



ALMATIS

PREMIUM ALUMINA



Almatris Bauxite – Transformation Using Kata

March 29, 2017

Think alumina, think Almatris.

Almatis Bauxite History

- Almatis Bauxite Produces 2 primary product lines: Calcines and Tabular
- Alcoa opened the Bauxite plant in 1952 and commissioned the Calcines kilns in 1953. In 1964, the Tabular converters were commissioned.
- Alcoa Divested this site to Almatis in 2004.
- There are approximately 142 employees at this site (but in 1960s, there were almost 1700!)



Almatis Inc. Global Operations

- More Competition than ever before due to foreign suppliers
- Customers are demanding higher quality and lower prices
- Global Almatis recognized a risk of having a single supplier for critical feedstock materials and purchased a refinery in North America. Purchase improves risk condition, but increases cost of goods sold
- In January 2016, a critical supplier with more than 50 years history with Almatis stopped supplying feedstock, causing Almatis to replace it with the feedstock from the new refinery.
 - Burnside Feedstock requires more processing to create quality finished goods, which causes costs to go up

Almatis Inc. Arkansas Operations

- Almatis Inc. has committed to ABS (Almatis Business System) for over 20 years
 - **No personnel at this location had current training on lean manufacturing** concepts in order to grow the commitment locally to supporting a practical implementation of ABS
- Almatis Inc. Arkansas Operations is requested to participate in **cost savings of nearly 7% in 2016 and > 20% in 2017** in order to reduce costs
- **No sustainable means to eliminate waste** through planned lean behaviors is identified
- The “**soft skills**” to continuously improve, to eliminate waste, to increase employee ownership, problem solve in a systematic way were identified as **lacking at Almatis**



Almatis Inc. Arkansas Operations

- To address need to improve ABS implementation Almatis sought external support from AEDC
- One key obstacle at Almatis is **no ability to move equipment** or change the flow of the process because it is a thermal continuous and some **equipment is old**
- AEDC Services Provided to Fill the Necessary Gaps
 - Management coaching to set the plant direction (identify challenge statement to set a shared vision at start)
 - Class room & hands on training – 12 days
 - 2 Almatis projects identified to practice lean skills
 - Effective 40 hour week
 - Calcines Railcar Payload Maximization



June 7, 2016 – Principles of Lean Manufacturing with Introduction to Kata Session

- Participants include plant manager, production department managers, maintenance manager, quality manager, EHS manager, 43% of the supervisors and 4 operators



- Participant Learnings:
 - The hands on session created a **large amount of engagement** with the entire team
 - Learned that we already know a lot more than we realized!
 - Learned **learning happens at all levels**
 - **Listening & being open to other's ideas** is ESSENTIAL

Transformation Training

June 16, 2016 – Leading Change



All the teams broken into a rounded group of personality types working to put together 15 piece puzzles in 15 seconds using Kata continuous improvement techniques



Learnings From Leading Change Session

- Communication – **Everything goes smoother** when you have it!
- We get better when we **work together** (team work)
- **Setting a vision ahead of time** works!
- **Personality Types** are different at all levels of the organization!
Must consider that in communication
- The process works best when there is **input from all the personality types**
- We must **trust** each other
- **Mindset / attitude matters!** If you think you will fail, you will
- We must **adapt and work together and share** to be most successful.
- **Recognize people's efforts!** If people are recognized for doing good they will want to do it more.

July 13-14, 2016 – Value Stream Mapping

Hands On Session to Create Current Value Stream Map

- Each Lean Transformation Project broke into teams to develop the current map, identify the metrics to measure, and the future map

Take away assignment to start collecting data for the projects

- Railcar Payload Maximization – Project Engineer lead
- Effective 40 Hour Week – Maintenance Manager lead

