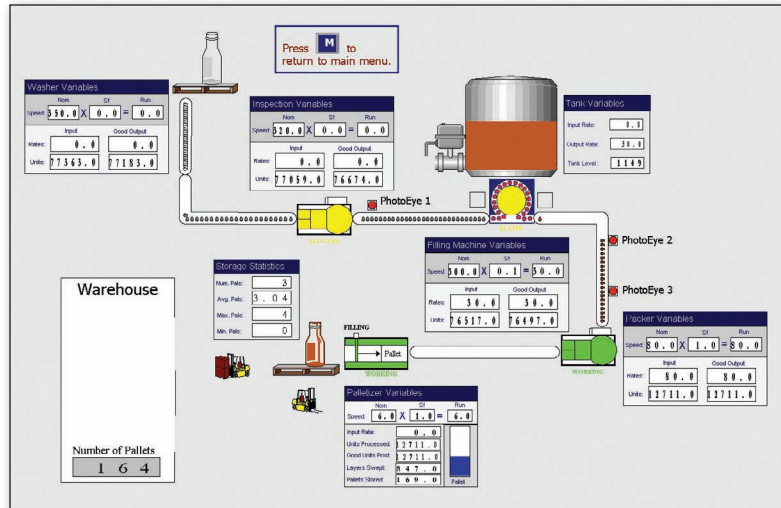


Advantages

- Excellent strategic tool for improving or determining the performance of a current or proposed system
- Evaluate where to focus process improvement initiatives by seeing effect on overall system
- Design your system correctly the first time including conveyor lengths, accumulation sizing, and sensor positioning
- Easier-to-use flowchart-style, object-oriented modeling environment is the ideal way to bring the power of modeling and simulation to business process improvement
- Using the virtual Packaging Edition can reveal the impact of a proposed change on your throughput, operational effectiveness, and profit margins
- Helps you predict system performance based on key metrics such as throughput, utilization, blockages/starvations, and effective run rates

When the life of your business is at stake, Arena® helps in selecting the most beneficial strategies, empowering you with the confidence to “go live.”



Overview

Today’s manufacturers are under the pressure of increasing production demand and efficiency, while reducing overall production cost. This further emphasizes the need to maximize current production line(s) and/or designing a new line correctly the first time.

Arena® Packaging Edition addresses the shortcomings of the old paper-and-pencil and spreadsheet analytical techniques of the past and delivers information for the total dynamics and variability inherent in the modern packaging operation.

Features

Arena Packaging Edition provides you with a comprehensive tool necessary to simulate your current or proposed packaging system, represented by a model (or several models) of your processes, operating parameters, configuration, and resources.

Once constructed, your unique packaging simulation model can be subjected to various scenarios, conditions, and operational rules that may be far too risky and expensive to implement in real life. The Packaging Edition can reveal the impact of a proposed change on your throughput, operational effectiveness, and most importantly your bottom line – cost.

By testing proposals and strategies in realistic conditions – before committing to real investments or implementing changes on live business – you gain the confidence to select and implement only the strategies that have been proven to work, reducing the risk of improper implementations. The result – “right-sizing” your facility, maximized operating efficiency, and meeting customer demands.



Benefits

Make Informed Decisions During System Design

The basic elements of a high-speed packaging line have many similarities, but understanding a system's intricacies and how the performance and configurations affect one another can be quite complex. Arena can mimic the behavior of your system, assisting in making strategic decisions about it.

- **Packaging Equipment**

The Arena Packaging Edition has specific building blocks to represent the equipment on virtually any packaging line. Specific objects include machine types, accumulating and non-accumulating conveyors, palletizer and depalletizers, as well as storage and flow tanks.

- **Multiple Machine Types**

Regardless of the type of machine in the line, Arena can mimic its behavior. This includes everything ranging from assembly machines to filling machines to labeling machines to heat treat ovens.

- **Machine, Conveyor, and Palletizing Performance**

Accounting for equipment performance is essential in analyzing any packaging line. Arena's Packaging Edition enables a user to account for run rates for each piece of equipment, even unique to the item running through the line. In addition, the reliability of equipment can be factored. This is pivotal in evaluating new systems and understanding the amount of necessary buffer in the system.

