From Data to Action: How Decisions Are Made at AGC

Bradley Willson





Agenda

- Who is AGC and what do they do?
- How did AGC use the PI System in the past?
- How does AGC use the PI System now?
- What are the next steps in the evolution?
- Questions



Who is AGC Glass

North America

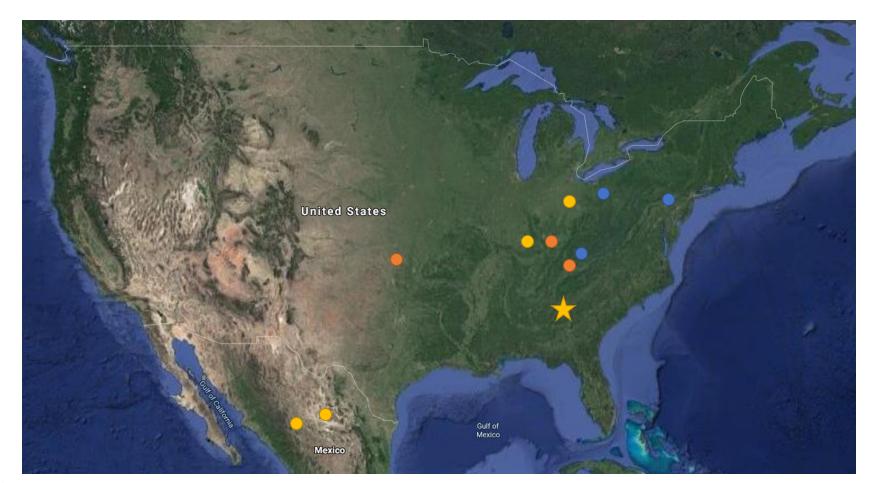
- One of the largest manufacturers of glass
- +4,300 employees
- Pl user since '96

World Wide

- World's leading power in flat glass
- +50,000 employees











The Tools That We Use

Prior 2018

- PI ProcessBook
- Pl DataLink
- PI Manual Logger

Today

- Migrating to PI Vision
- Building Asset Framework
- Creating Notifications
- Developing Analyses
- Integrated our ERP system into PI Vision
- Rolling out PI AF and PI Vision to other sites





