Clearwater Recaust Control using CAUST-X

GOALS

- Convert Na_2CO_3 to NaOH preventing overliming
  - *High CE (Causticizing Efficiency)*

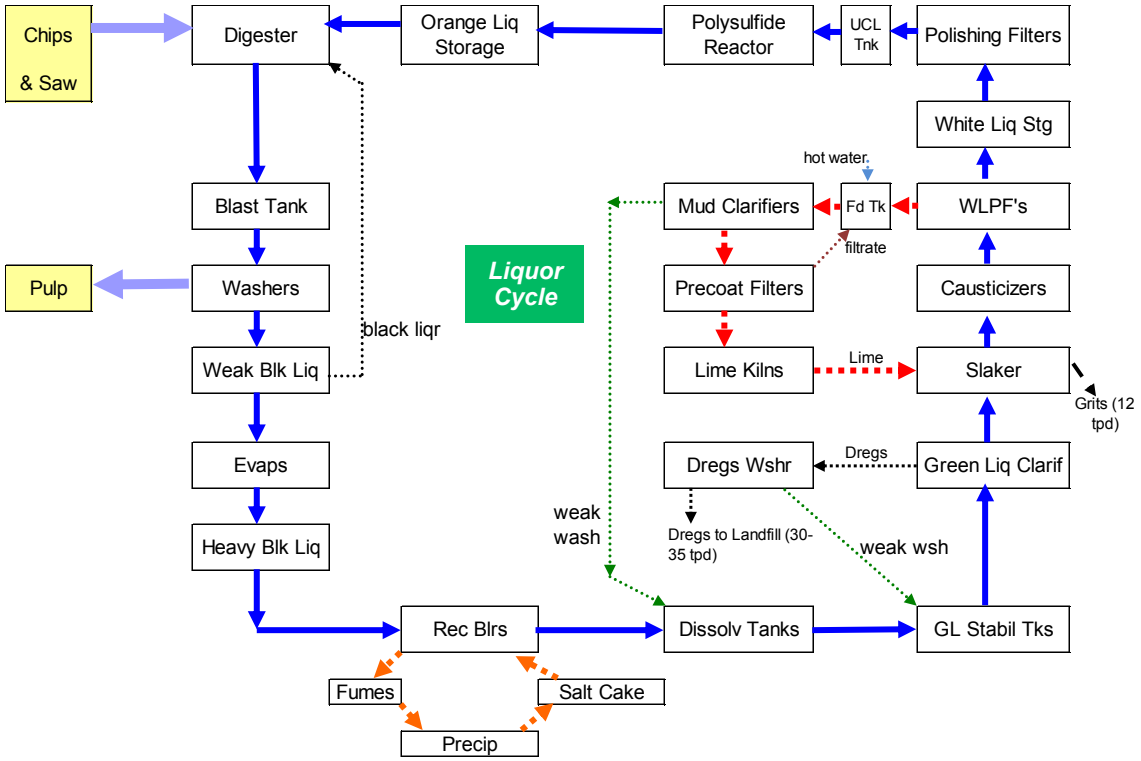
- Produce white liquor with stable liquor composition (Reduced variability)
  - *Stable EA*

Liquor Cycle Summary

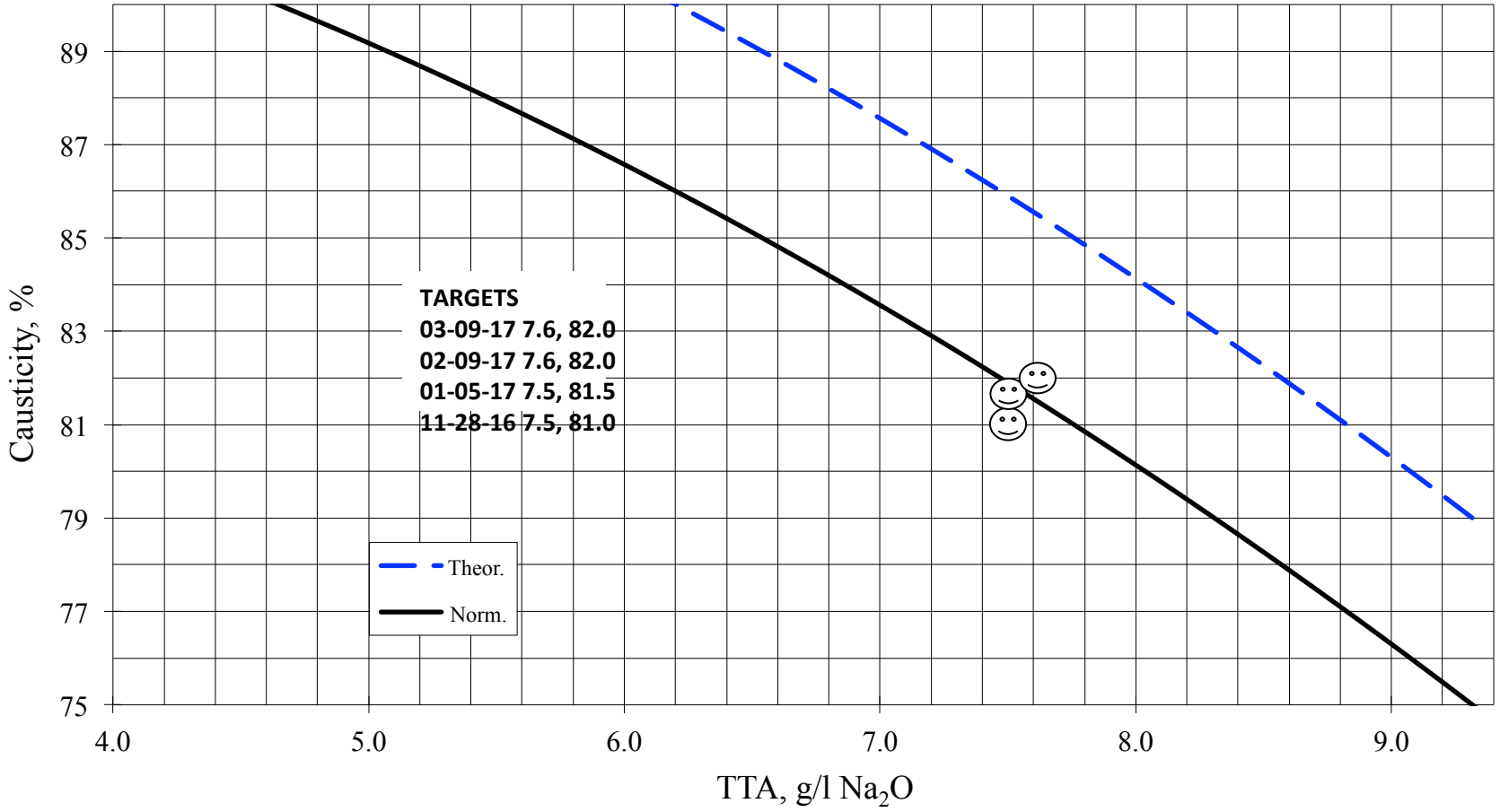
Liquor cycle – Once we've freed the lignin and washed it out of the pulp, we want to recover both the lignin and the cooking chemicals. We'll make steam from the lignin and convert the inactive chemicals back to an active form for more cooking.