- **Accumulation Tables**

As space is limited in most facilities, accumulation tables or devices are effective in maximizing space and providing necessary buffer. Conveyor constructs enable the modeling of these items to assist in determining the proper buffer necessary in your system.

Handle Complex Issues with Ease

Arena Packaging Edition was designed to handle a wide array of complex issues, from sensor logic for both conveyors and tanks to modifying upstream run conditions when down stream items fail to a changing of diverter direction.

- **Conveyor and Tank Sensors**

Forcing machines to do hard starts and stops due to blockages and starvation can be very harsh on any machine. Creating the necessary buffer and utilizing sensors on conveyors can reduce the likelihood of these events. Arena Packaging Edition easily allows placement of sensors on conveyors or tanks to emulate the current system or see the effect of modifying sensor positioning or resultant actions.

- **Control Logic**

Effectively designing and constructing a systems control behavior can increase machine performance, reduce footprint requirements, and maximize throughput. Arena's Packaging Edition enables testing these conditions including modifying run rates based on downstream states to changing diverter positioning to replenishing needed materials based on time or sensors.

The screenshot displays the Arena software interface for a packaging line simulation. The main workspace shows a complex layout of equipment including conveyors, palletizers, accumulators, and labelers, connected by lines representing material flow. A table at the bottom provides detailed specifications for each machine in the system.

Machine	Name	Type	Begin a Line	Ends a Line	Cycles / Minute	Units / Cycle	Assemblies / Cycle	Containers / Cycle	Capacity	Initially Active	Initial Speed Factor	Loss	Reliability	Statistics	Animation
1	Blow Molder	Basic Machine	<input checked="" type="checkbox"/>	<input type="checkbox"/>	500	1				<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Filler	Filling Machine	<input checked="" type="checkbox"/>	<input type="checkbox"/>	400	1			99	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Labeler 1	Basic Machine	<input type="checkbox"/>	<input type="checkbox"/>	220	1				<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Case Packer 1	Assembly Machine	<input type="checkbox"/>	<input type="checkbox"/>	30	1				<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Case Packer 2	Assembly Machine	<input type="checkbox"/>	<input type="checkbox"/>	30	1				<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Labeler 2	Basic Machine	<input type="checkbox"/>	<input type="checkbox"/>	220	1				<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

- **Switching, Splitting, and Merging**

Arena Packaging Edition has specific building blocks to mimic the behavior of conveyor switching, splitting, and merging. Divert items based on product, count, or triggered by other system conditions or actions.

Convert Existing System Information into Actionable Business Decisions

Arena Packaging Edition can leverage existing information to help you identify and focus on existing problem areas and bottlenecks so you can suggest specific improvements.

- **Integrate with Key Data**

Arena Packaging Edition leverages key data management technologies to make data transfer and integration an integral component of the solution. Arena is able to read from and write to any Microsoft®-supported data repository such as Excel or Access. Using DAO capability, you can read in data such as machine and conveyor run parameters, reliability, and sensor positioning – information critical to your line(s) operations.

- **Standardized Add-ins**

Arena integrates Visual Basic® for Applications (VBA) into its product architecture so that users may create their own utility tools and custom interfaces.

- **Virtual Packaging Editions**

Building models quickly and accurately that simulate complex system behavior is a key strength of Arena Packaging Edition. Accurately modeling equipment performance and actions triggered by that performance is absolutely critical to experimenting with the system actions and positioning of devices (sensors) in a system. The software provides several unique features to describe the exact set of parameters used in configuring a packaging line. As a result, Arena Packaging Edition has an outstanding performance record in modeling automated packaging lines for many global packaging, bottling, and manufacturing companies.

- **Justify Where to Focus Process Improvement**

Once you've created a model of your Packaging Edition, you can add new equipment and buffering virtually – in your model – to compare how these new investments affect your service and performance levels to justify their purchase and/or where to focus process improvement.

