

## Modified Kaizen Blitz

### For Continuous Processes

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## Overview

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- Who is DSM Chemicals, NA?
- The need for Kaizen
- Modification
- Case Study
- Success
- Key Learnings



## Who is DSM Chemicals, NA

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- Located in Augusta, GA
- Founded in 1962
  - DSM of The Netherlands
  - PPG Industries of Pittsburgh, PA
  - Fertilizer complex (Urea and Ammonium Nitrate)
- 1964, Caprolactam
  - Expansions 1972 and 1974
  - Largest independent supplier in US
- Nylon 6 production in 1999
- Nylon 6 carpet recycling facility in 1999



## Who is DSM Chemicals, NA

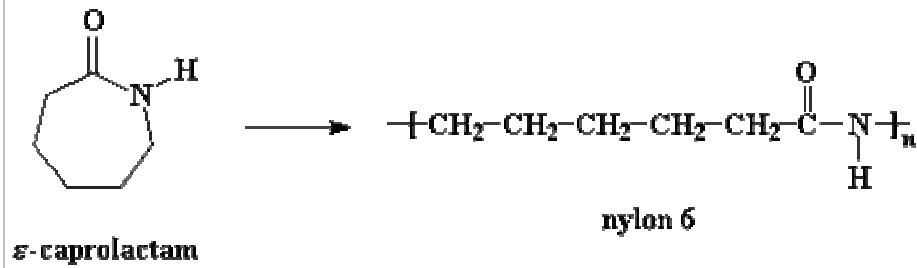
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- Commodity Business
- Large Volumes
  - Kilotons of product
- Energy Intensive
- Raw Material Prices
- Margins of pennies/pound
- Lean work force
- Continuous Operation



## What is Caprolactam?

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## What is caprolactam?

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- Monomer for Nylon 6
- Available forms
  - Molten liquid
  - Flaked solid
- Uses
  - Carpet
  - Engineering plastics
  - Tire cord
  - Fishing line
  - Apparel



## The Opportunity

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- Customer Base
  - US
  - Abroad
- Change in market conditions
  - Attractive Asian market
  - Saturated US market
- Increased Capacity needed fast!
- No clear solution
- Kaizen Blitz, perfect tool but.....



## Characteristics of a Kaizen Blitz

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- 3 phase process
  - Preparation
  - Action
  - Follow-up
- Team based
- Typically 1 week
- Interruption of current activities
- Improvements completed within event



## Modified Kaizen Blitz

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- All about Timing!
- 3 phase process
  - Focus on preparation
- Team based
- 1 week extended to 1 month
- No interruption of current activities
- Improvements not bound by event