Recovery boiler - converts sodium and sulfur compounds to active sodium sulfide ***(Na2S)*** for cooking more wood

Caustic Plant - clarifies and then mixes green liquor from the recovery boilers with lime to convert sodium carbonate (Na2CO3) into active sodium hydroxide ***(NaOH)*** for cooking wood



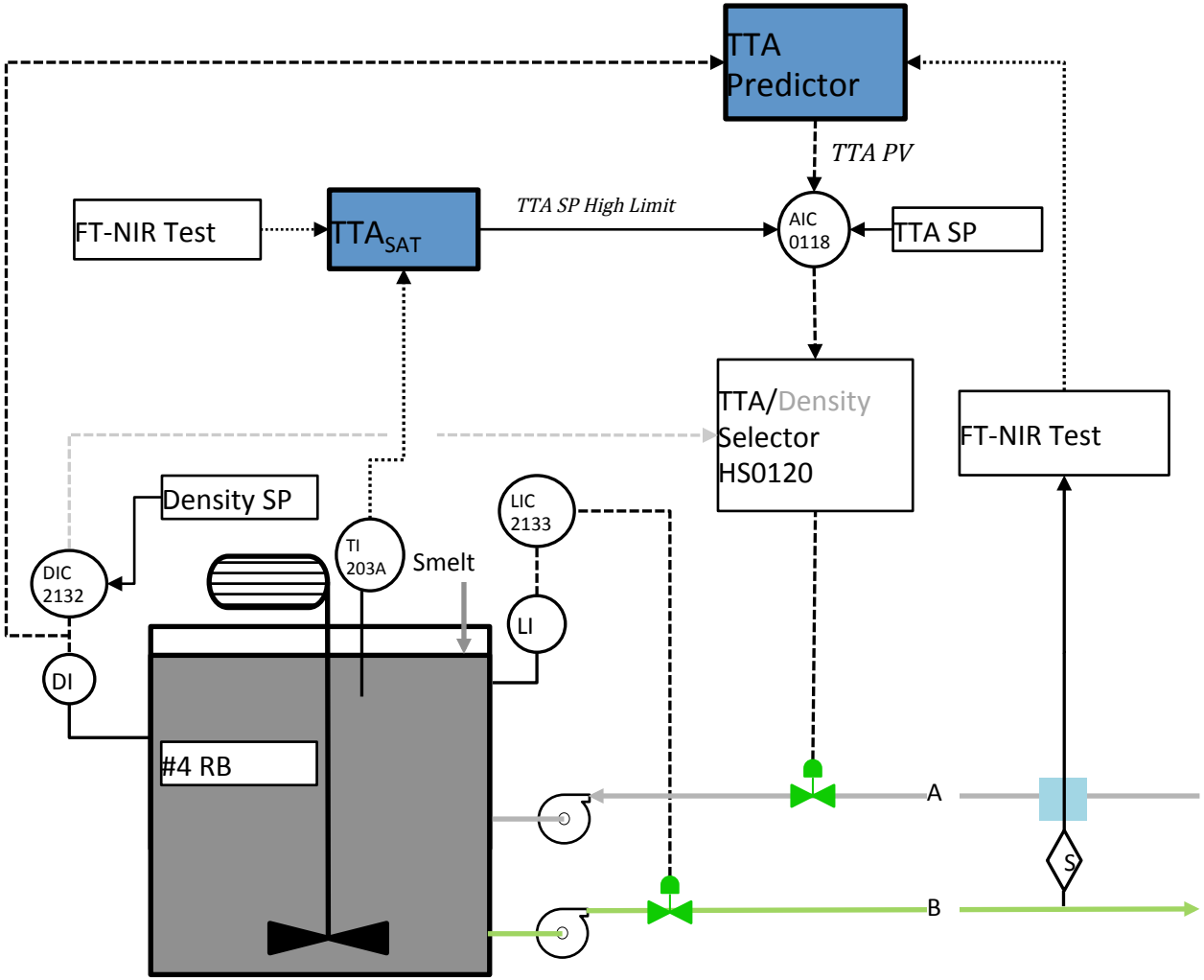
Goodwin Curve



CAUST-X Controls

- Raw Green Liquor TTA control
- Stabilized Green Liquor TTA control
- Slaker temperature control
- CE soft-sensor
- Lime Quality Estimator
- Purchased or reburnt lime dosage control

