Redefining Efficiency

Steps Between Manual and Automation

ARM SPRING EXECUTIVE FORUM 2018

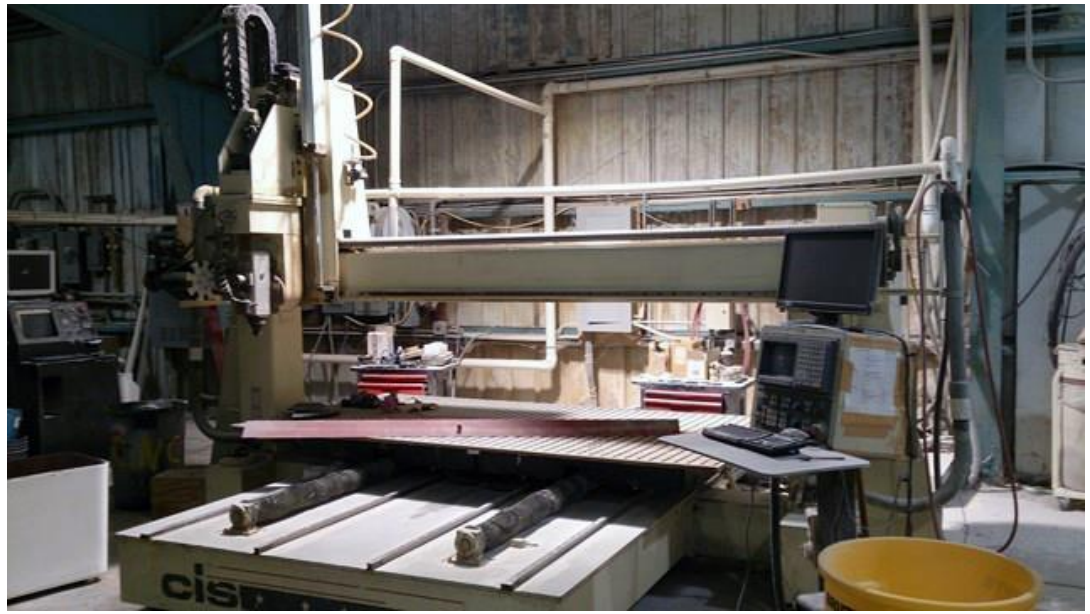
ORLANDO, FLORIDA

Automation

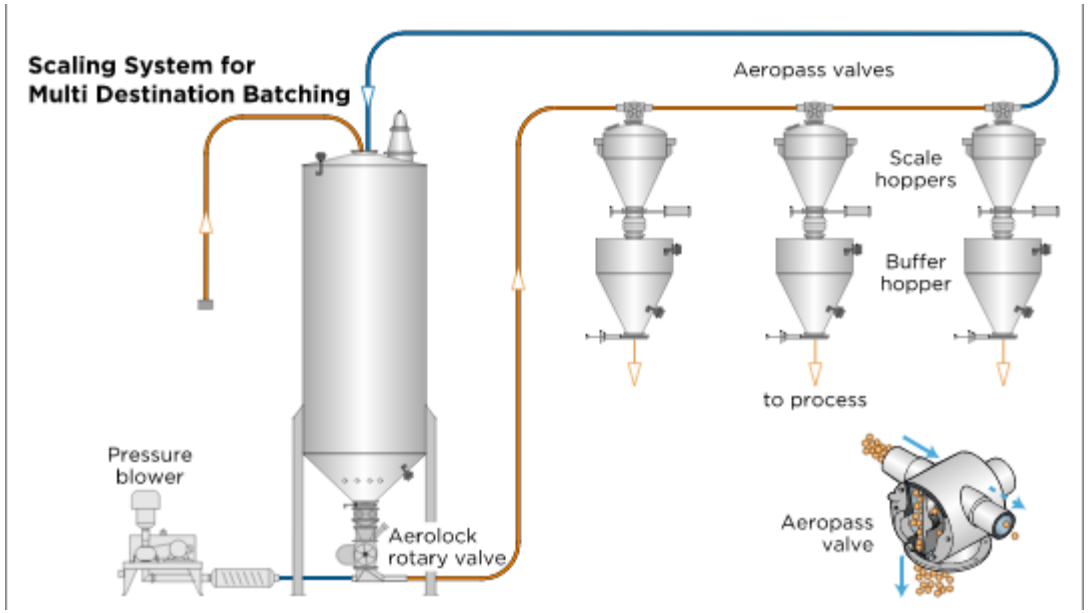
- Takes financial commitment
  - Initial purchase
  - Set up and customizing
  - Training
  - Ongoing maintenance
- Needs a long run of product to justify it
- Takes time to implement
- Fully or partially automated?

