

Emerson's Winblend

Blending Process Control Software



Winblend™

- Comprehensive software suite of blending process control applications ranging from receipt of raw materials to the delivery of finished product.
- Pre-packaged modules and blending algorithms based on decades of proven process and industry experience.
- Standard user friendly, interface and tools for ease of operation and quick start up.
- Ability to integrate with ERP/SAP.
- Scalable Architecture. Seamless Integration.
- Built-In Operations and Maintenance Diagnostics and Troubleshooting

Introduction

Emerson's Winblend is a comprehensive blending process control software package that incorporates over 50+ years of process and industry knowledge. This scalable, pre-packaged software solution has proven successful in helping lubricant, grease, and chemical manufacturers all over the world manage, control, optimize, and record blending and pigging operations from the receipt of raw materials to finished product delivery including product transfers, manifolds, loading and unloading, and mini-bulk operations.



Winblend's pre-packaged control modules are based on 50+ years or proven field experience in enabling accurate blend performance.

Benefits

Scalability: Winblend is scalable, from “small scale” systems to “large scale” systems to meet the projected demand. The system architecture permits optimum adaptation to meet operational requirements and plant size. When extensive expansions become necessary, you can readily expand the existing hardware and software infrastructure to meet your expansion requirements, thus protecting your initial investment. You are always working with the same overall system and control concept, regardless of how large the plant might become in the future.

Standard, User friendly Software: Allows the operator to quickly understand and operate the system with an interactive screen that automatically displays alarms, operator prompts, and diagnostics in real-time. All operations can be controlled with an optimal number of intuitive displays.

Seamless Integration: Control isolated operations: from a single blender, manifold, or drum decanting unit to a fully integrated plant with multiple blending units, manifolds, bulk loading/unloading bays, and filling and packaging lines. With its unique blending algorithms and field proven installations, Winblend allows you to achieve on-spec blending while implementing the most efficient production process possible. Winblend software components are modular, each with standard user interfaces; this enables rapid application development, reducing implementation time and costs; use of field-proven application modules eliminates risks.

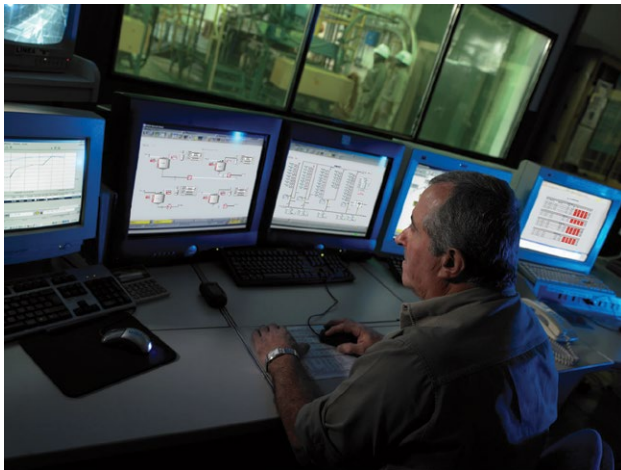
On-Spec Production Across the Plant: Winblend ensures on-spec production and control across all areas of manufacturing. With built-in, pre-blend checks, the system will automatically validate the availability of raw materials, routes, flow paths, and tank storage to ensure successful completion of a batch once it is started. In addition, the system will check process and equipment interlocks and alert or stop a blend (depending on the severity of operational issues) ensuring safe operations and/or preventing off-spec batches.

ERP/SAP Integration: Provides the ability to integrate a stand-alone blending control system with an external production planning system based on ERP systems such as SAP. Production order management, material inventory management, and batch scheduling can be handled at ERP level, simplifying and streamlining plant operations.

Operation Tracking and Reporting: Blending completion data will be stored in the system database for report generation purposes with multiple options to generate various reports based on details needed. In addition, system will log alarms and prioritize alarms.

Built-In Operations and Maintenance Diagnostics:

Comprehensive diagnostics for blending and pigging operations, system hardware and instrumentation alerts, and alarms to prevent errors in execution.