CAUST-X Controls: #4 RGL TTA control



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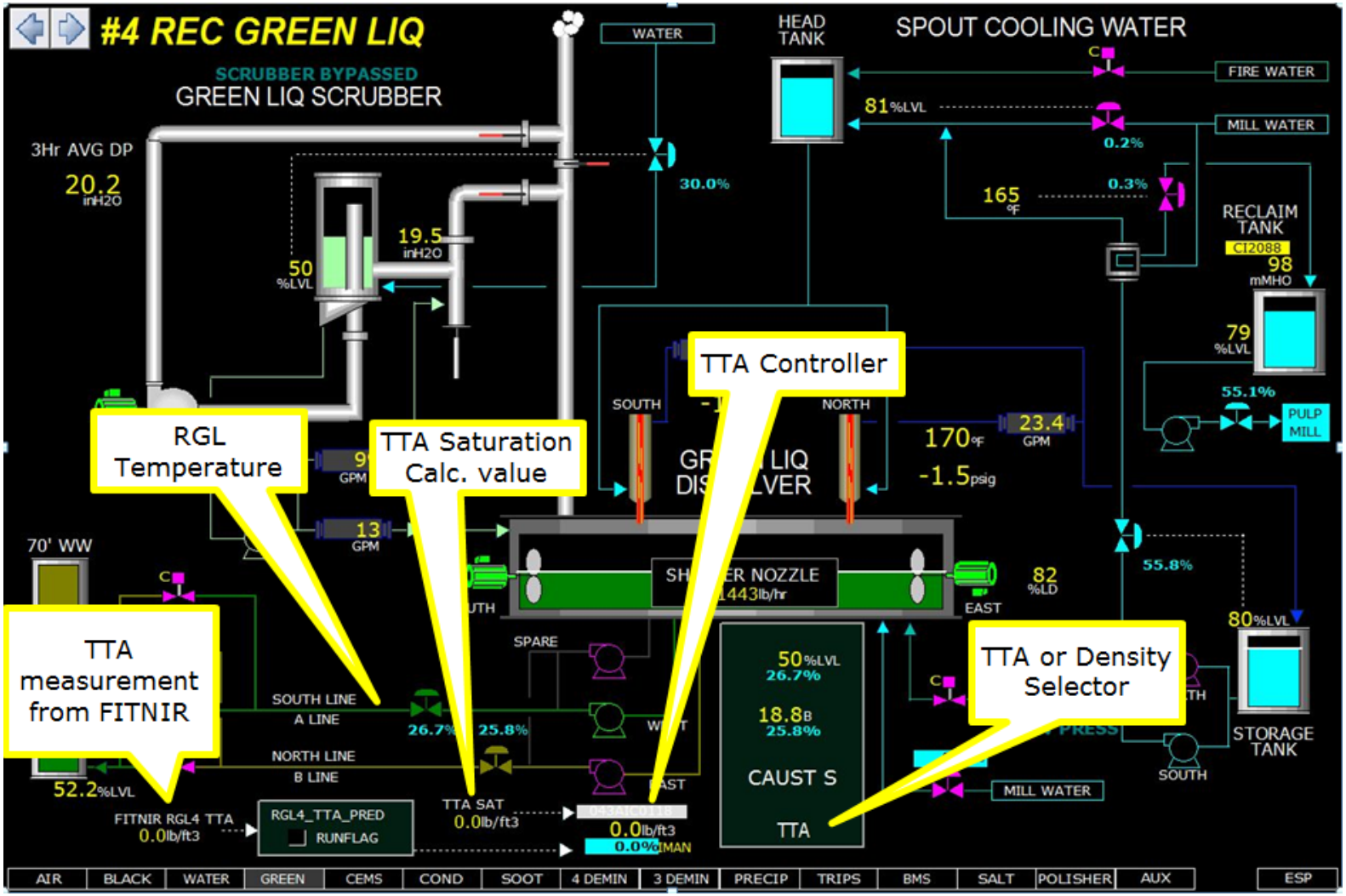
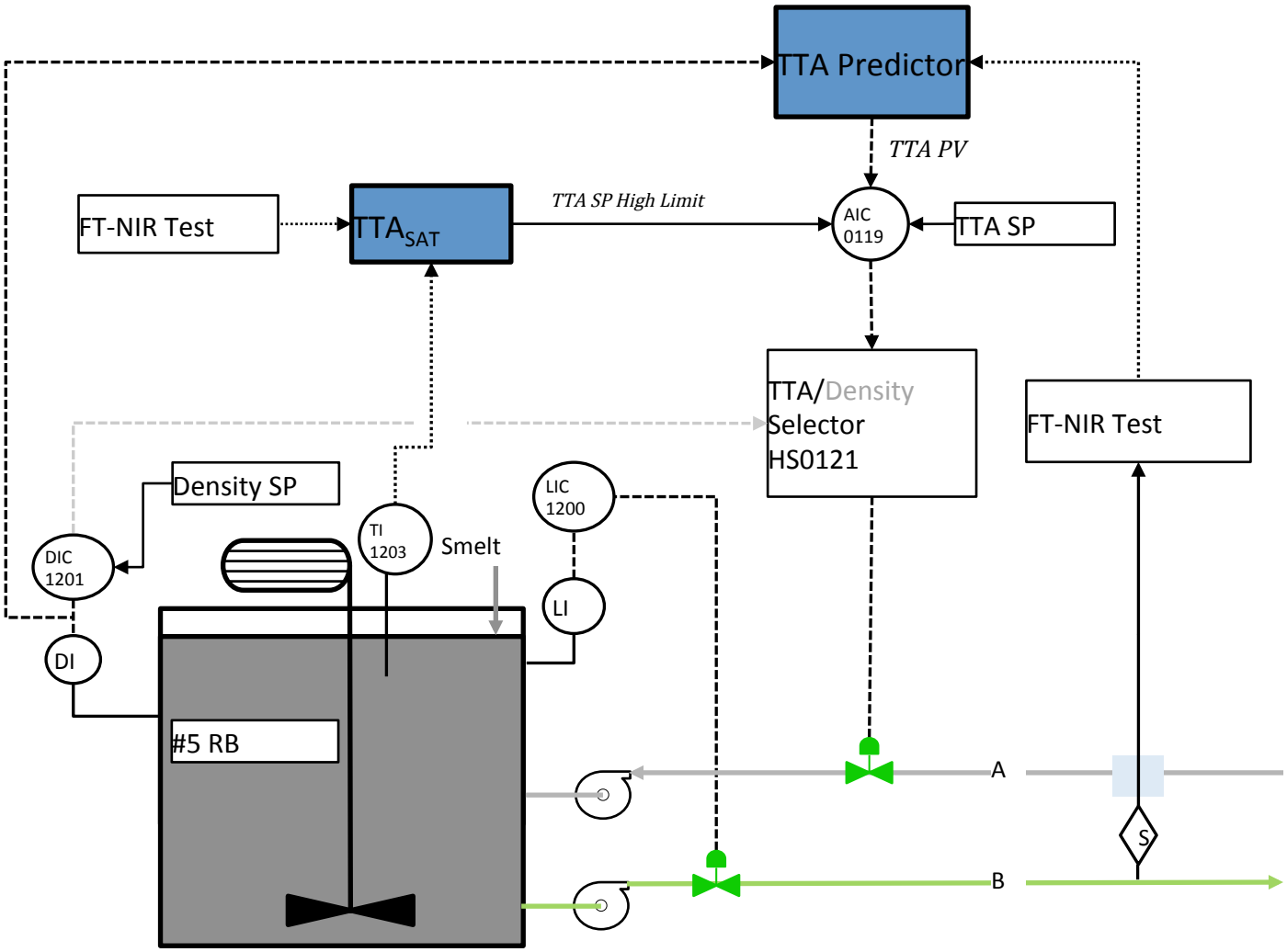