Partial Automation

- Robotic trimming
- CNC routers



- Material transfer devices



LABOR

VS

AUTOMATION

Labor Efficiency

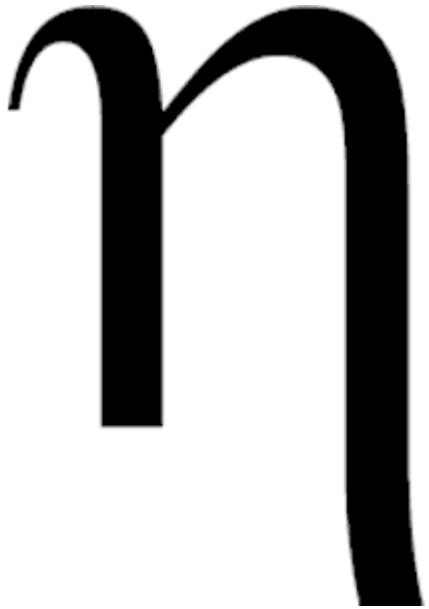
Overview

- Define
- Measure
- Discover
- Solution/Implementation

Defining Efficiency

ef·fi·cien·cy
əˈfiSHənsē/
noun
1.the state or quality of being efficient.

Efficiency is the ability to avoid wasting materials, energy, efforts, money, and time in doing something or in producing a desired result.



Defining Efficiency –

Efficiency is not Cost

- Cost is the value of enterprise money that has been used up to produce something,
- Efficiency is the extent to which time, effort, or cost is well-used for the intended task or purpose. .

Cost is a number - Efficiency is a measurement.

Measure

"If you can't **measure** it, you can't improve it."

Peter Drucker

Measuring Efficiency

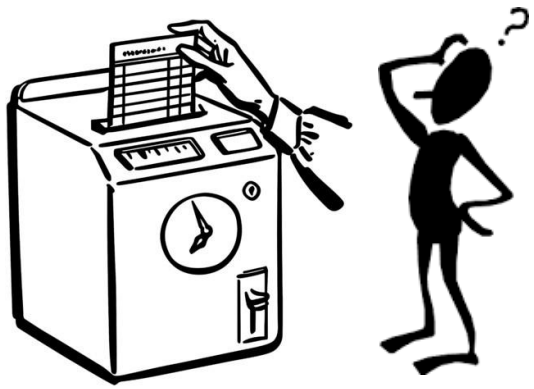
OWNER/INVESTOR **LEVEL 4** **ROI**	**COMPANY PRESIDENT/ CEO** **LEVEL 3** **NET PROFIT** **SALES**
PLANT MANAGER **LEVEL 2** **GROSS MARGIN** **$ SHIPPED** **MFG. COSTS**	**LINE MANAGER** **LEVEL 1** **DEPT. PERFORMANCE** **OUTPUT** **LABOR**

Measuring Labor Efficiency

$ SHIPPED
HEADCOUNT

$ SHIPPED
DIRECT LABOR HOURS

$ SHIPPED
EFFECTIVE LABOR HOURS



Measuring Effective Labor

Effective Labor Hrs. = Available Labor Hrs. - Non-productive labor hrs.