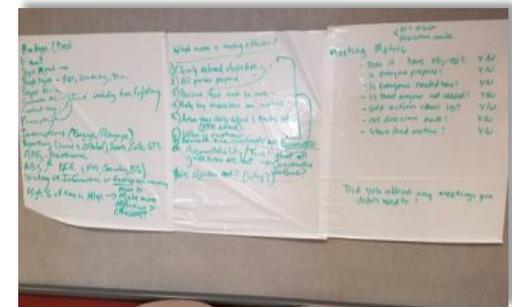
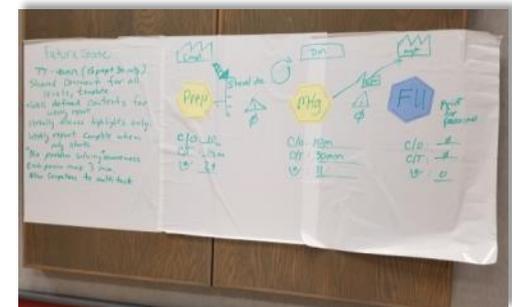
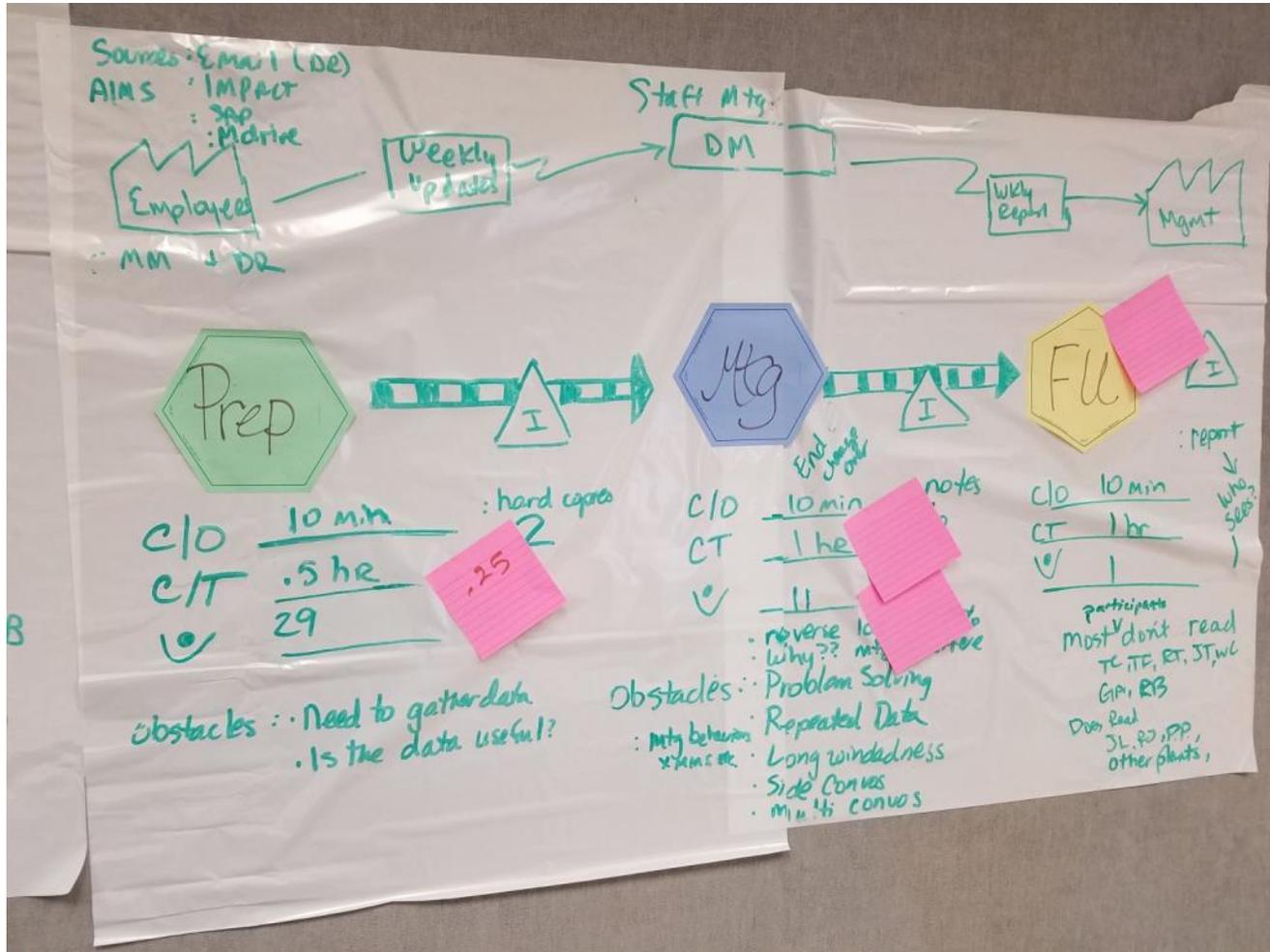
At Almatis, Kata is used both for projects and for managing continuous improvement!

