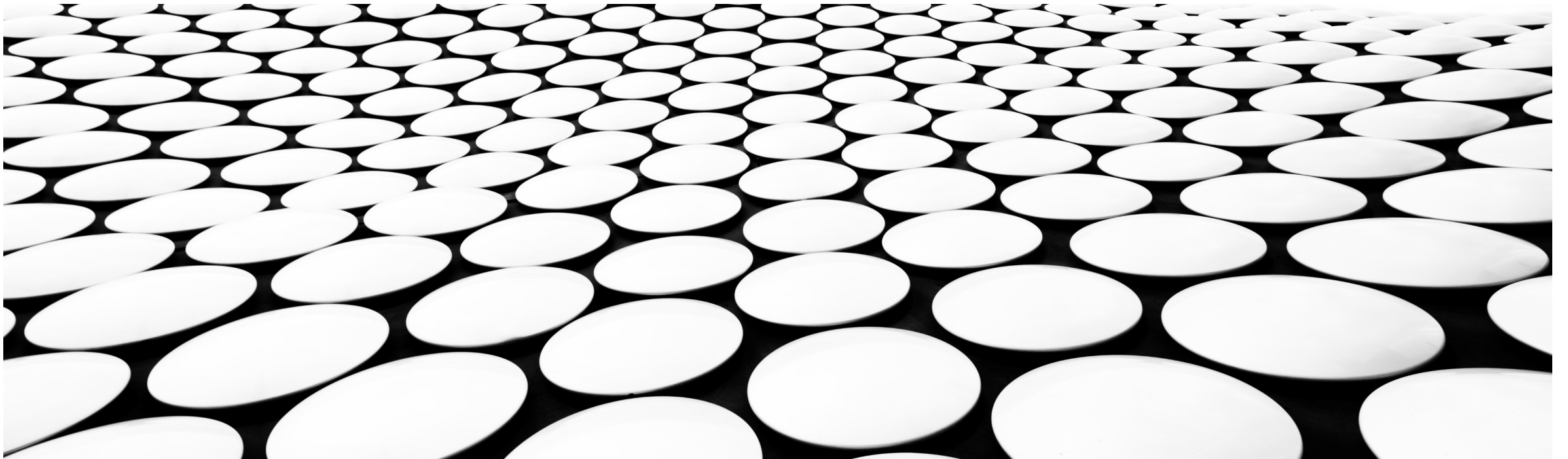

ON-LINE ANALYSIS AND CONTROL OF SHREDDED ALUMINUM

USING GAMMA-TECH CB-RM ANALYZER



Value of The Analyzer in The Aluminum Industry

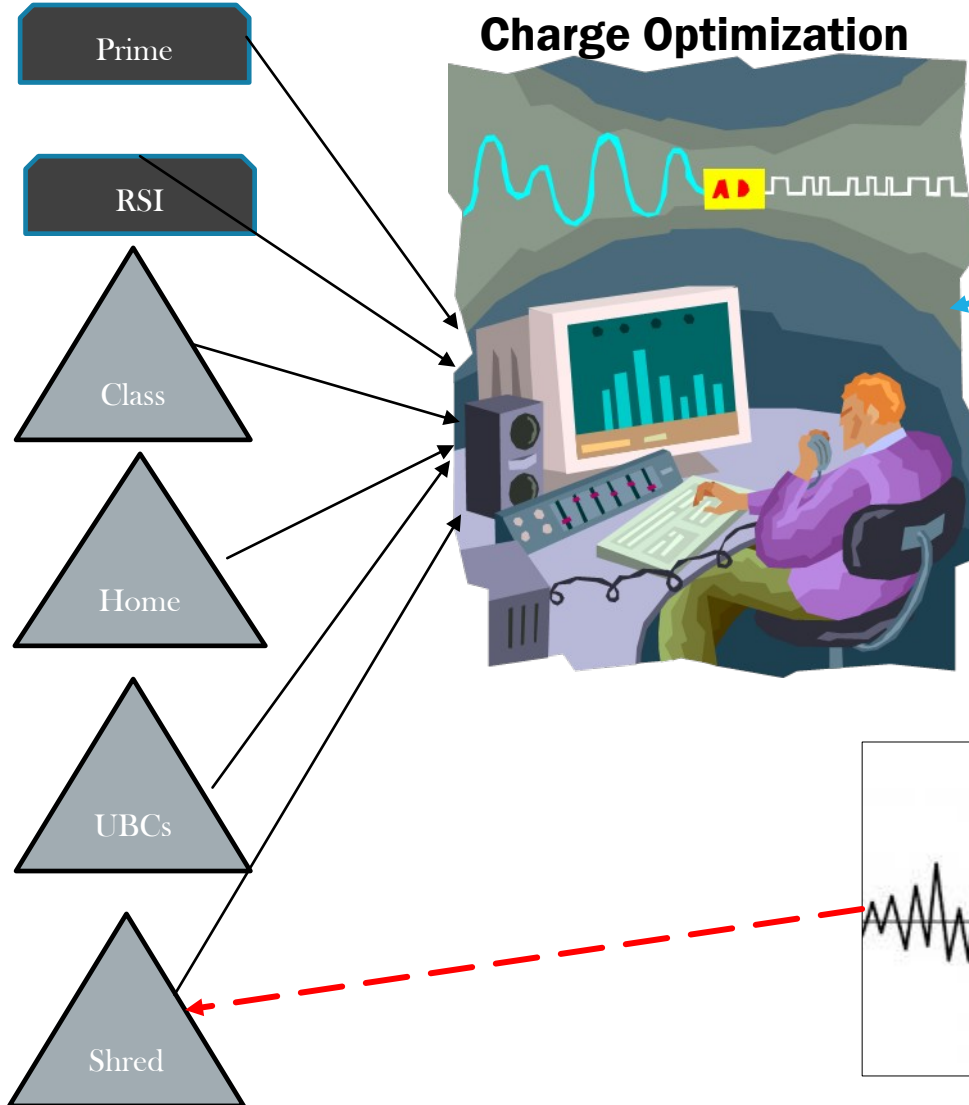


The Value

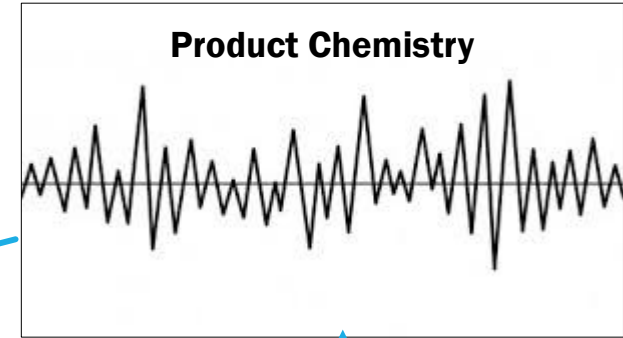
- The value of knowing what we are buying & melting – removing the hidden costs
