

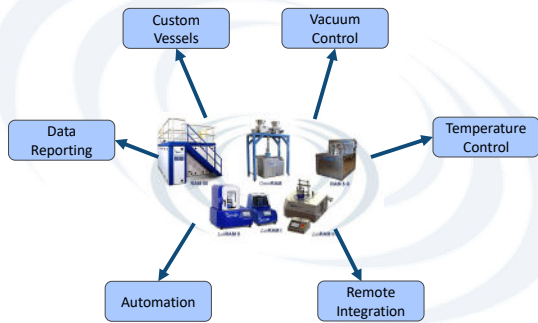
Resodyn Acoustic Mixers Control Features

Justin Whaley
Engineering Manager
Resodyn Corporation



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Interchange 2025

Resodyn as a Service Provider

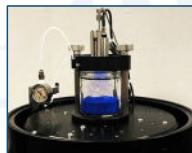
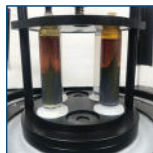
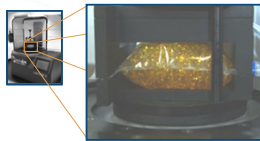


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Vessel Design and Monitoring

- Vessels can be designed to meet nearly any processing need
 - Additional temperature sensing
 - Non-Contact temperature sensing
 - Humidity & Leak monitoring
 - Individual Vacuum Sensors

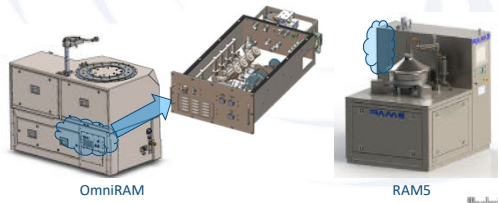


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OmniRAM and RAM5 Vacuum Systems

- Controls located in electrical cabinet with pneumatic valves and sensors located in auxiliary enclosure
- Works with dedicated vacuum pump or facility vacuum source



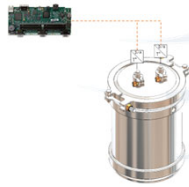
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Temperature & Flow Control

	Temp. Monitoring
Monitoring	Mix Temp.
Alarms	Mix Temp.
Control Method	None



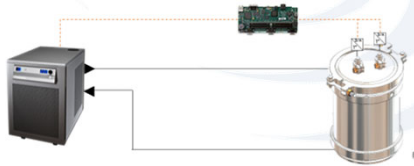
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Temperature & Flow Control

	Temp. Monitoring	Temp. Control
Monitoring	Mix Temp.	Mix Temp.
Alarms	Mix Temp.	Mix Temp. Limits & Deviation
Control Method	None	Cooling Fluid Temp



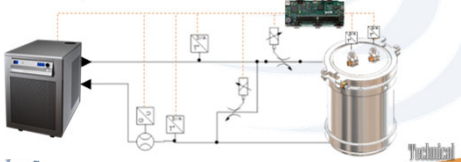
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Temperature & Flow Control

	Temp. Monitoring	Temp. Control	Flow Control
Monitoring	Mix Temp.	Mix Temp.	Mix Temp. & Heat Transfer
Alarms	Mix Temp.	Mix Temp. Limits & Deviation	
Control Method	None	Cooling Fluid Temp	Setpoint & Flow to achieve target Temperature



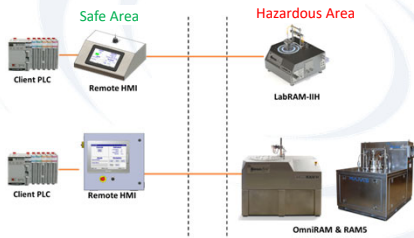
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Remote Control

- Remote operation provides operator protection
- Standard on all Hazardous units but available for all mixers
- Mixers can be integrated into client DCS



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Automated Vessel Loading

- Robotic vessel clamping has been incorporated on every machine family
- Resodyn's equipment can integrate with facility equipment



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Automated Vessel Loading

- Robotic vessel clamping has been incorporated on every machine family
- Resodyn's equipment can integrate with facility equipment



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Automated Vessel Loading

- RAM 5 Vessel Loading and Clamping

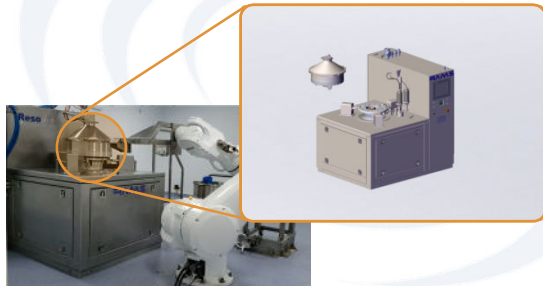


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Automated Vessel Loading

- RAM 5 Vessel Loading and Clamping



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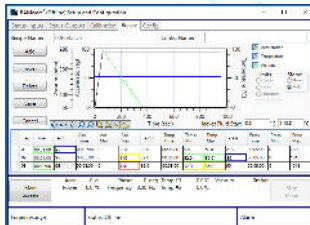
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Integration

- **Continuous RAM Integration**
 - Flow, pressure, and temperature sensors
 - Loss-in-weight powder feeders
 - Liquid pumps
 - Conveyance & Post-mix Operations
- **Safety**
 - Light Curtains
 - Safety Switches
 - Hazardous Location
- **DCS Integration**
- **Custom Integration**

Recipe Control

- **Recipes Define Pre-Programmed Mixing Routines for repeatable mixing and usability during production**
 - Time
 - Acceleration
 - Temperature
 - Vacuum
- **User control of Alarm & Alarm Behavior!**

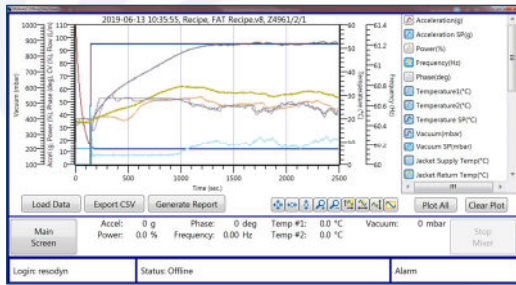


Data Acquisition and Batch Reporting

- **All RAM Systems Record Parameters in Real Time**
 - Resonator / Drive Parameters
 - Temperature / Vacuum Control Variables
 - Machine Health
- **Parameters can be Plotted In Real-Time while running or from Historical Data when stopped**
- **RAM5 / OmniRAM Data options**
 - Customized batch reports
 - Network integration
 - CFR 21 Part 11 Compliant
- **What does this look like in practice?**

Data Acquisition and Batch Reporting

What does this look like in practice?



Summary

- Standard Systems Have with a Rich Set of Features
 - Recipe Control
 - Data Viewer & Exporting
 - Remote Control Options
- Vacuum and Temperature Control are Popular Options that Improve Mixed Product Quality
- Capabilities to Develop and Deliver Custom Automation and Integration

Thank you for your time
and attention.