Winblend is a fit-for-purpose, process control solution that can be scaled up from a small system comprising of a single blender, manifold, or a drum decanting unit to a large system with several blenders, manifold, and other auxiliary equipment.

Product Description

Emerson’s Winblend package is a complete, integrated suite of applications for blending plants. The application covers all activities from raw material receipt to final product distribution. This fit-for-purpose, process control solution can be scaled up from a small system comprising of a single blender, manifold, or a drum decanting unit to a large system with several blenders, manifold, and other auxiliary equipment.

Winblend includes application modules to handle different types of blending - Inline Blending, Batch Blending, and Simultaneous Metered Blending. Winblend incorporates formula and recipe management features, advanced reporting capability, batch control based on ISA 588.01 batch process model.

The control application modules and tools included in the Winblend Suite are:

Primary Control Functions

- Batch Blending Vessel (BBV)
- Simultaneous Metered Blending (SMB)
- Inline Blending (ILB)
- Piggable Manifolds
- Product Transfers

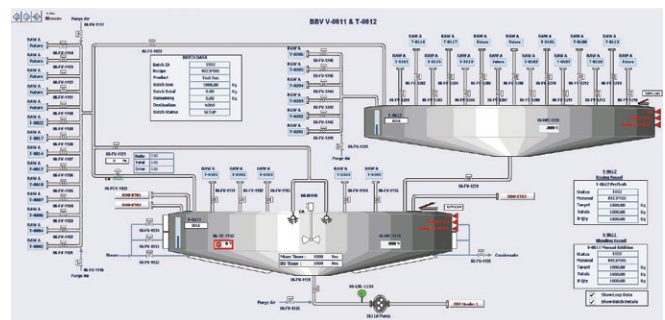
Auxiliary Functions

- Loading and Unloading
- Filling and Packaging System Integration
- Tank Farm Integration
- ERP/SAP Integration Tools
- Materials Manager
- Tank Manager
- Route Manager
- Reports
- Batch Interface Service (BIS)

Primary Control Functions

Batch Blending

The Batch Blending Vessel (BBV) module controls the batch blending process using weight measurement. This module includes application logic to handle the automatic sequencing of products into a blend kettle, the heating and mixing of blend components in the kettle, the rinsing of the kettle via clean-in-place systems, and the discharge of finished product from the kettle.



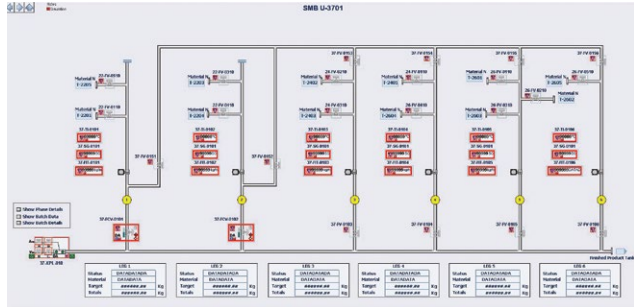
Example Batch Blending Vessel Operator Interface.

Simultaneous Metered Blending

Simultaneous Metered Blending (SMB) uses two or more flow streams to directly add raw materials to a blender header transferring product to a storage tank. Several raw materials, as many as the number of flow streams available, can be added to the blender header simultaneously. When more raw materials than the available number of flow streams are to be blended, multiple raw materials can be added through flow streams, one by one in sequence, until all materials are added. Hence,

this type of blending referred to as “Simultaneous Metered Blending System”.

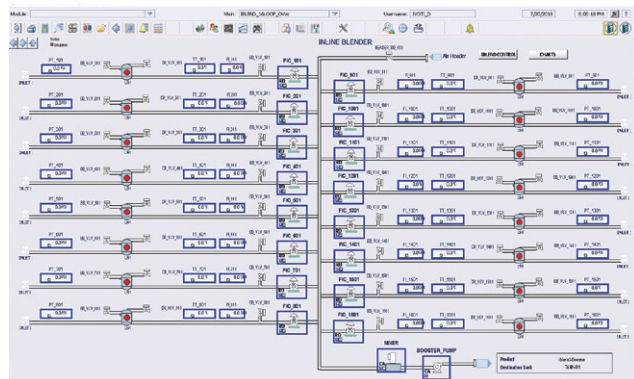
When all raw materials are added, final mixing will be done in the destination tank until all raw materials are homogeneously mixed to make the final product.