- The value as process control instrument to provide means to change the scrap product

The Value of Knowing

Removing the unknown



Known Analysis



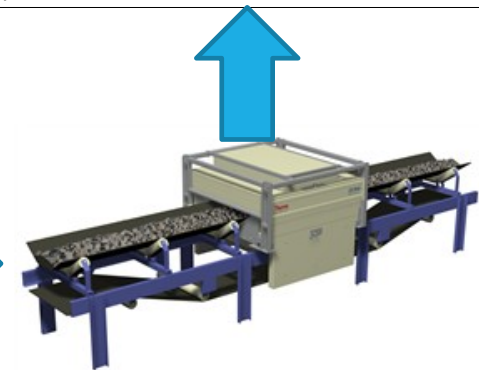
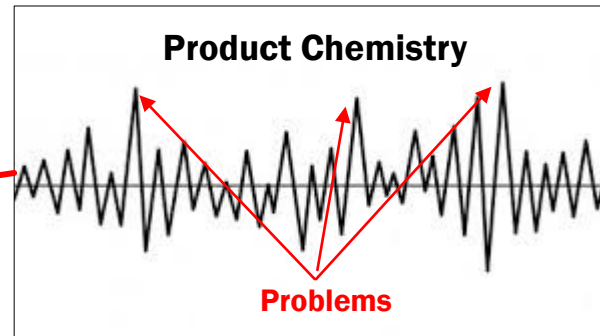
2011-Jul-26 09:41:31.19
Historical mound analysis

Name: 6-25-11 Shredded Al Product
Tons 21.59
TPH 22.15
kg/m 94.14
Al 97.38
Si 0.38
Fe 0.74
Cu 0.35
Ni 0.04
Cr 0.07
Mn 0.53
Zn 0.61
Mg 0.00
Ti 0.18