AGC's PI System Architecture



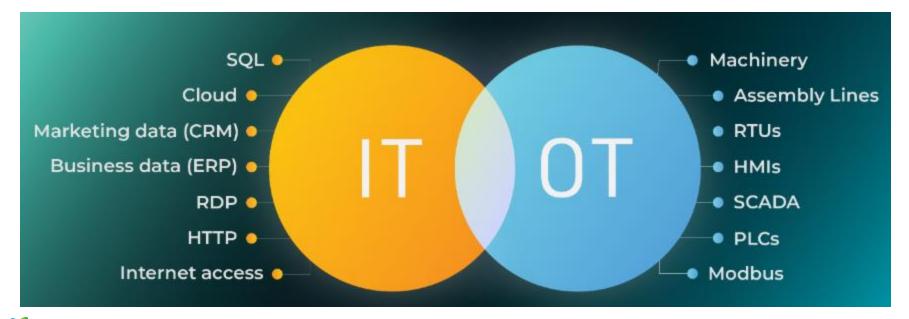
IT versus OT

Prior 2018

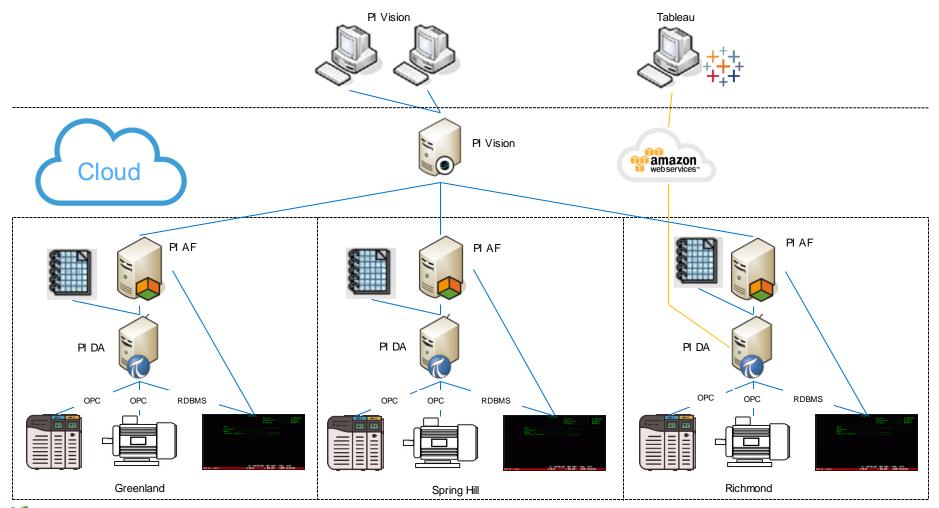
 Two separate networks

Today

- The lines are blurry
- Share data in both directions



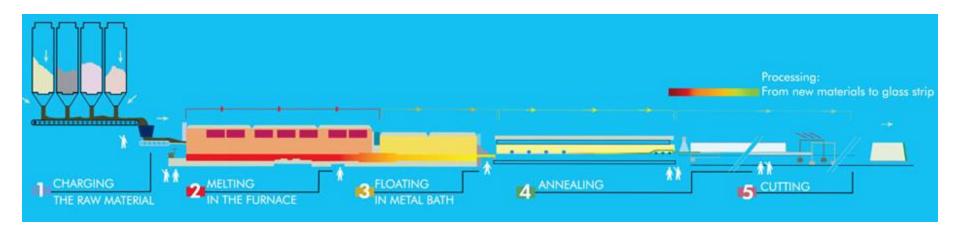




Glass Making 101



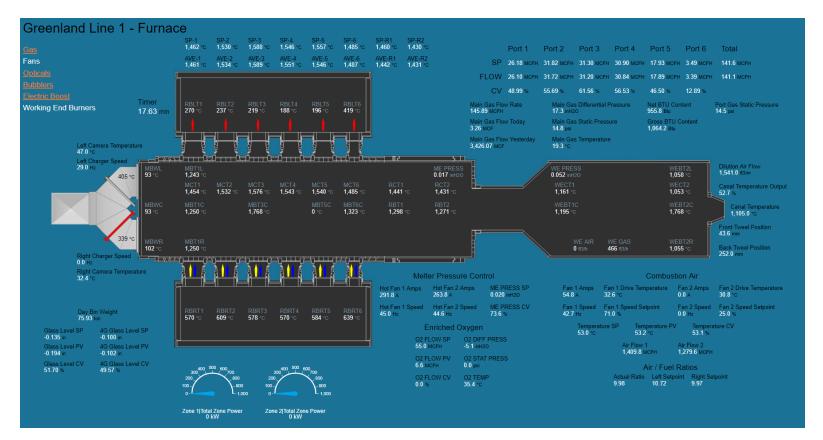
How to Make Glass



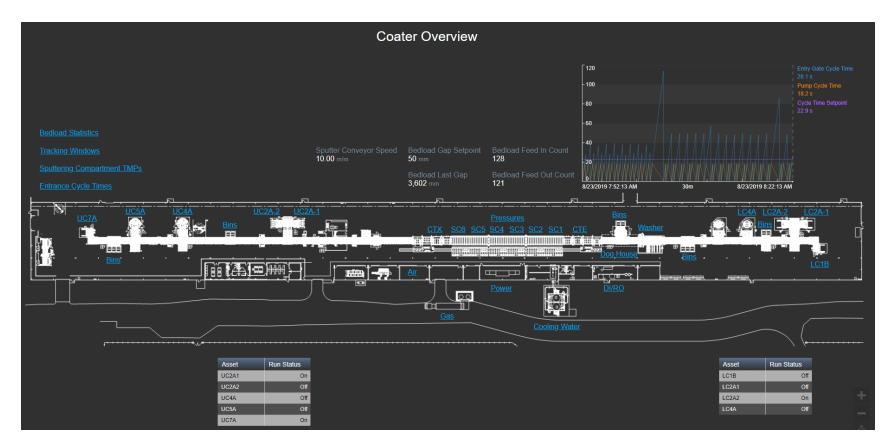


How Do We Use The Tools?