Simultaneous Metered Blender Operator Interface

Inline Blending

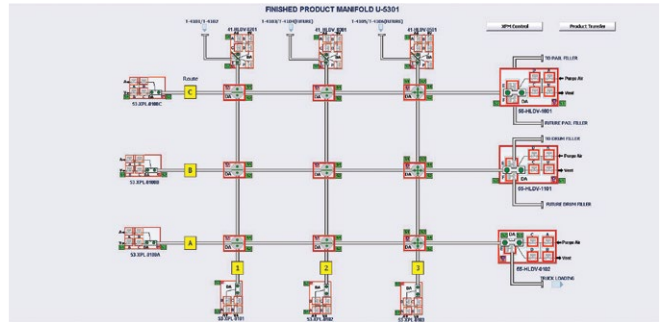
Inline blending control involves automatic regulation of two or more component streams to maintain an instantaneous flow rate and integrated total of each component that precisely represents its ratio in the total blend. In an Inline blender, all flow streams operate simultaneously to ensure that all components specified in the formula are added to the blend at the same time, in the required formula ratios. The ratio control is achieved indirectly by controlling the flow rate for each flow stream.



Inline Blender Operator Interface

Piggable Manifolds

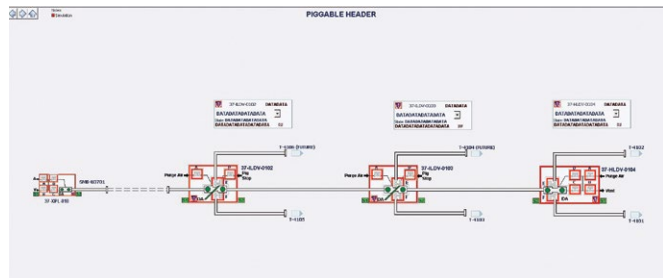
A piggable manifold is a piping matrix of multiple inlets and outlets. An automated valve known as a cross over valve, enables the flow from a source line to enter a destination line. The manifold control module automates the sequencing, opening and closing of valves, and pigging in the manifold.



Piggable Manifold Operator Interface

Product Transfers

The transfer modules automates all sequencing, transferring, and pigging of materials across the plant from multiple source points to destinations.

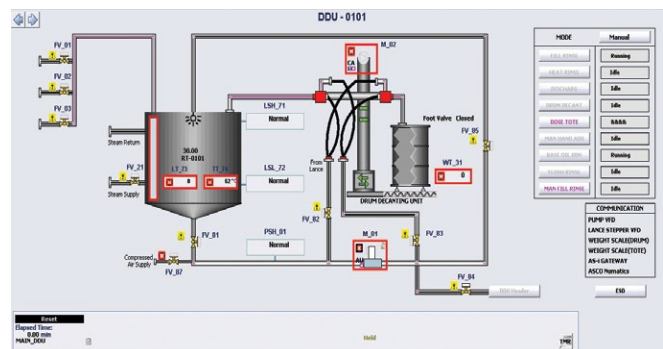


Piggable Transfer Operator Interface

Drum Decanting Units

Additives available in drums are added to a batch blend using a Drum Decanting Unit, an independent control system for decanting precisely measured quantities of additives from drums.

The Drum Decanting Unit control module facilitates integration of Drum Decanting Unit operations into master recipe executed on the blending control system.