CAUST-X Controls: #5 RGL TTA control



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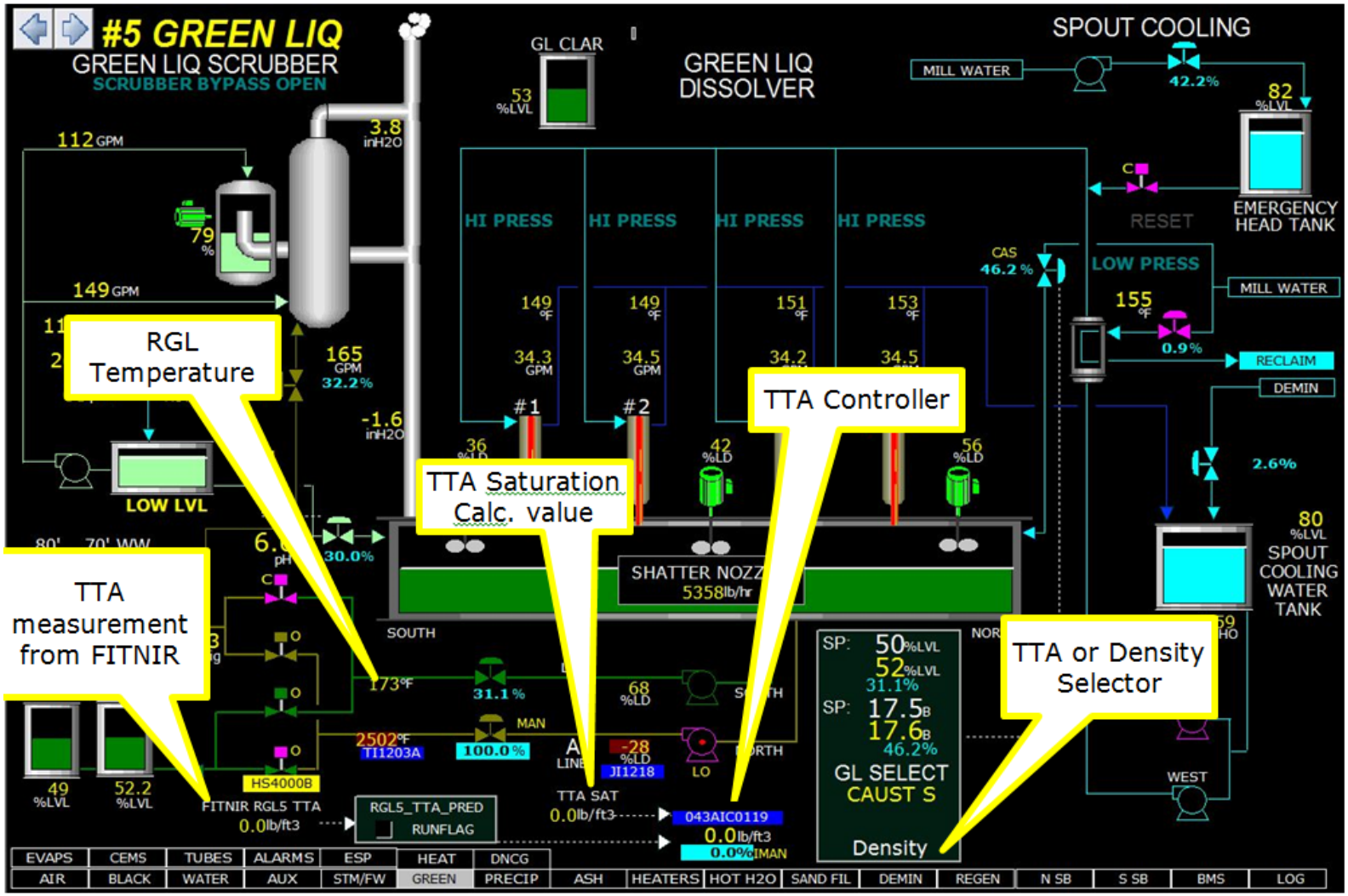
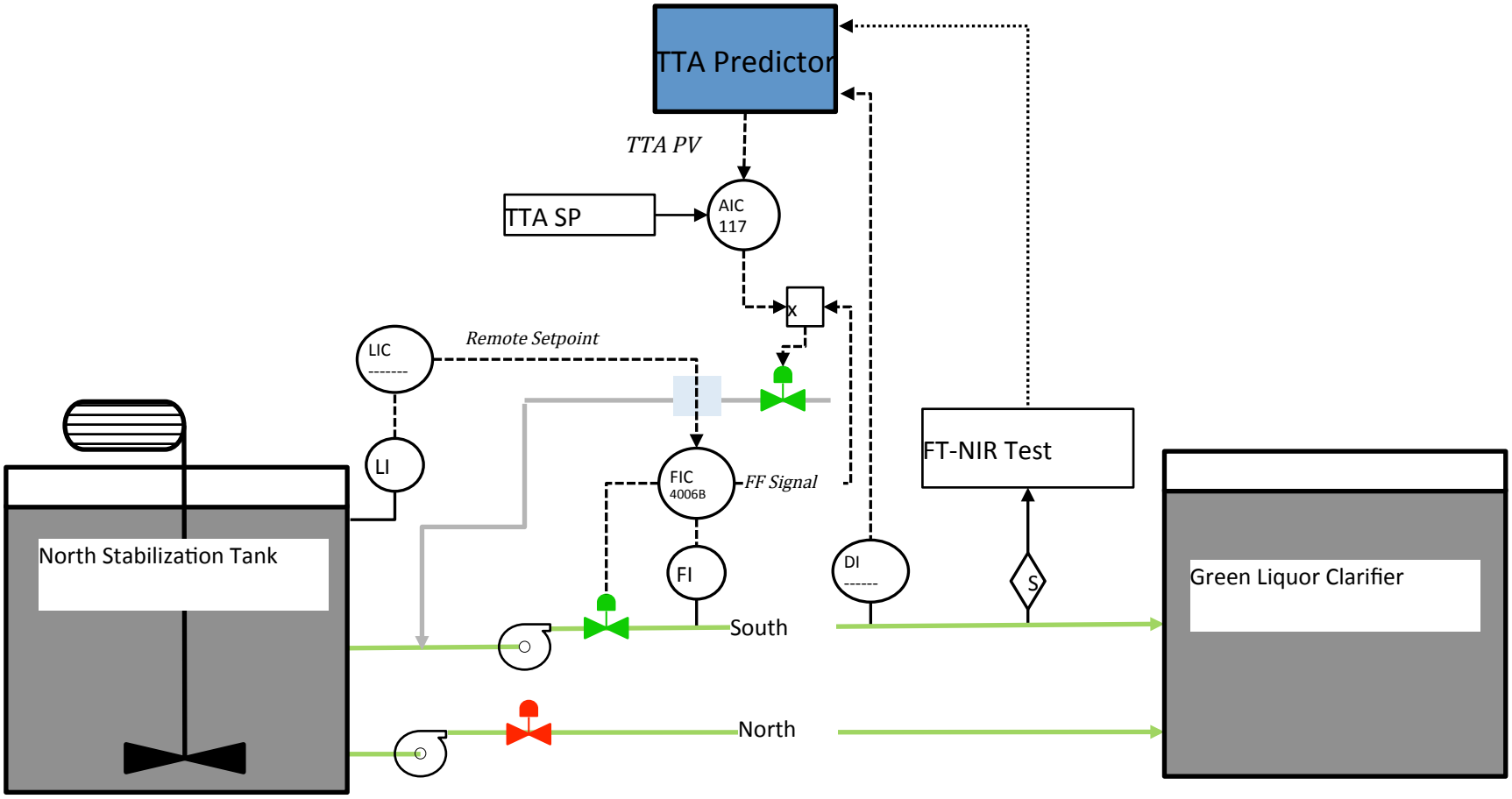