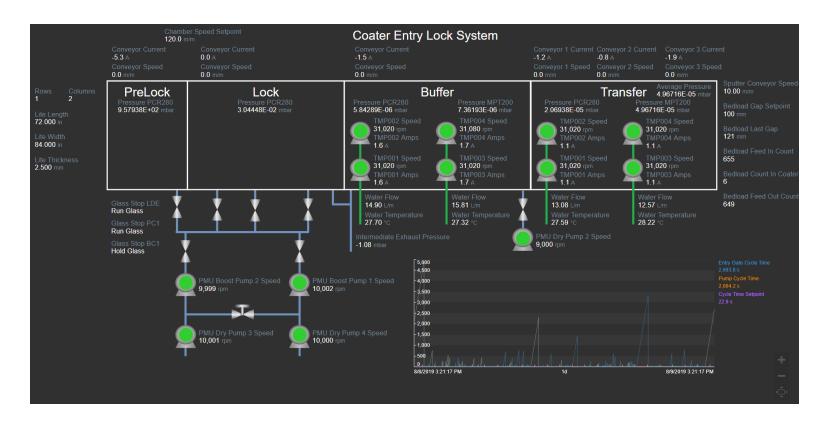










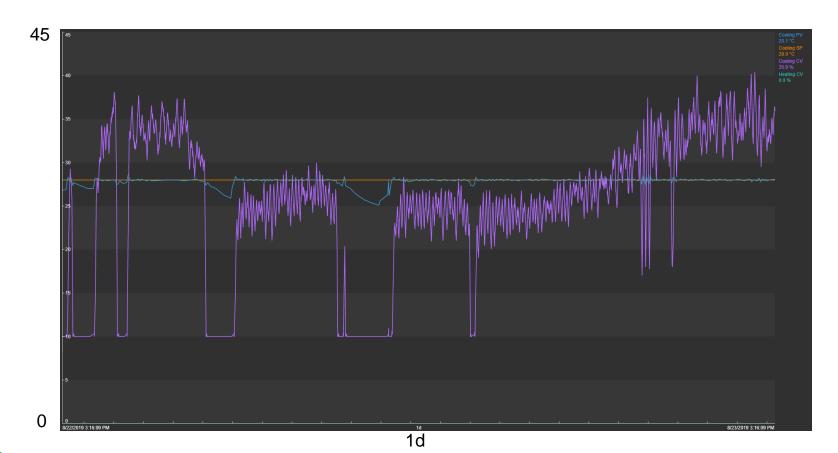








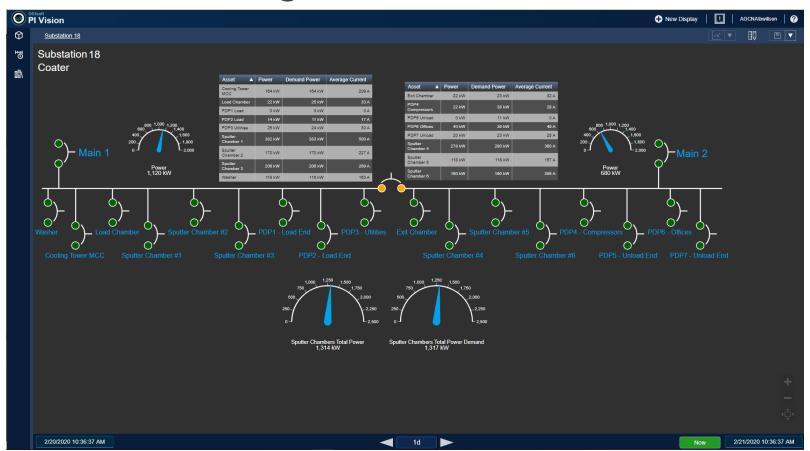
Process Tuning





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Power Monitoring





Power Monitoring

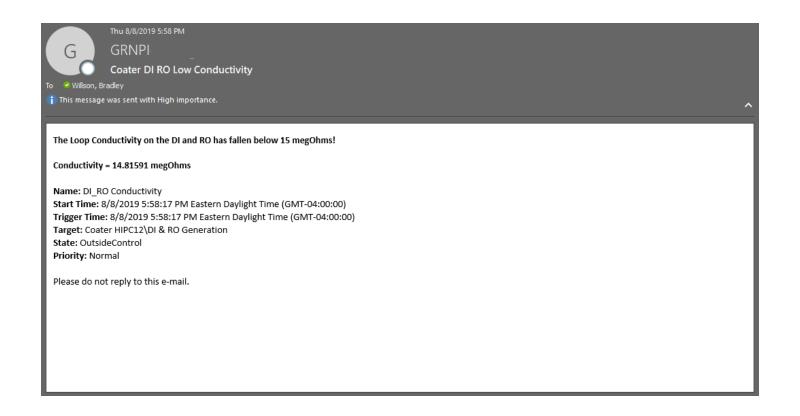




New Tools

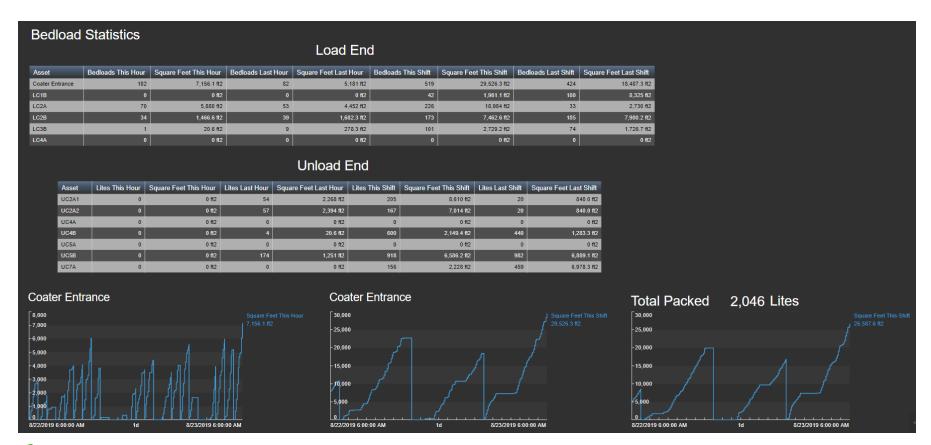