Transformation Training

Effective 40 Hour Week Project

Current State Map

Right Top: Class meeting, Middle: Future State Map, Bottom: Brainstorming



Learnings From Value Stream Mapping Session

- VSM's **visual nature makes it easier to understand**
- **Process is more understandable** when written down and it is easier to observe the problems in the process
- There are **lots of opportunities for improvement**
- **VSM lets you see the small issues** to solve bigger problems
- Learned **critical thinking** for flow charting
- Management / office people get to **see what operators do** “walk a day in my shoes”
- This session made us start to **think differently** about the process
- It is much more difficult to do VSM on continuous system than on a widget type line so we have to think outside the box
- We had to **listen to each other** to get it right. It takes the whole team to solve these problems

Transformation Training

August 23-25, 2016 – Kata

Starting To Put The System Together – Challenge, VSM, Kata to OUR projects

FOCUS ALMATIS BENTON

CHALLENGE - 7/1 - AUG 2017
 - \$50.00/MT ~~Q INVOLUNTARY COST~~
 FROM 55 \$/MT WHILE IMPROVING LACN
 PAVING WORK AREA.

CURRENT RPT: RMD

76 TOTAL COST = 100%	90
76 RECEIVING COST	7x%
76 CALCINING	8x%
76 ABULAR	2x%
76 MAIN	2x10
76 LAIS	2x20
76 SHIPPING COST	2x2 29.4

Next Step:

1. Rail car payload proj
2. Mtg effectiveness Proj.

OBSTACLES DS.

- 1) STAFF TIME/EFF.
- 2) Communication to larger group is missing
- 3) SHIPPING COST HIGH!
- 4) R/TM COSTS ABOVE AVG.
- 5) FUEL STOCK INV. ALL THAT ABOVE.
- 6) ENERGY COSTS (elec/air) COSTS HIGH

Action Items:

- Complete:
 - ACTION ITEM: Dinesh to establish expectation for when to work on the Kata activities for already decided 8:30am daily [Leaders] - training during shutdowns for production
- Communication:
 - Signs out clock house
 - Communicate challenge
 - TAB/CAL/R/TM Comm. by
 - LED monitors for communication
 - board size/formal papers

8) Rail car fleet is costly
7) Spillage



Focus Process: ARKANSAS OPS TEAM MTGS.

Challenge: [Handwritten text]

Target Condition Achieve by:

- 1. [Handwritten goal]
- 2. [Handwritten goal]

Current Condition:

[Handwritten notes and diagrams]

Obstacle Parking Lot:

- [Handwritten list of obstacles]

Obstacle Parking Lot:

- [Handwritten list of obstacles]

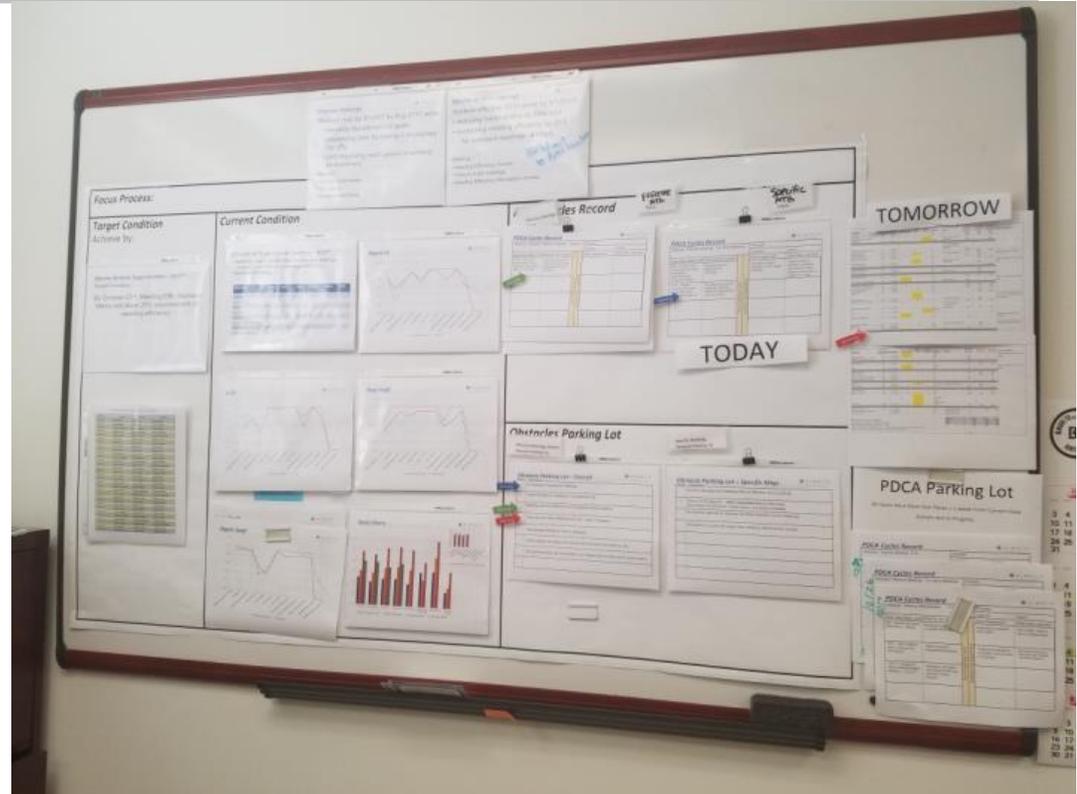
Learnings From Kata Training Session Quotations from the participants