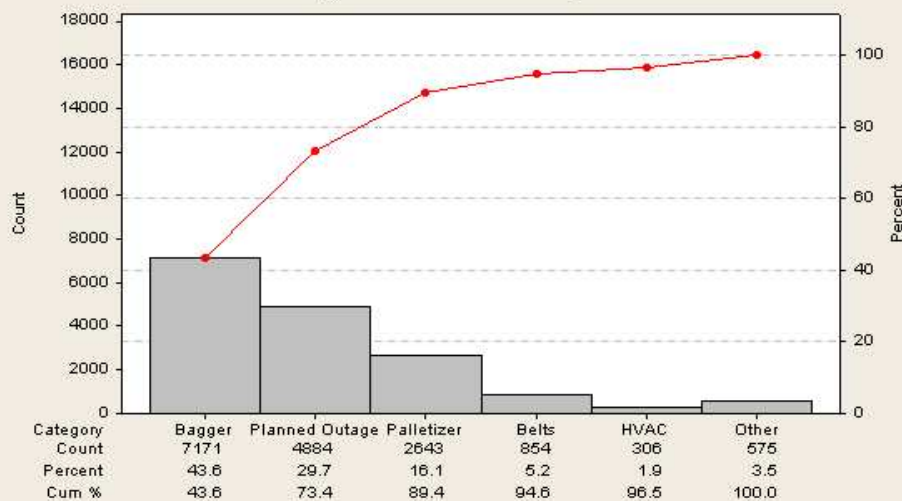


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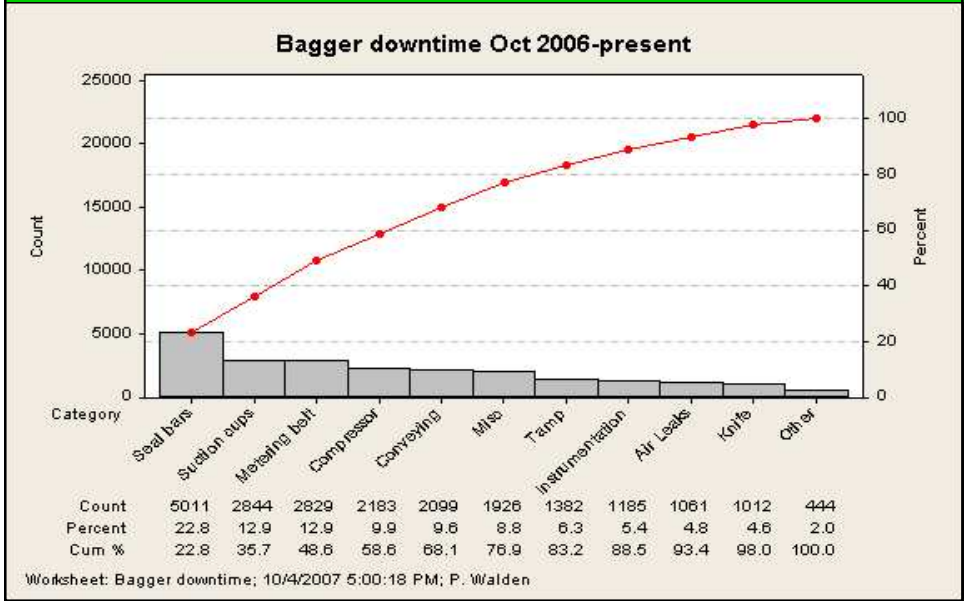
## Case Study: Downtime

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Flaking downtime Oct 2006-present



Worksheet: flaking downtime; 10/4/2007 5:15:20 PM; P. Walden



- Multi-disciplined team
  - Rotating team members
- Time commitment
- Goal
- Training
  - Kaizen
  - Pareto analysis
  - Multi-voting
- Rules
- Go to Gemba!



- Focus item each week
  - Seal Bars
  - Housekeeping
  - Palletizer
  - Other items
- Report Observations
- Use Multi-voting to narrow list
- Assign task list



- Example Findings:
  - Seal bar re-build procedure
  - Best Practices for Ops and Maintenance
  - Coordinate planned outage
  - Tool board
  - Recycle system
  - Repair/ Replace broken Oiler



Task	Given or Long Term	Assigned	Status	Comments
Seal bar rebuild procedure w/specs	given	O	active	
Operator best practices	given	M	active	H.H list, weekly meetings with SOs to finalize
Flaking specialist	long term	H	active	Management receptive, meet with HR
Vendor training	long term	P	active	Consultation w/vendor about topics, location, etc.
Spare bagger	long term	V	active	Initial #'s indicate \$\$\$.
Vendor 1 PM/yr	given	V	complete	schedule in AIMS
replace seal bar air cylinder	given	O	complete	bags not sealing at folds, addressed at shut-down
Repair broken palletizer oiler	given	O	complete	addressed at shut-down
Recycle flake to hopper	long term	H	need TR	need TR
Lighting, access, and catwalk around palletizer	long term	H	need TR	need TR#
Add air nozzles on reject load cells at weigh scale	long term	V	need TR	V to write TR, keep lactam clear

## Case Study: Downtime

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- Success!
  - Results within 1 month
  - Cut downtime by 35%
  - Increased volume by 10%
  - Increased volume over \$2 M



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## Key Learnings

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- Modified Blitz Effective
- Use tool(s) as proven if possible
- Do not be afraid to modify
- Knowledge is key



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## Questions

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