Gamma-Tech

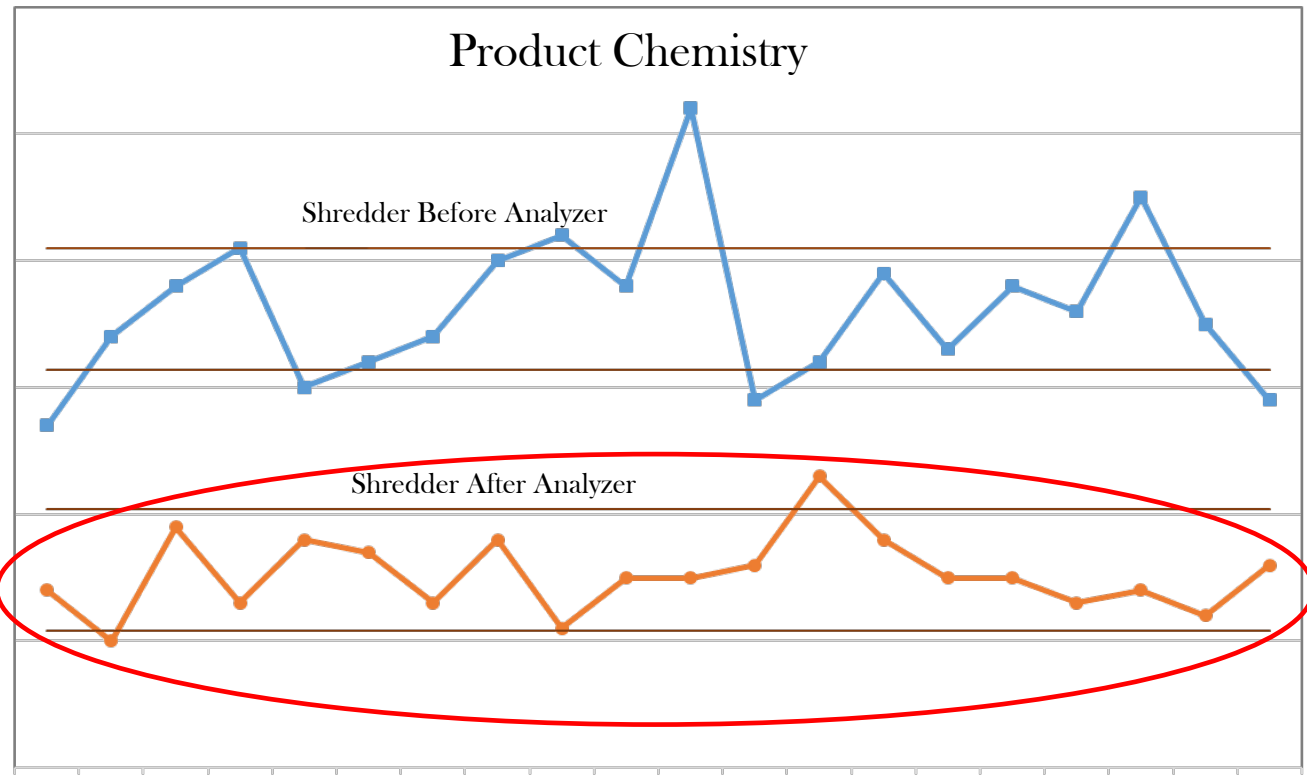
Gamma-Shred
Aluminum Analysis

Hidden Variability



The Value of Improved Process Control

Changing The Scrap Product

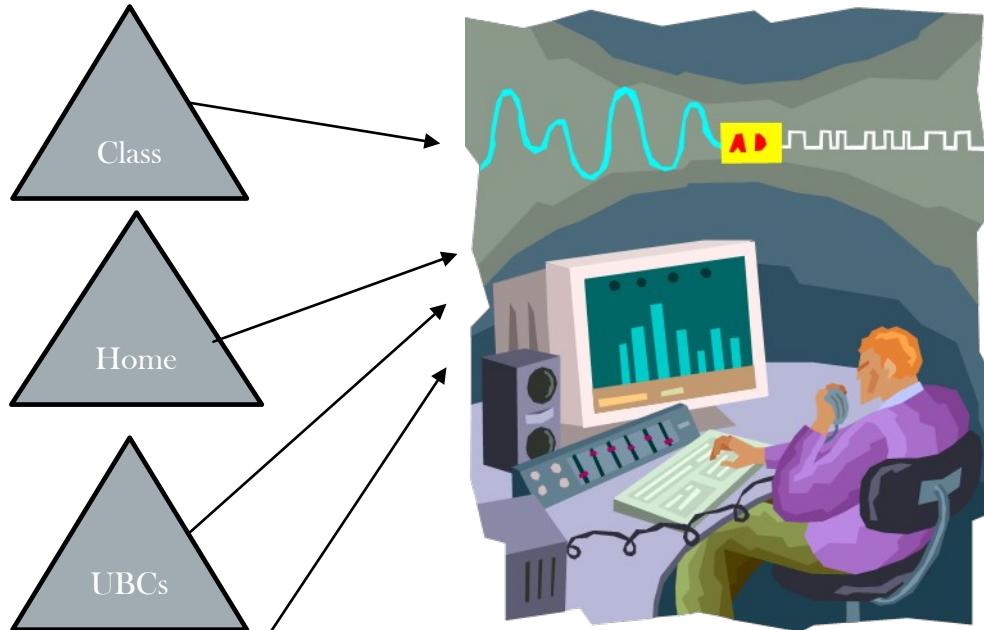


Charge Optimization

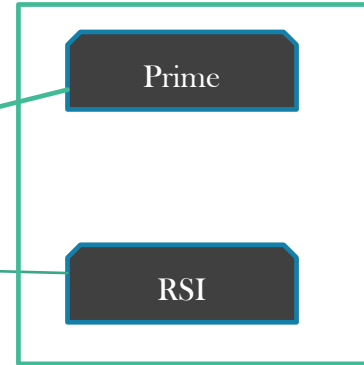


The Value of Analyzed Shredded

Charge Optimization

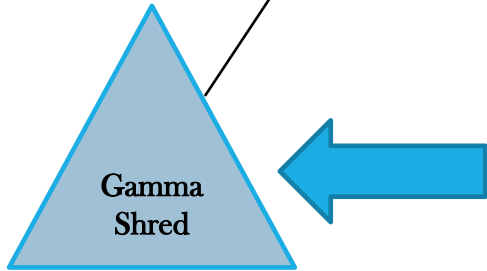


Diluents




The Value - Minimize Diluents

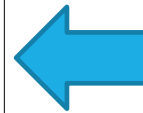
- Lower Raw Material Cost
- Environmental Impact - Lower CO₂
- Increase Productivity



2011-Jul-26 09:41:31.19 Historical mound analysis