100 Employees: 2080 Hrs./ Year = 208,000 Direct Labor Hrs./ Year

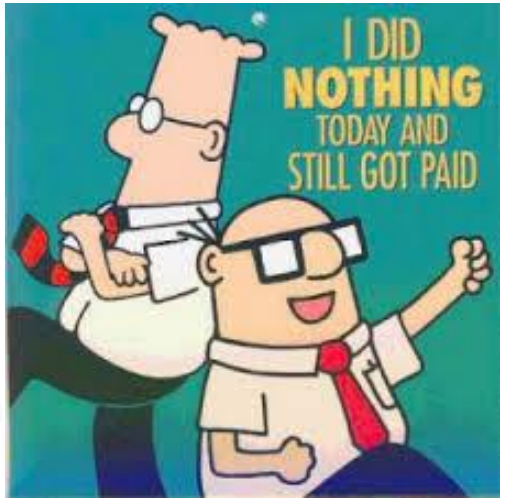
Vacation ave. 2 weeks per year: 100 X 2Weeks X 40hrs./Week = 8,000 Hrs.

100 X 11 Holidays X 8hrs. = 8,800 Hrs.

Breaks = 1 Hr./Day X 100 Employees X 260 Days/year = 2,600 Hrs.

Effective Labor hours = 188,600 (90.7%)

208,000 – 188,600 = 19,400 Non-productive Labor Hours



Considerations

Pay Incentive
Do the Math – It's Worth it.

Assumption: $15.00/Hr., Sale Price $44.00/ Hr., 100 Employees, 8 hrs./day

Cost make up = $15.00/Hr. + Benefits + MFG OH = $33.00/ Hr.

Sales = $44.00/ Hr. X 800 Hrs. / Day = $35,200/ Day

Cost = $33.00/ Hr. X 800Hrs. / Day = $26,400 : Profit = $8,800 = 25% GM

Now assume 10% incentive for a 10% improvement in efficiency:

Sales = 10% more = $35,200 X 1.1 = $38,720 / Day

Cost now = $16.50/Hr. + Benefits + OH = $34.50/ Hr. X 800 = $27,600

Profit = $38,720 - $27,600 = $11,120 = 28.7% GM

Incentive Program

- Must be definable
- Must be achievable
- Must be measurable/calculable
- Must be group, not individual
- Must be able to be affected by the group receiving the reward.
- Reward must be Frequent

Incentive Program – Other Benefits

- Self Policing
- Accountability
- Generates Ideas
- Weeds out Slackers
- Opens group up to embracing change

Incentive Program - Cautions

- Be wary of short cuts - Inspection
- Avoid internal conflicts – Sales vs. MFG
- Understand/Accept – Variable Results
- Embrace Change – avoid relapse
- There will be differences of opinions
- Needs constant discipline