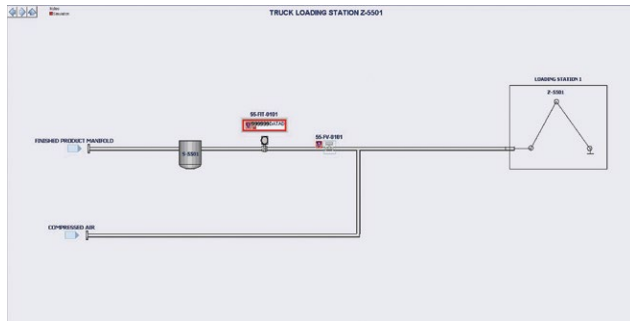


Drum Decanting Unit Operator Interface

Auxiliary Functions

Loading and Unloading

Controls can be extended into the integration and automation of loading and unloading operations of materials from truck, rail, or marine vessels.



Example Truck Loading HMI

Filling and Packaging System Integration

Controls can interface to filling and packaging systems.

Tank Farm Integration

Ability to perform tank level and level monitoring/tracking either by integrating tank instruments directly into Winblend or through a communication link to an external tank information system.

ERP/MES Integration

Frequently, manufacturers require the ability to integrate a stand-alone blending control system with an external production planning control system based on ERP systems such as SAP or other MES systems. With this integration, production order planning, batch scheduling, and optimization of equipment utilization can be managed from the ERP system. Winblend suite includes a set of pre-built middleware applications to facilitate ERP/MES integration.

User Interface for SAP Order Manager

Tools

Materials Manager

Winblend maintains a list of all raw materials, finished products, and their properties in an SQL database. Materials manager is an application that allows operators to maintain up-to-date information regarding material properties. This application supports material management functions listed below:

- View materials, material types, categories, and families
- Add/edit/delete material properties, types, categories, and families
- Add/view/edit product compatibility matrix

User Interface for Material Manager

Tank Manager

Bulk raw materials — base oils and additives — and blended finished products are stored in storage tanks in the tank farm.

User Interface for Tank Manager

Winblend maintains a list all raw material and finished product tanks in the system database. This application supports tank management functions listed below:

- View tanks available in the tank farm
- View/edit tank information such as material assigned, capacity, and level alarm settings
- View real-time level, volume, and mass of material available

While blending, using the information stored in the database, Winblend will automatically determine sources tanks from which raw materials are to be drawn.

Reports

Blend completion data will be stored in the system database for report generation purposes. Winblend suite includes a set of standard reports listed below:

- Batch Summary Report
 - A summary report providing a list of all batches executed during a specified duration
- Detailed Batch Report
 - Complete information for a specific batch, including component wise details
- Material Consumption Report
 - A summary report providing batch wise material consumption for all raw materials

- Tank Wise Material Consumption Report
 - A summary report providing tank wise material consumption for a specified duration
- Detailed Phase Wise Report
 - A report providing phase wise details for all phases in the recipe

Batch Interface Service

Batch Interface Service (BIS) performs blending application specific validations when a batch is released for execution and during the execution of individual phases in a recipe. BIS will allow a batch to run if and only if all process conditions required for successful execution of the batch are satisfied. Some of the typical blending specific validations are listed below:

- Verify that source tanks for all components specified in the recipe are in service
- Verify that enough quantities of all raw materials identified in the formula are currently available
- Verify that the product currently stored in the selected destination is the same as the product just about to be blended
- Verify that sufficient free space is available in the destination tank to accommodate the target quantity requested for the current batch
- Verify that a physical route is available from each of the source tanks required to the appropriate blending equipment
- Verify that a physical route is available from the blender to the selected destination tank

Related Products

- Batch Blending Vessels (BBVs)
- Drum Decanting Units (DDUs)
- DeltaV Workstation and Hardware
- Grease Units
- Inline Blenders (ILBs)
- Lifecycle Services and Support
- Piggable Valves
- Piggable Manifolds
- Simultaneous Metered Blenders (SMBs)

Emerson leads the industry with 50+ years of experience and 100+ Winblend systems installed world wide.



Emerson's blending solutions enable on-spec production and flexibility for a variety of lubricant, grease, refining, and chemical blending applications.

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