- **Validate System Behavior**

Arena Packaging Edition gives you the ability to verify quickly and easily that your model is working properly through a critical “eyes on” flowchart animation. Flowcharting is an ideal, intuitive tool that allows Arena

Packaging Edition users to map graphically their entire packaging system. In Arena Packaging Edition, the flowchart comes to life, enabling visualization of the entire system, or if you prefer, zoom into specific areas in the line. Further verification is provided by online statistics that display the status and performance of equipment graphically as the model runs. No other Packaging Edition modeling tool gives you these fundamental capabilities.

Quantify the ROI of a Proposed Change with Arena's Reports

Once you run a model of your line for a given scenario of inputs, the response of your system can be viewed through reports on key Packaging Edition performance issues such as those shown below or one's that you create yourself.

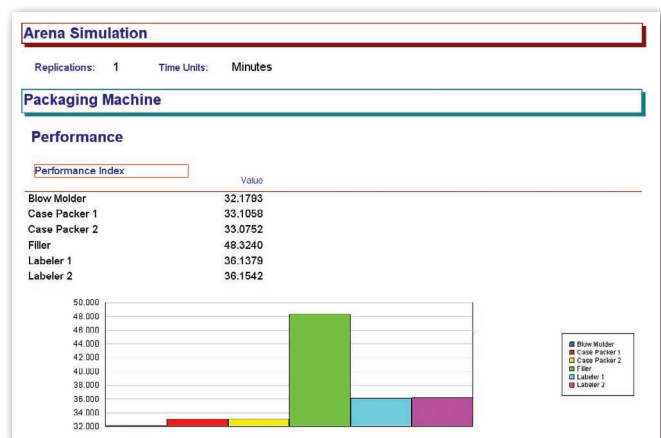
- **Machine, Conveyor, and Palletizer Performance Metrics**

- Utilization
- Unit summaries, including throughput and loss units
- Activity counters (total processed, blockages, changeovers, failures, scheduled stops)
- Output rates
- Time totals in various states
- Performance index
- Yield
- Costs (total, lost product, equipment operating cost)

- **Tank Usage**

- Average Level
- Average Rate

Additionally, Arena Packaging Edition can provide real-time dynamic output in the form of plots, histograms, and standard Packaging Edition performance metrics. Dynamic animation provides the unique ability to identify bottlenecks visually, obtain a better understanding of the circular relationships affecting system performance,



and perform sensitivity analysis. You can create and customize reports as you wish. Information that you want to display is written out to an Access database. Using Crystal Reports® by SAP BusinessObjects, you can read this information to create sophisticated reports and even display them across the web.

Recommended Requirements

Minimum requirements/recommendations for running the Arena software include:

- Arena® simulation software, version 13.00.00.
- Microsoft® Windows Vista® (SP1 or later, 32-bit version only), Windows Server® 2003 Standard Edition (SP2 or later, 32-bit version only), Windows Server 2003 Standard Edition R2 (SP2 or later, 32-bit version only), Windows XP Professional (SP2 or later), or Windows XP Home (SP2 or later).
- Microsoft Internet Explorer®, version 6.0 or later. Version 7.0 is recommended for Windows Vista operating systems.
- Adobe® Acrobat Reader 8.1.0 or later, to view documentation.
- Hard drive with 250MB free disk space (or more, depending on the options installed). 1GB RAM (or more).
- Intel® Pentium® processor, 2GHz or faster. The Arena software can be run on single processor, dual processor, and dual-core processor computers; however, you can only run one instance of Arena at a time.

Note: The faster the PC, the better the system will run. The running and animation of Arena and some large simulation models can be calculation-intensive, so a faster processor with additional memory may result in improved performance. In addition, a larger monitor and a screen resolution of at least 1024 x 768 are recommended for improved animation viewing. You must have Administrator privileges to install the software.

More Information

To see an online demonstration of Arena, please consult our Web site at www.ArenaSimulation.com and look at our Demo on Demand and Web seminar offerings. While there, you can also download product brochures, white papers, and application case studies.

For more information and pricing of Arena software, please contact the U.S. Rockwell Automation office at (1+) 724-741-4000 or contact your local Arena reseller. A listing of worldwide Arena resellers may be found at www.ArenaSimulation.com.

www.ArenaSimulation.com

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www.rockwellautomation.com

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