WWK has long recognized that the only constant in manufacturing and assembly is continuous change. Product mix, equipment quantities, staffing levels, and yield are among the many variables that change over time as the factory ramps up new products and ramps down old products. With Factory Explorer®, you can

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easily model these changes and capture their impact on factory physics. You simply tell Factory Explorer® the real-world dates when changes occur and it takes care of the rest. What's more, all of this data is stored in a single Factory Explorer® model. The days of creating separate models for different time periods in the factory's lifecycle are over. When you run Factory Explorer®, you tell it the starting date for the analysis, the run length, and the length of each analysis period (hours, days, weeks, months, quarters, years). Outputs are displayed for each analysis period and summarized across the replication or the entire run if multiple replications are performed.

	D	G	H	I	J	K	L	M	N
1	Resource Group	Period 1 (2004-01-01)	Period 2 (2004-04-01)	Period 3 (2004-07-01)	Period 4 (2004-10-01)	Period 5 (2005-01-01)	Period 6 (2005-04-01)	Period 7 (2005-07-01)	Period 8 (2005-10-01)
2									
82	D1-9	47.4	56.8	80.3	90.8	106.5	117	127.4	127.4
92	DFA	18.8	22.9	32.7	37	43.6	47.9	52.3	52.3
102	DFB1-2	14.2	17.4	24.9	28.2	33.2	36.5	39.8	39.8
112	DFB3	14.3	17.4	24.8	28.2	33.1	36.4	39.8	39.8
122	DFB4	4.9	6	8.5	9.7	11.4	12.5	13.6	13.6
132	DFC1	2.7	3.2	4.3	4.9	5.6	6.2	6.7	6.7
142	DFC2-3	6.3	7.7	11	12.4	14.6	16.1	17.5	17.5
152	DFC4	51	59.9	85.6	97	114.1	125.5	137	137
162	DFE1-2	7.6	9	12.4	13.9	16.2	17.7	19.2	19.2
172	DFE3-4	7.1	8.6	12.3	13.9	16.4	18	19.6	19.6
182	DRY1-2	22.7	27.6	39.4	44.6	52.5	57.7	63	63
192	QLESS	27.1	32.5	45.9	51.9	60.8	66.8	72.7	72.7
202	FSI	10.3	12.4	17.4	19.7	23.1	25.4	27.5	27.5
212	ION1-3	29.5	35.7	51	57.8	68.1	74.9	81.7	81.7
222	LPS1	20.7	24.5	34.1	38.3	44.7	48.9	53.1	53.1
232	MEG1-2	8	9.5	13.5	15.3	18	19.8	21.6	21.6
242	OSICD2	11.9	14.1	20.2	22.9	26.9	29.6	32.3	32.3
252	PE1-5	44.2	52.6	74	83.5	97.7	107.2	116.7	116.7
262	SCRUB	7.8	9.1	12.5	14	16.3	17.8	19.3	19.3
272	TEG2	10.9	13.2	18.8	21.3	25.1	27.6	30.1	30.1
282	WET1	18.8	22.3	31.9	36.2	42.5	46.8	51	51
292	WET3	23.4	28.1	40.1	45.5	53.5	58.8	64.2	64.2
302	WET5	20.4	24.3	34.8	39.4	46.4	51	55.6	55.6

Plan for capacity short falls before they impact production.

The net result is an analysis tool that helps you answer important questions, in a shorter time, with greater confidence, than ever before:

- Planning an equipment set for the next eight quarters? Simply enter the changes in start rates (or throughput rates) and use Factory Explorer's capacity analysis engine to create a model with a suggested equipment set — the resulting model will contain entries, by quarter, with the suggested minimum equipment count for each equipment group.
- Investigating the impact of product mix and equipment set changes on cycle time for the next six months? Build one model that contains the proposed changes and use Factory Explorer's simulation engine to estimate cycle time by month, by product.
- Performing sensitivity analysis on gross margin versus start rate, or cycle time versus factory loading, or product cost versus suggested equipment loading? From a baseline model, use Factory Explorer's run-time options to vary the parameters of interest across replications in a single analysis run. Then use Factory Explorer's custom chart wizard to automatically chart your results.

These are just a few comments about some of the applications that Factory Explorer® can address. Common applications include:

- Capacity Planning
- Critical Path Supply Chain Analysis™
- Cycle Time Optimization
- Technology Transitions
- Factory Sizing
- Work-in-Process Trending
- Academic Teaching

SYSTEM PERFORMANCE (TEST BED DATASET #1)

PLATFORM	CAPACITY ANALYSIS	SIMULATION (lot moves/minute)	ONE YEAR SIMULATION
PIII 600MHz	1 Second	>1,200,000	46 Seconds
Athlon 1.4GHz	<1 Second	>2,700,000	22 Seconds
Athlon 1.8GHz	<1 Second	>3,500,000	17 Seconds

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