Name: 6-25-11 Shredded Al Product
Tons 21.59
TPH 22.15
kg/m 94.14
Al 97.38
Si 0.38
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Ni 0.04
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Mg 0.00
Ti 0.18



Gamma-Shred
Aluminum Analysis



Analyzer Installed where Scrap is Processed



ANALYZER PERFORMANCE

FOR SELECTED ELEMENTS

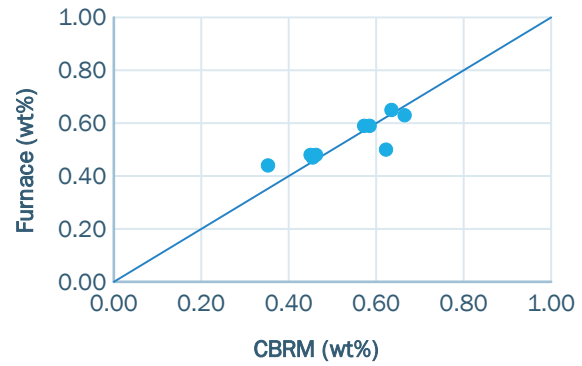
- CB-RM Results vs. Furnace
- 9 - 40,000 lb. loads.
- August 2019 – July 2020

Element	Accuracy†	Range
Si	±0.05%	0.44 - 0.65%
Fe	±0.03%	0.31 - 0.46%
Cu	±0.02%	0.09 - 0.23%
Cr	±0.01%	0.02 - 0.05%
Mn	±0.01%	0.23 - 0.43%
Zn	±0.07%	0.10 - 0.27%