CAUST-X Controls: Stab. GL TTA control



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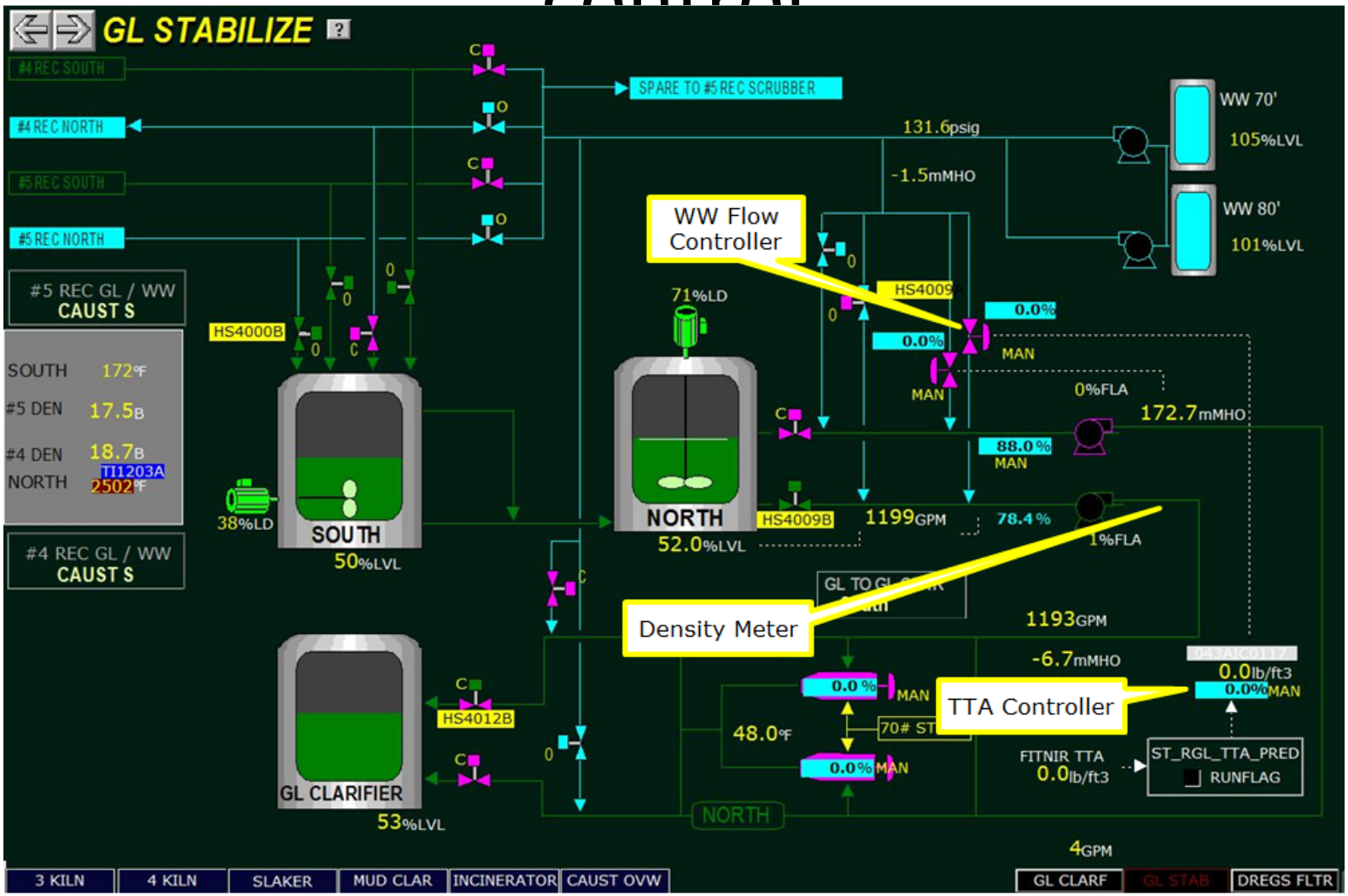
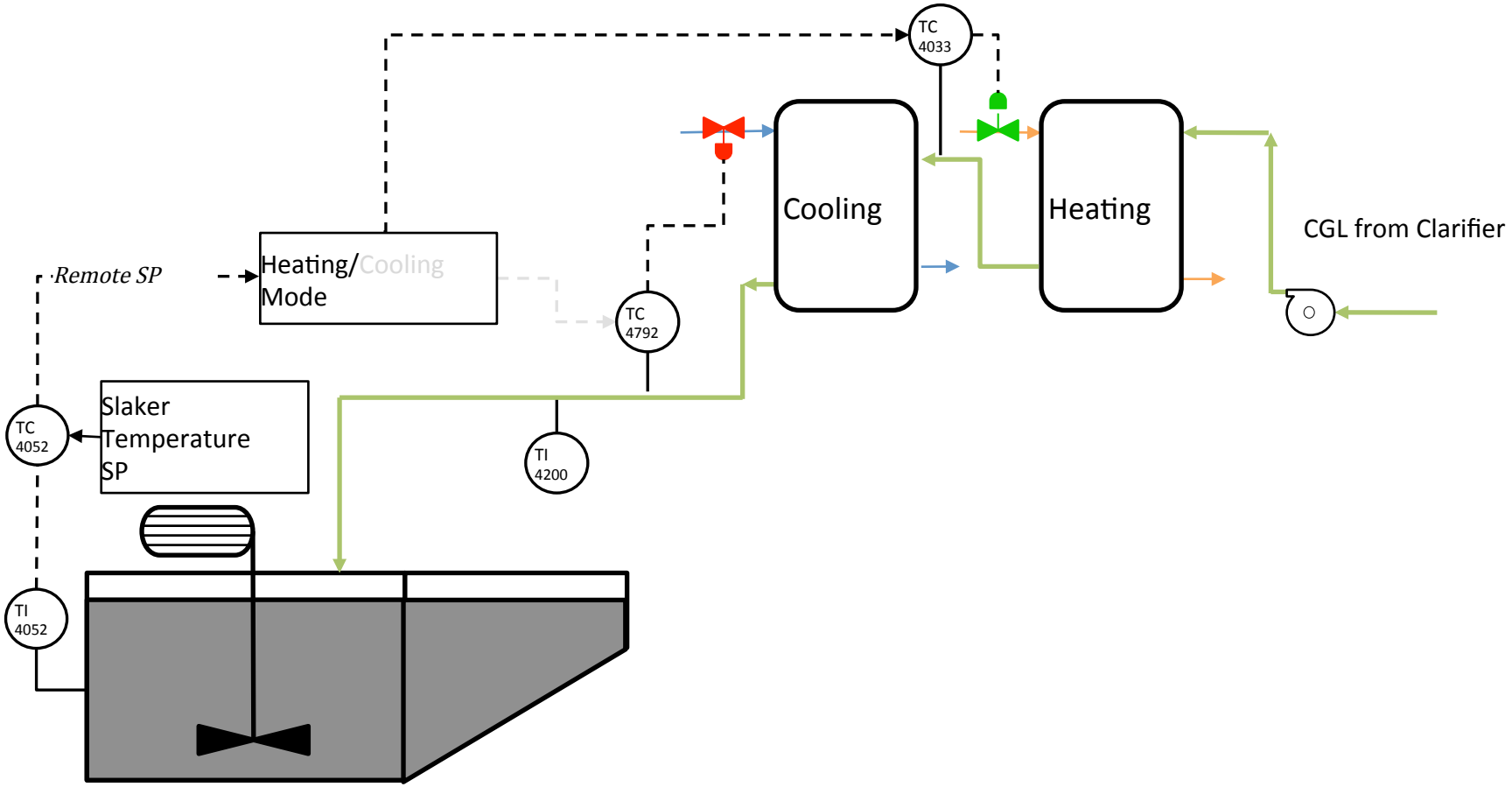