- By making **1 change with \$0 labor cost, we saved \$12,000 per year!**
- Kata is a paradigm shift. We are **learning to be problem solvers.**
- I am encouraged by the amount of **participation by everyone**
- **Now I see how I can make changes and I have ownership in the process.**
- Lots of **savings are immediately obvious**
- **We are here to save our jobs and we now have a system to do that.**

Challenges

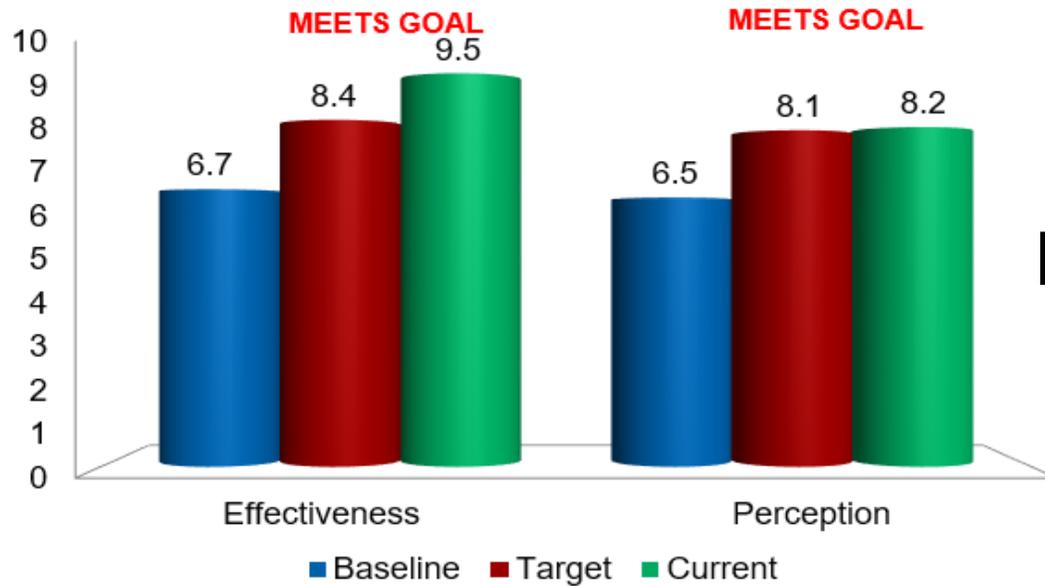
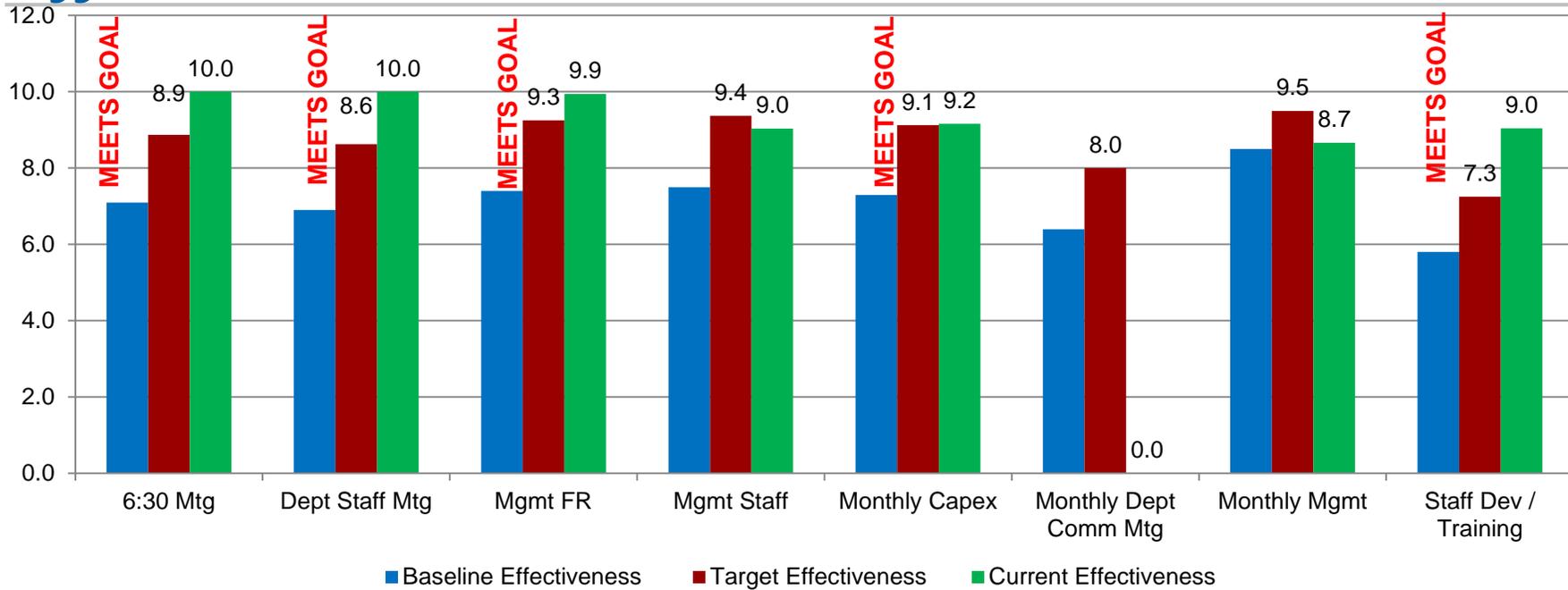
- For only 8 (of over 25) standard meetings, estimated **536 man hours at an approx. cost of \$257,280 per year is spent on meetings**
- No shared definition of an “effective meeting”
- No ability to measure or systematically improve the meetings

Target Condition:
Meeting Time Reduced by 25% and Meeting Efficiency Increased by 25% by 3/1/2017



The story board including the challenge statement, the target and current condition with metrics, the obstacles the project faces and the PDCA cycles in progress