E-mail Notifications



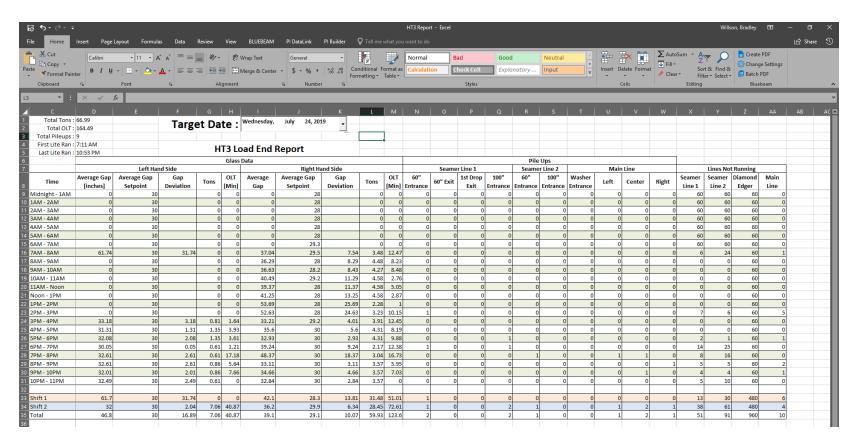


Production Reporting – PI Vision





Production Reporting - DataLink





Furnace Emissions Monitoring

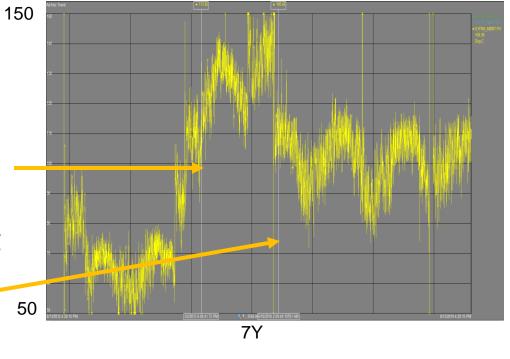




Troubleshooting

Melter Backwall

- Noticed increase of block temperature
- Trace events back to start
- Verify countermeasures
- 7 year trend
- 100°C span

