For over 30 years Mesabi has worked to meet the compounding control system needs of the rubber industry. From simple to complex compounding control systems, Mesabi offers a standard system which can be customized to each customer’s needs. Mesabi provides control system hardware, software, engineering, fabrication, installation supervision, commissioning, training, and 24/7 support.

**Mission Statement**

At Mesabi, our mission is to be the Rubber & Plastics Industries first choice for compounding control systems that provide the best combination of advanced technology, quality, service and support.

Our commitment is to execute this with integrity, honesty, and accountability to each and every customer.

**CUSTOMER FOCUS**

Driven by a customer oriented and industry specific approach, we are committed to providing the best service and support available to the rubber industry. In addition to excellent support, our Mix Vision System is customized for each customer, and is flexible to grow and change with your needs.

**EXCELLENCE**

The quality and reliability evident in the design of Mix Vision is a result of Mesabi’s extensive experience. Our systems deliver the information and control necessary to improve processes and profits. We are the innovative leader in providing these systems and services tailored to meet each customer’s needs.

**INNOVATION**

Mesabi has a proven track record supplying advanced technology to the rubber industry. This technology provides the competitive edge necessary to succeed in a dynamic business environment. Mesabi is continually improving the Mix Vision Compounding Control System products, and updating our clients systems to help them maintain this competitive edge.
Mix Vision.Gen2: Process Overview

The Mix Vision.Gen2 system provides a complete view of the entire compounding process. This view combined with advanced ease-of-use and a comprehensive operational design, gives the plant floor operators the ability to monitor the compounding process and respond correctly to typical production issues, reducing downtime and improving consistency.

Mix Vision.Gen2 will store and validate the information for raw materials, pre-weighed materials, and mixed compounds. The Mix Vision.Gen2 system controls and tracks the automatic ingredient weighments, manual ingredient weighments, verifies ingredient loading, and controls the automatic mixing cycle completely eliminating mixing cycle variations.

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
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<tbody>
<tr>
<td>Mixing</td>
<td>Control all aspects of the compound mixing process utilizing time, temperature, power, ram pressure, ram position, and rotor speed.</td>
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<tr>
<td>Charge &amp; Weigh Belt</td>
<td>View and track ingredients weighed at the weigh belt and at the charge belt.</td>
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<tr>
<td>Receiving</td>
<td>Identify and tag raw materials or integrate to existing MRP Systems.</td>
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<tr>
<td>Control Weigh &amp; Feeding</td>
<td>Automatic weighment and feeding of bulk powder and oil ingredients. View and track minor ingredients for both automatic and manually weighed systems.</td>
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<tr>
<td>Batch Off Scale</td>
<td>View the cooling line and control the batch off scale.</td>
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<tr>
<td>Tracking</td>
<td>Mix Vision.Gen2 makes tracking raw materials, compounds, final product, and customer orders easy.</td>
</tr>
<tr>
<td>Mill &amp; Extruder</td>
<td>Configure, control and view the downstream equipment.</td>
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</tbody>
</table>
Mix Vision.Gen2 is a complete control system which can be integrated and tailored to coordinate all stages of your compounding process and existing systems.

The Mix Vision.Gen2 system architecture utilizes industry standard networking, computers, programmable logic controllers, scales, software, and database products. This approach provides an open-systems solution with readily available hardware and software, and no proprietary issues that inhibit support.
Mix Vision.Gen2: Floor Operations

THE NEXT GENERATION OF COMPOUNDING CONTROL SYSTEMS

Mixing
The Real-Time Mixing Screen provides a graphic display showing current recipe status, weigh systems status, and equipment status. The animation shows doors opening, ram movement and position, rotors turning, material feeding, etc. This screen is customized to reflect each customer’s equipment configuration.

Mill
The Mill display shows the control settings for roll temperatures, roll speeds, nip/gap settings, and blender counts.

Batch Off
The Batchoff shows the batch ID sequence from the mixer to the cooling line discharge. It collects actual compound weight, packaging, and lab test data. It also enables the printing of Compound/Skid ID tags with bar codes.