Effective 40 Hour Week Results & Charts



Meeting Effectiveness
Increased by **42%**
Meeting Time Reduced
by **49%**

Calcines Railcar Payload Maximization

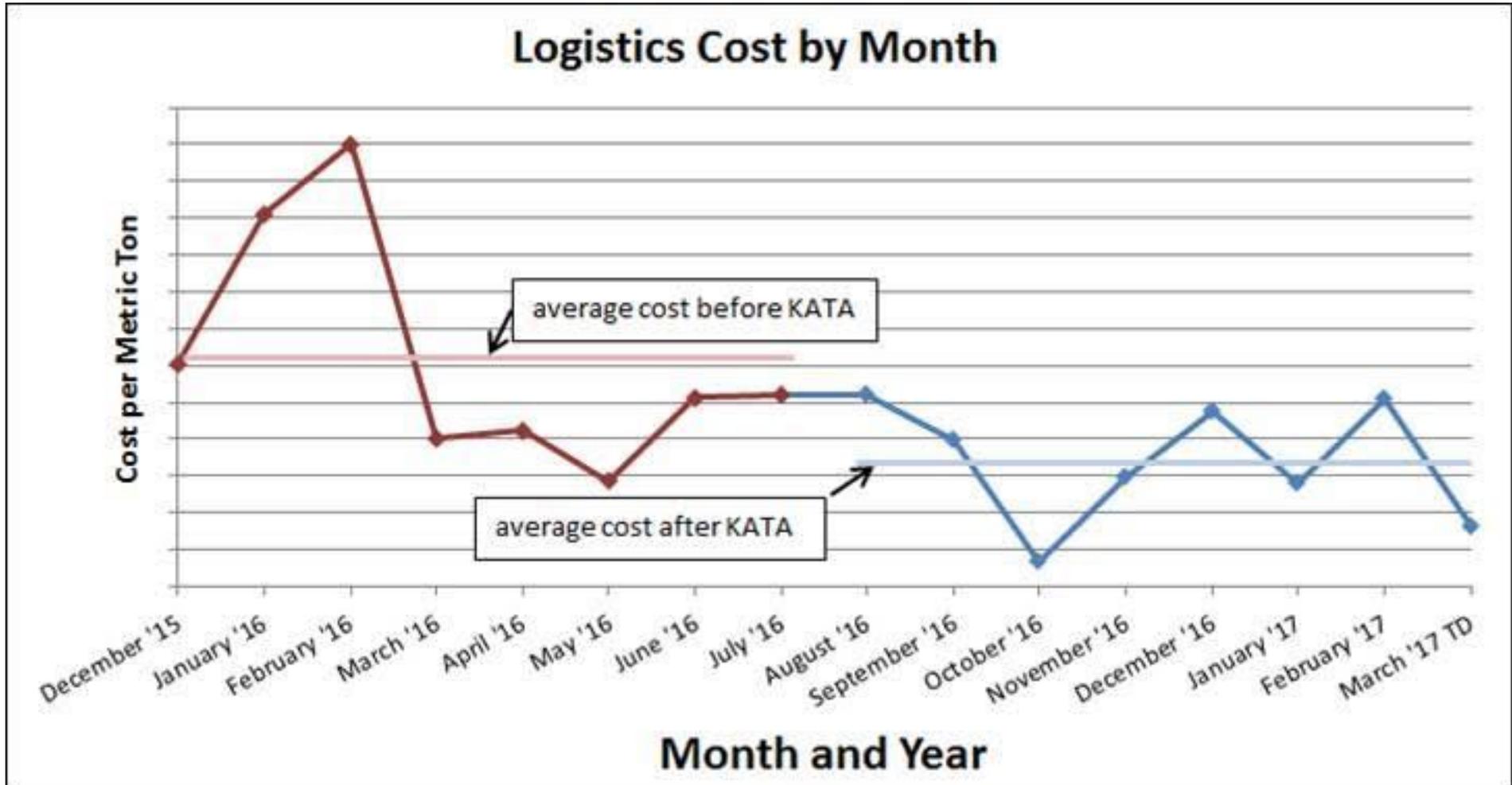
Daily Meetings with supervisor, operator, engineer, maintenance & team to identify obstacles and plan how to make improvements

- Changes to system cost >\$15,000 in expenses
- Changes based 100% on operator identified behavior changes:
 - Set Point changed relative to maximum capacity
 - Standardized definition of set point for loading railcar
 - Standardization of work
 - Improved scale calibration
 - Improved communication across shifts of problems and changes
- Reduction In Variation

	Results
Lost Capacity (Total potential pounds loaded minus pounds actually loaded (per certified scale))	Reduced 69.5%
Logistics Cost (Cost of shipping a railcar divided by metric tons shipped.)	Reduced by Nearly 2%

Calcines Railcar Payload Maximization

Note: Below data only takes into account newer large railcars. Presence of small railcars skews this data depending on how many were loaded that month



How Does Kata Factor Into The 5 Year Vision for Almatis Bauxite

- For Almatis to remain a competitive premium supplier of Alumina, controlled change must become part of the culture
 - Capital projects & Continuous improvements
- People at all levels must be engaged in the change process
 - Management sharing a vision and challenge
 - Employees (at all levels) empowered to resolve problems at the lowest level towards the shared goal
- Kata provides the discipline for all team members to be empowered to control their own work place better and to make contributions to the success of the company
- Current / Future Projects: Tabular Ball Forming, Management Personnel Morale Improvement, Calcines Incoming Feedstock Receiving, many others in planning!