CAUST-X Controls: Slaker temperature



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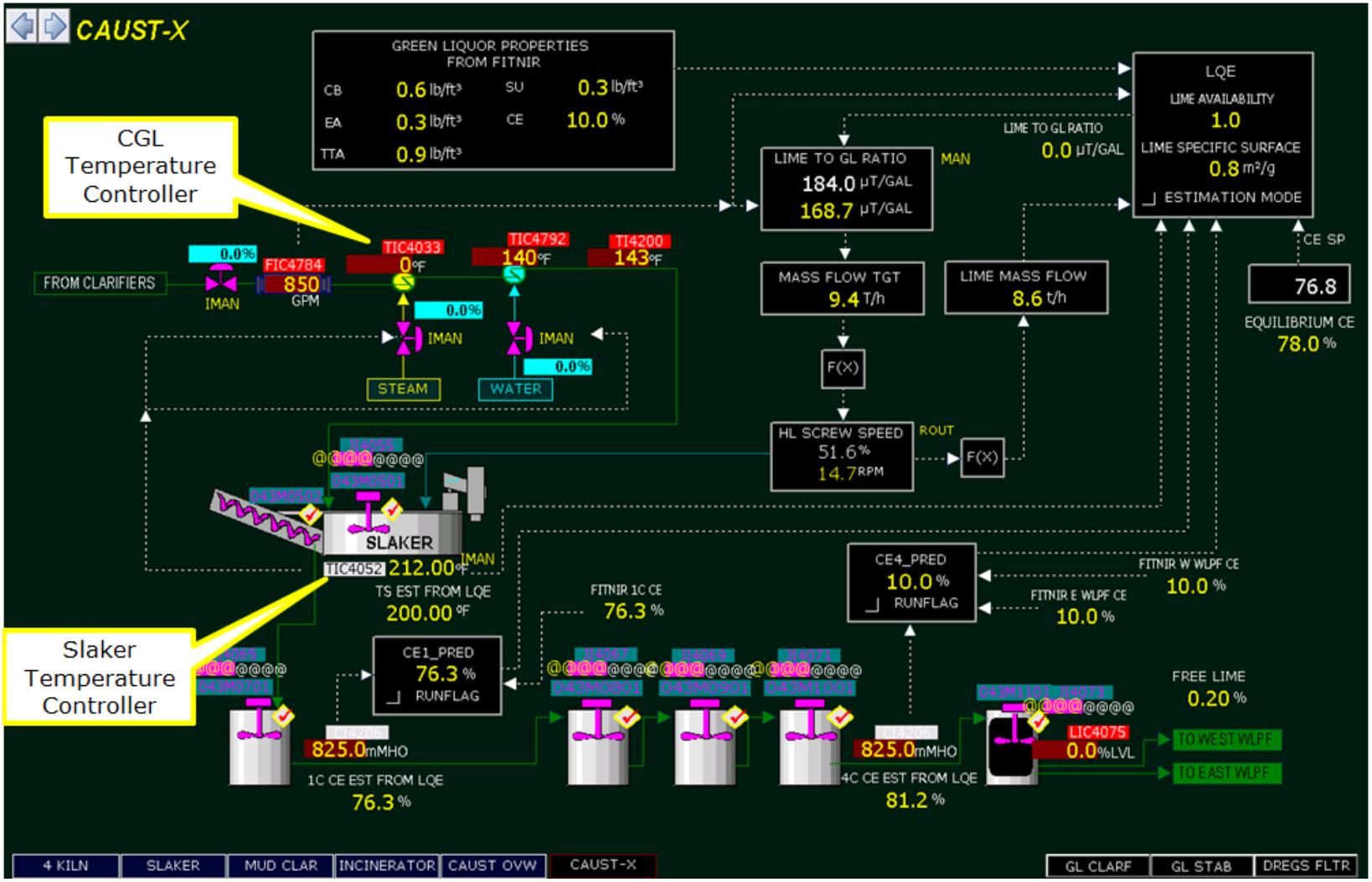
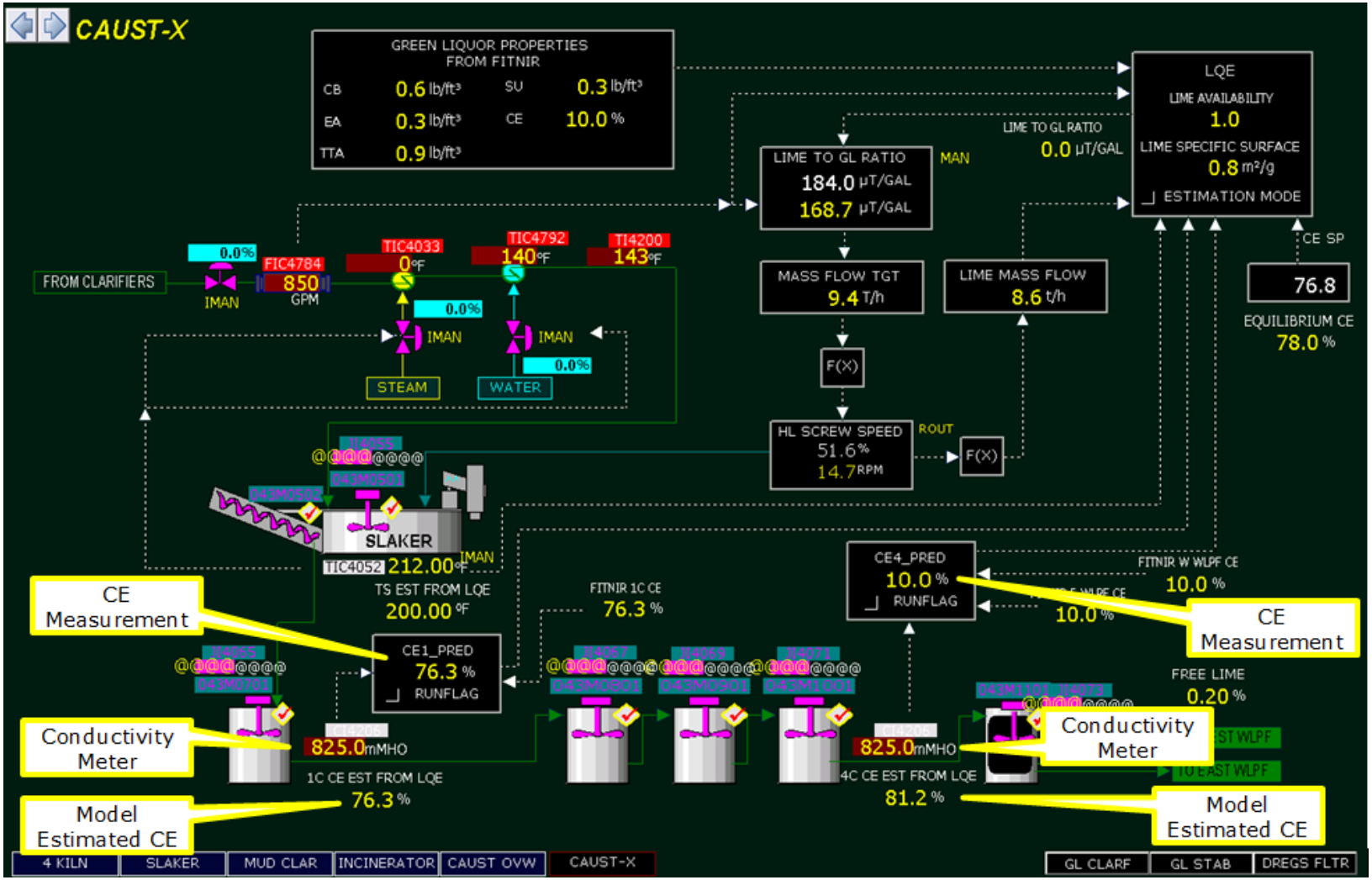
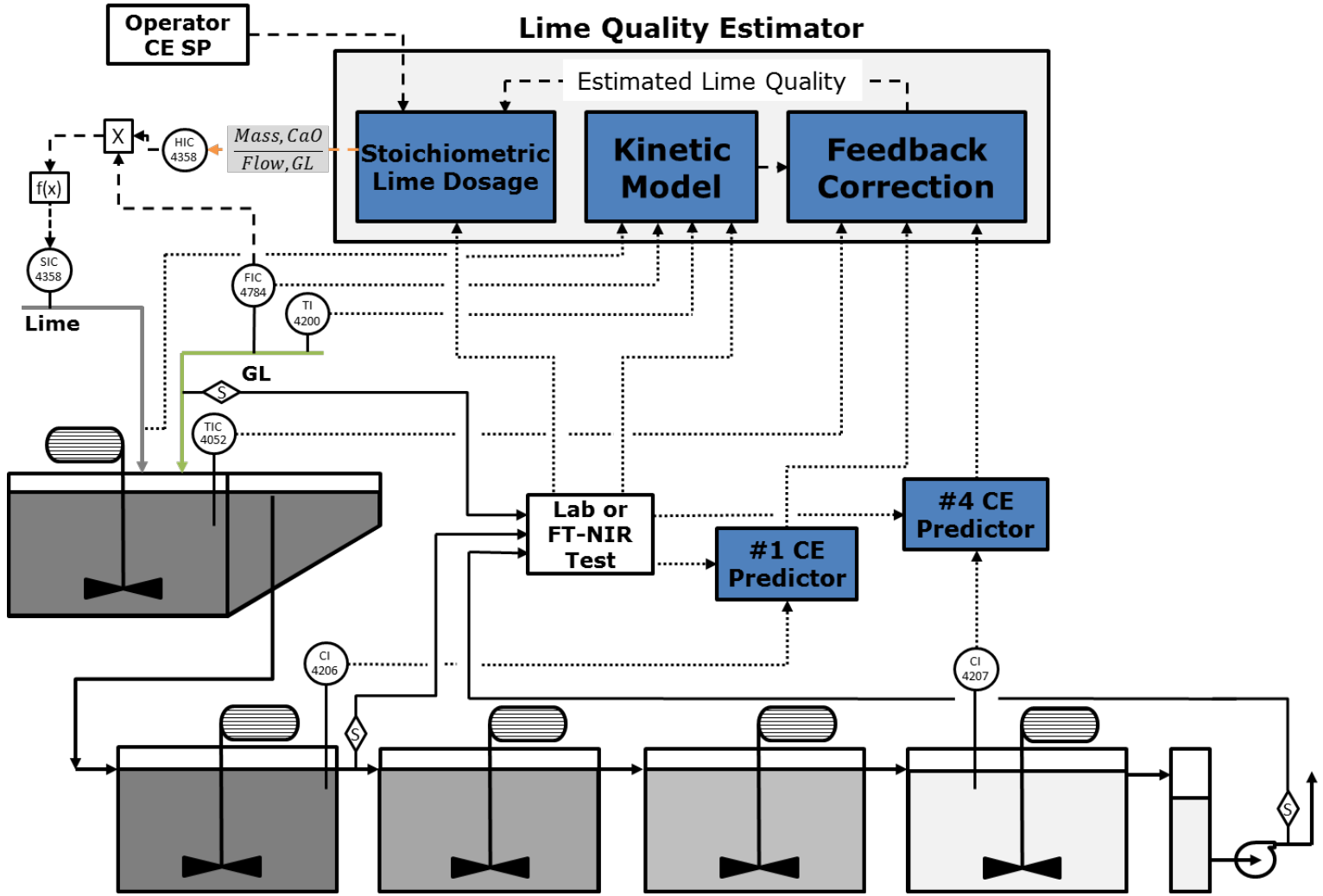