Measure - Time Study

Major Companies using Stop Watch Time Study method

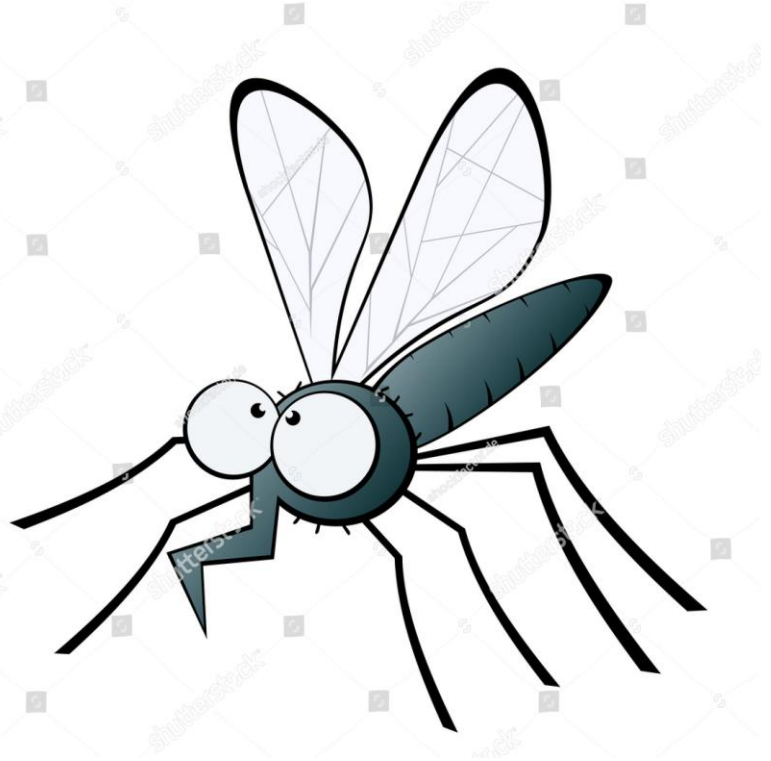
- Mahindra and Mahindra (Automobile)
- Tata Motors (Automobile)
- Honda Motors (Automobile)
- Bajaj Motors (Automobile)
- Ford Motors Company
- General Motors

Time Study Considerations

- Expensive
- Difficult to apply to non-repetitive operations
- Theoretical, Information overload - Not practical
- Produce some interesting results.
- Can be done in a more practical way

Discovery/Measure

Hidden Inefficiencies



Discovery/Measure

FIT IN PARTING LINE:

- Find portable dolly – 5S
- Refill bluing ink – 5S
- Look for grinder – 5S
- Look for abrasives – 5S
- Injury Time out – Safety Committee
- Rework Weekly Reviews
- Looking for info/direction -

LAN – Information Availability

Discovery – HI Examples

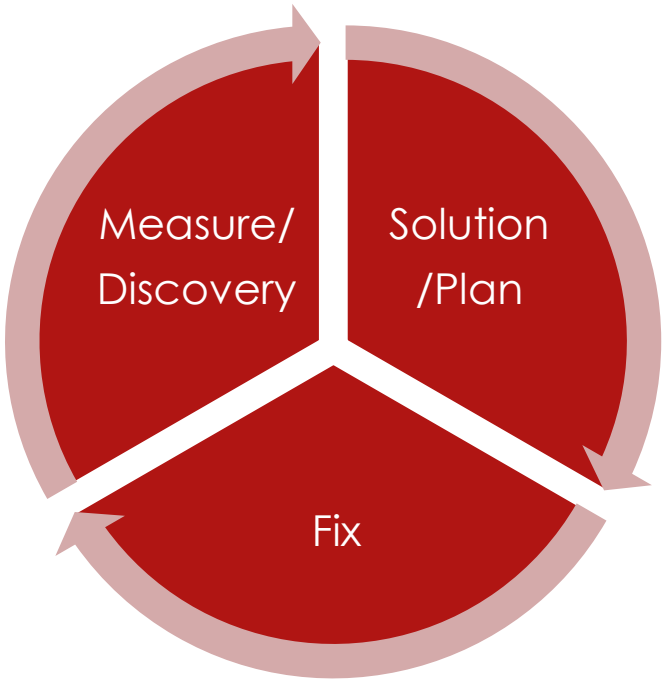
- Looking for Direction
- Looking for tools/equipment
- BB’s
- Visiting with others
- Visiting with managers
- Training – Are they trainable?
- Rework, Mistakes
- Meetings

Beer Hall Wisdom for HI Management

- Be observed being observant
- Look at your watch
- Write something down, be seen writing it
- Stick around a while – observing everything
- Have a visible conversation with the area supervisor