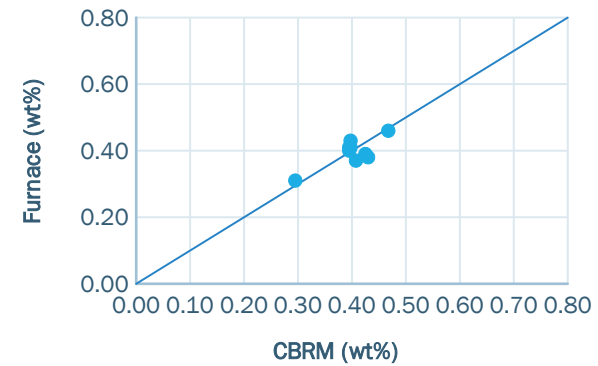
† RMSD, 1-hour sample period

ACCURACY PLOTS

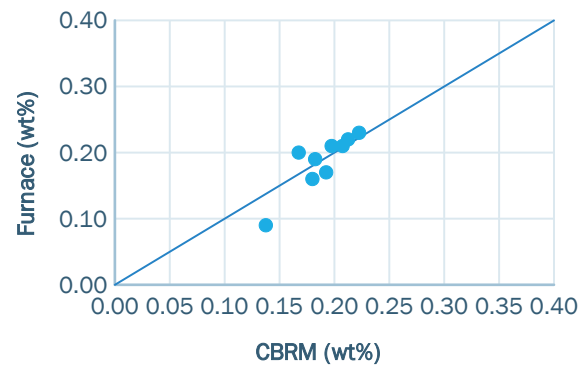
Si



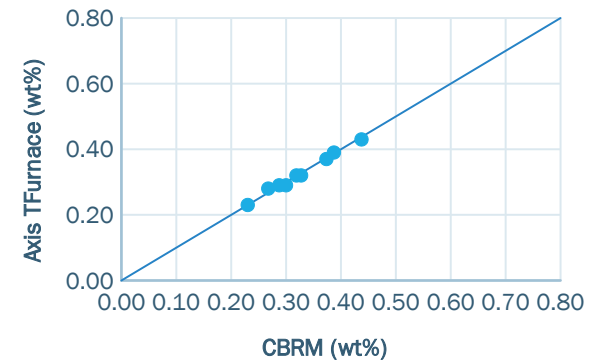
Fe



Cu



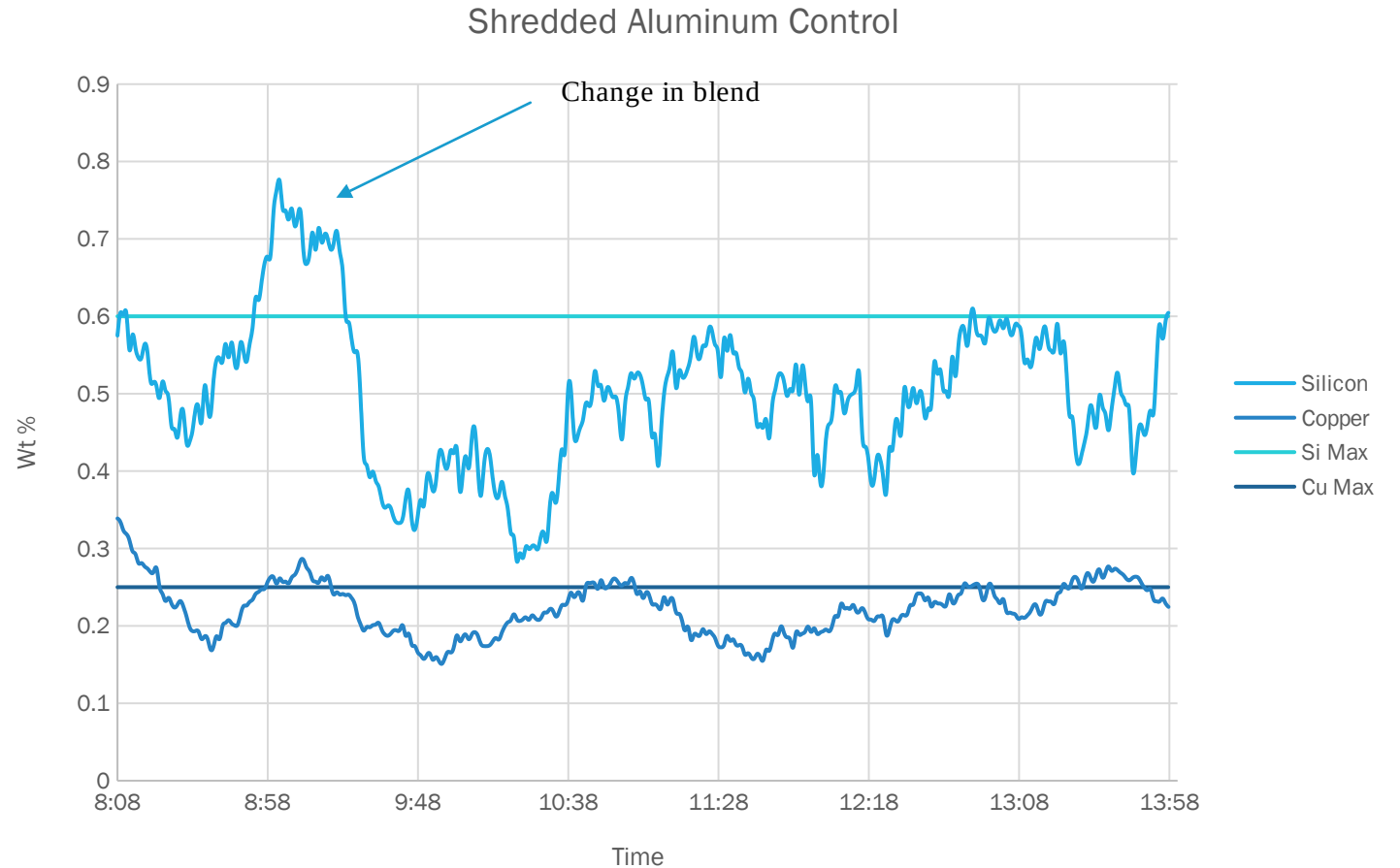
Mn



PRODUCTION

- Daily production run
- Controlled for Si and Cu limits
- Analysis allows for control
- Handling and shipping mixes material
- Final chemistry meets spec

Lbs. 368,614
Tph 28
lbs./ft 46.49
Al 97.96
Si 0.51
Fe 0.37
Cu 0.23
Cr 0.03
Ni 0.01
Mn 0.30
Zn 0.13
Mg 0.31
Ti 0.03



VALUE

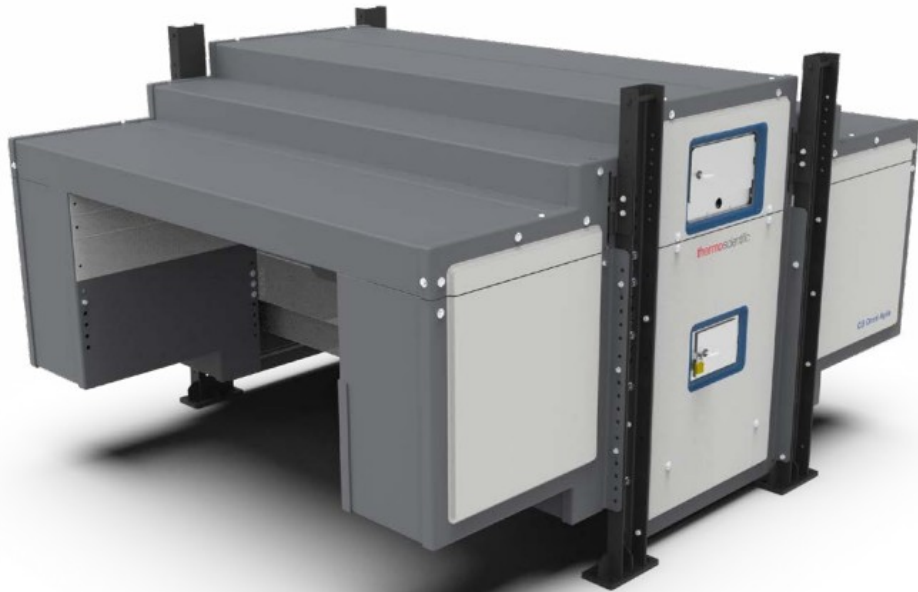
For the Shred Consumer:

- Furnace has experienced no out of spec shipments in more than 1 year.
- More than 100 million pounds of analyzed shred has been melted.
- Allows for increase in shred usage and decrease of prime grades and RSI.
- Shredders ability to analyze and blend increases availability of shred.

For the Shred Processor:

- Shredder reduces/eliminates downgrades.
- Can blend from more sources to increase to production.
- Improves quality
- Improved quality translates to increase in demand (in this case shredder has increased shipments by 23%).

WHERE WE ARE GOING



CB Omni Agile
Online Elemental Analyzer

Features:

- Isotope OR Neutron Generator for excitation
- Modular design
- Variable tunnel height based on process
- State-of-the-art electronics

PROCESS AND RAW MATERIALS OPTIMIZATION