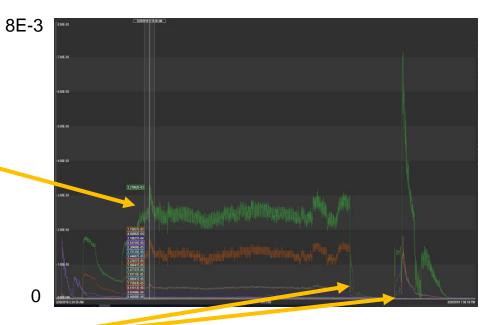


- Possible 2 week downtime
- ~\$2M + materials/labor

Troubleshooting

Coater Pressures

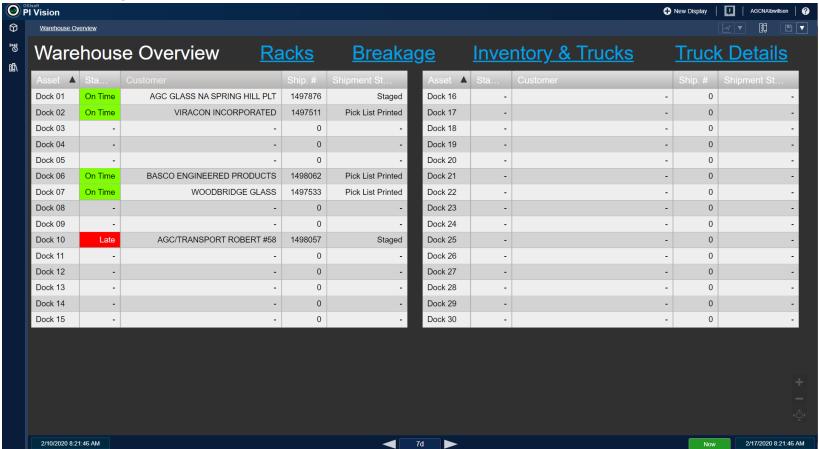
- Unable to maintain vacuum pressure
- Typical is 10E-6 mbar
- Sections only 10E-3 mbar
- Operator adjusting valves to pinpoint problem



- ~\$2,000 per hour
- Found issue faster



ERP System - Shop Floor Visualization



ERP System - Shop Floor Visualization

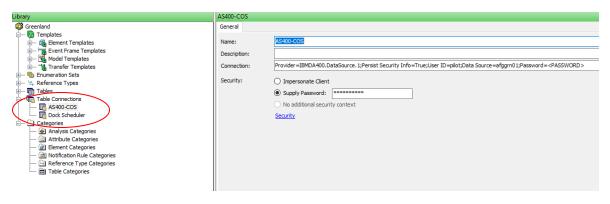


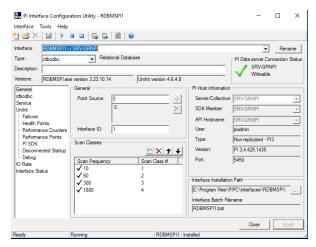
ERP System - Historical Data





ERP System – Integration



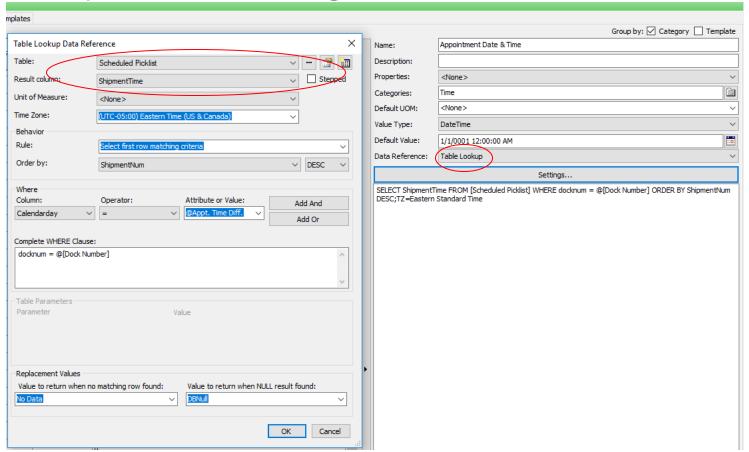








ERP System – Integration





What's Next?



- Explore additional tools
 - Event Frames
 - Analyses
- Continue developing PI Vision screens
- Rolling-Out to Other Facilities
 - How do we standardize?
 - Not all furnaces are created equally
- Machine Learning using AWS and Tableau



Reducing / Preventing Downtime



CHALLENGES

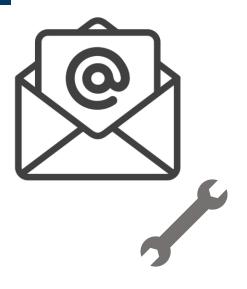
- Large facility with numerous machines
- Hard for operators to monitor everything

SOLUTION

 Provide automated notifications to maintenance personnel

BENEFITS

- Maintenance personnel are notified immediately when there is a problem
- Expanded SOW to include preventative notifications as well





Now we know when a piece of equipment is down earlier. This allows us the machine before it turns into a major catastrophe.



-AGC Greenland Maintenance Team



Speaker Contact Information

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Questions?

Please wait for the microphone

State your name & company

Save the Date...



AMSTERDAM October 26-29, 2020