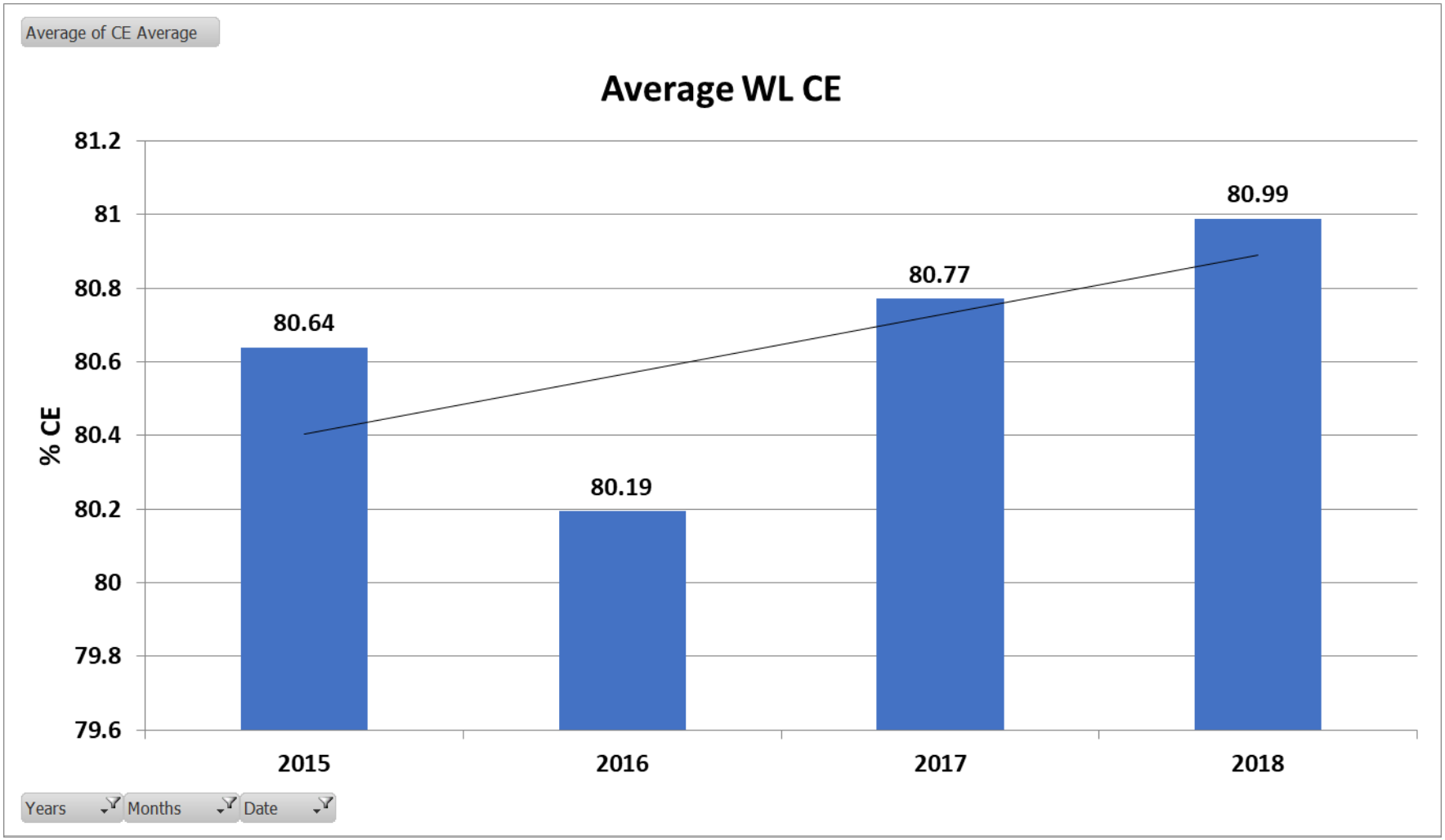
CAUST-X Controls: CE Predictors



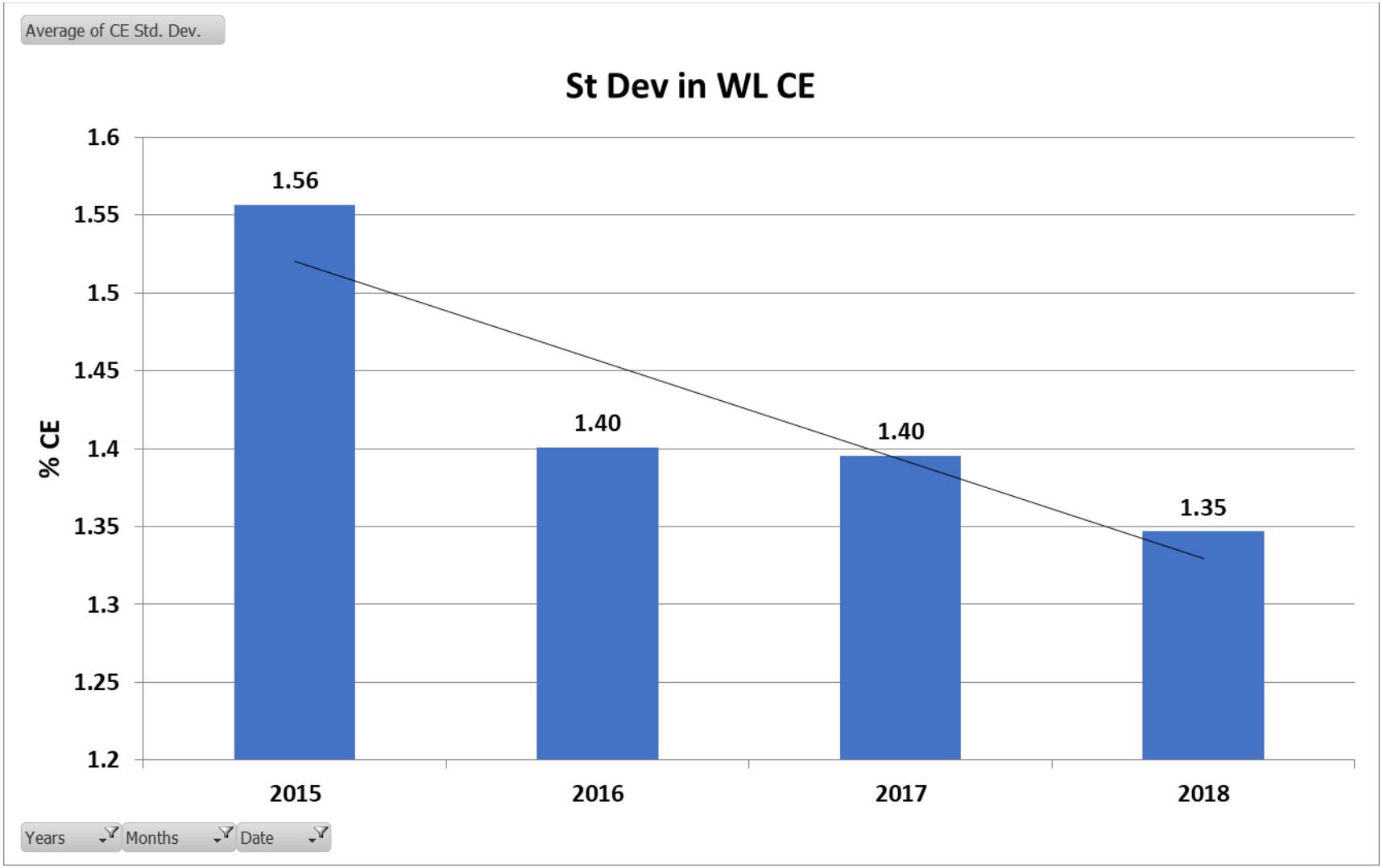
CAUST-X Controls: Lime Quality Estimator



Achievements



Achievements