Shipping
The Shipping display provides mechanisms for the selection and entry of outgoing shipping information including the creation of a barcode shipment tag that will provide complete traceability. Products/Shipments can be traced back to their raw ingredients, lots, process information, and production information facilitating the highest level of traceability.

Alarms
Alarm/Fault tab displays a list of all the active alarms and faults for the current compound. The most recent alarm is always displayed at the bottom of the real-time mixing screen.

Mix Smarter: Reliable Tracking
Receiving
Mix Vision.Gen2 provides for the entry of raw material information such as date received, shelf life, vendor info, lot information, and will print barcode tags for tracking and verification.

Feeder Configuration
Assign ingredients to feeder positions and/or day bin positions, and adjust feeder tuning parameters such as pre-act and fast/slow settings. The feeding parameters are adjusted and maintained in the system database for each ingredient, providing consistent feeder control.

Mix Better: Reduce Scrap
Minors
Mix Vision.Gen2 allows barcode scanning of raw materials, and bag/tote/charge ticket printing. Both auto minor and manual minor systems can be controlled through the Mix Vision.Gen2 System. Actual weights are automatically deducted from the quantity on hand or in a bin. Usages are generated and recorded, and manual adjustments can be made.
Inventory Tracking

The Inventory Tracking screen offers flexible and comprehensive material tracking from receiving through the entire compounding process. Through the use of barcode ID tags the raw materials, pre-weighments, and mixed compounds can be tracked providing complete traceability. The Mix Vision.Gen2 system offers a flexible and complete solution for inventory management.

Recipe Management

The Recipe Management screen is designed to provide complete compound mixing control with maximum process control flexibility via the use of all the available process control parameters, including a specialized hold temperature command for silica mixing. All possible Logic (And/Or) and process parameter (Time, Temperature, Kw, KwH) combinations are available to be used at any step of the mixing cycle.

Mix Faster: Reduce Downtime

Reporting

Process and ingredient data is automatically collected for each compound produced. This complete compound history provides the detailed data necessary for process analysis, quality control, and traceability. The compound history, material tracking, usage, production, scheduling, and recipe information is available within the database, and can be utilized by other processes and/or applications at the plant information system level, such as MRP, ERP, etc.
Mix Better: Increase Profits

THE NEXT GENERATION OF COMPOUNDING CONTROL SYSTEMS

Scheduling
The Schedule display provides mechanisms for the scheduling of compound production. The Scheduling function provides an active schedule status and complete schedule history.

Security
The Mix Vision.Gen2 security provides mechanisms to set up multiple levels of security to control and track access to system operations. Security templates are provided for groups and types of users, which can be tailored and customized to each customer’s requirements.

System Maintenance
Mix Vision.Gen2 is completely configurable through the system maintenance screens, providing unsurpassed operational flexibility and ease of use. This configurability allows changes without downtime or interference to production.

Mix Smarter: Accurate Data Collection
Mesabi Control Engineering’s top priority is our commitment to customer satisfaction. With a focus on strong long-term relationships with our customers, Mesabi is dedicated to providing the best possible customer support and service.

With over 175 Mix Vision systems installed across the full range of the industry, from tires to industrial products, from custom compounders to floor mats, Mesabi is the recognized leader in providing compounding control and information systems to the rubber industry.

Whether you are looking for a turnkey project provider to manage the installation of a new mixing line, or just need to retrofit an existing mixer, Mesabi has the experience, skill, and ability to deliver.

System Support Services

Mesabi Control Engineering’s top priority is our commitment to customer satisfaction. With a focus on strong long-term relationships with our customers, Mesabi is dedicated to providing the best possible customer support and service.

24/7 Access to Mix Vision Support

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<thead>
<tr>
<th>Online Support</th>
<th>Telephone Support</th>
<th>On-site Support</th>
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<tr>
<td>![Online Support Icon]</td>
<td>![Telephone Support Icon]</td>
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Field Services

Support Agreements

Mesabi offers Support Agreements for the Mix Vision Compounding Control Systems. This includes telephone support, online assistance, and on-site services to keep you covered 24 hours a day, 7 days a week.

Field Service

Mesabi provides field services including installation assistance & supervision, commissioning, and training, for Mix Vision Compounding Control Systems.

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