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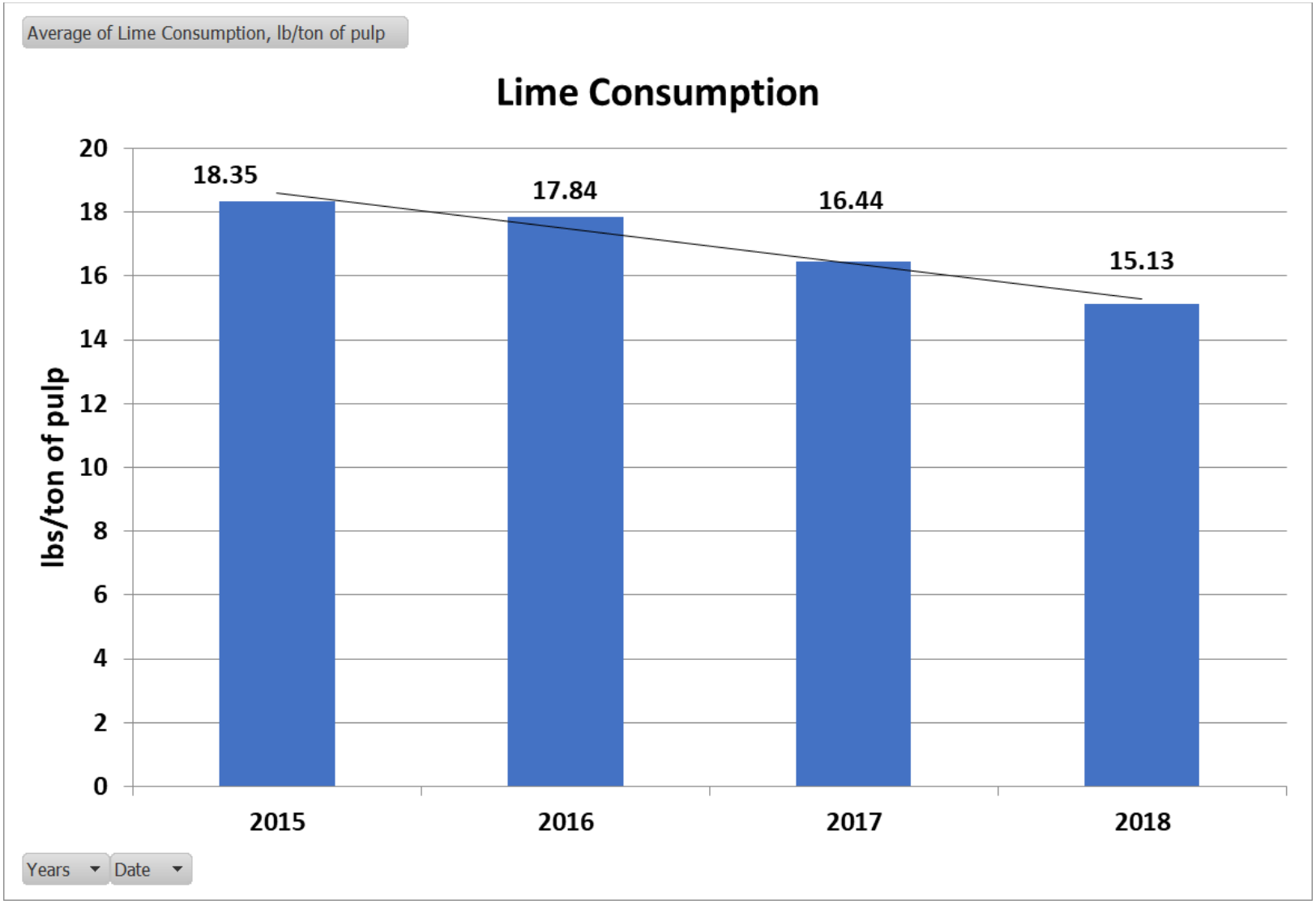

Conclusions

- Improved control
  - Higher causticizing efficiency – less deadload
  - More consistent white liquor strength
  - Purchased lime cost savings