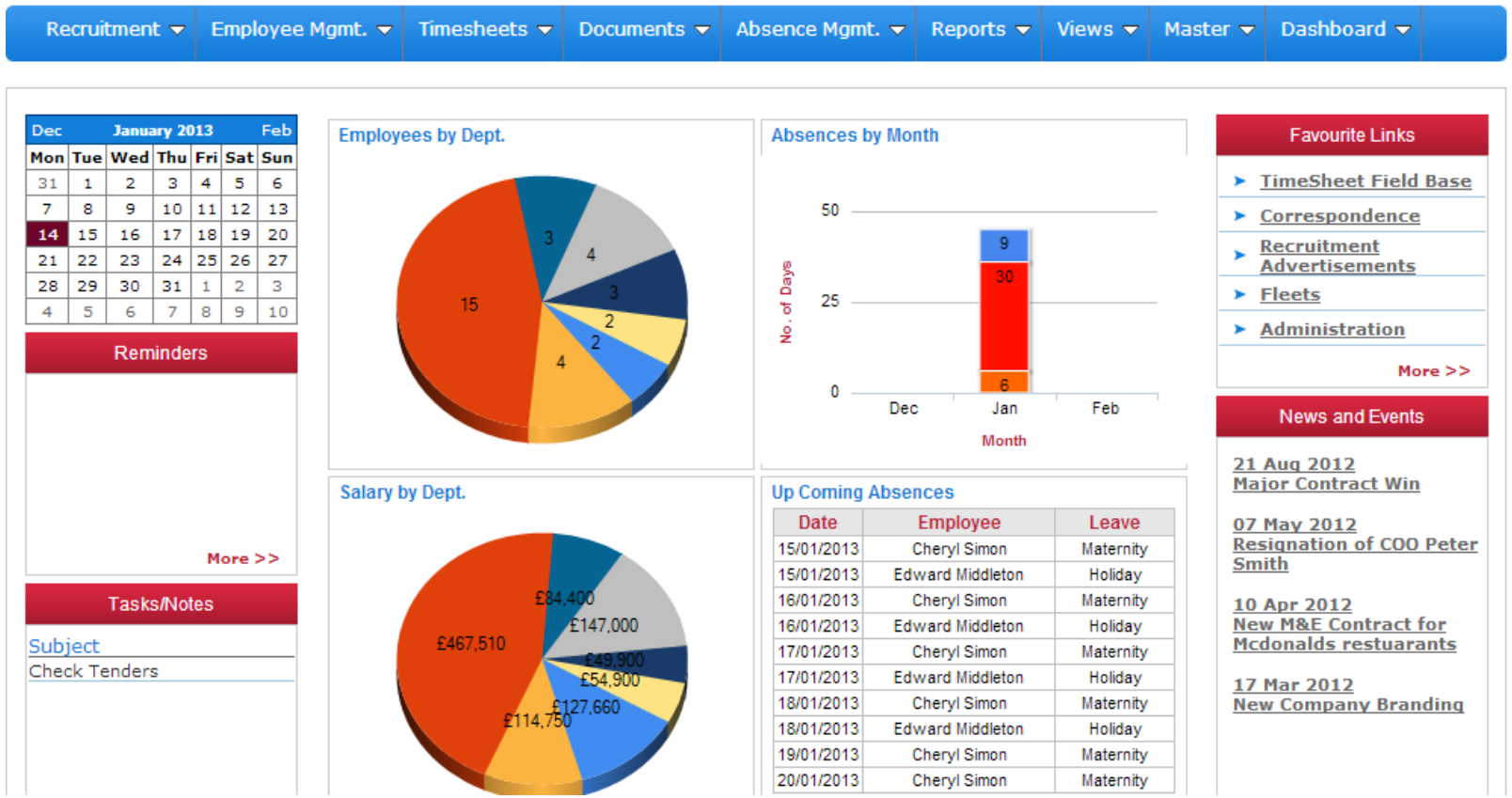
- Works for good employees
- Problematic Employees – Discipline

The Efficiency Improvement Cycle

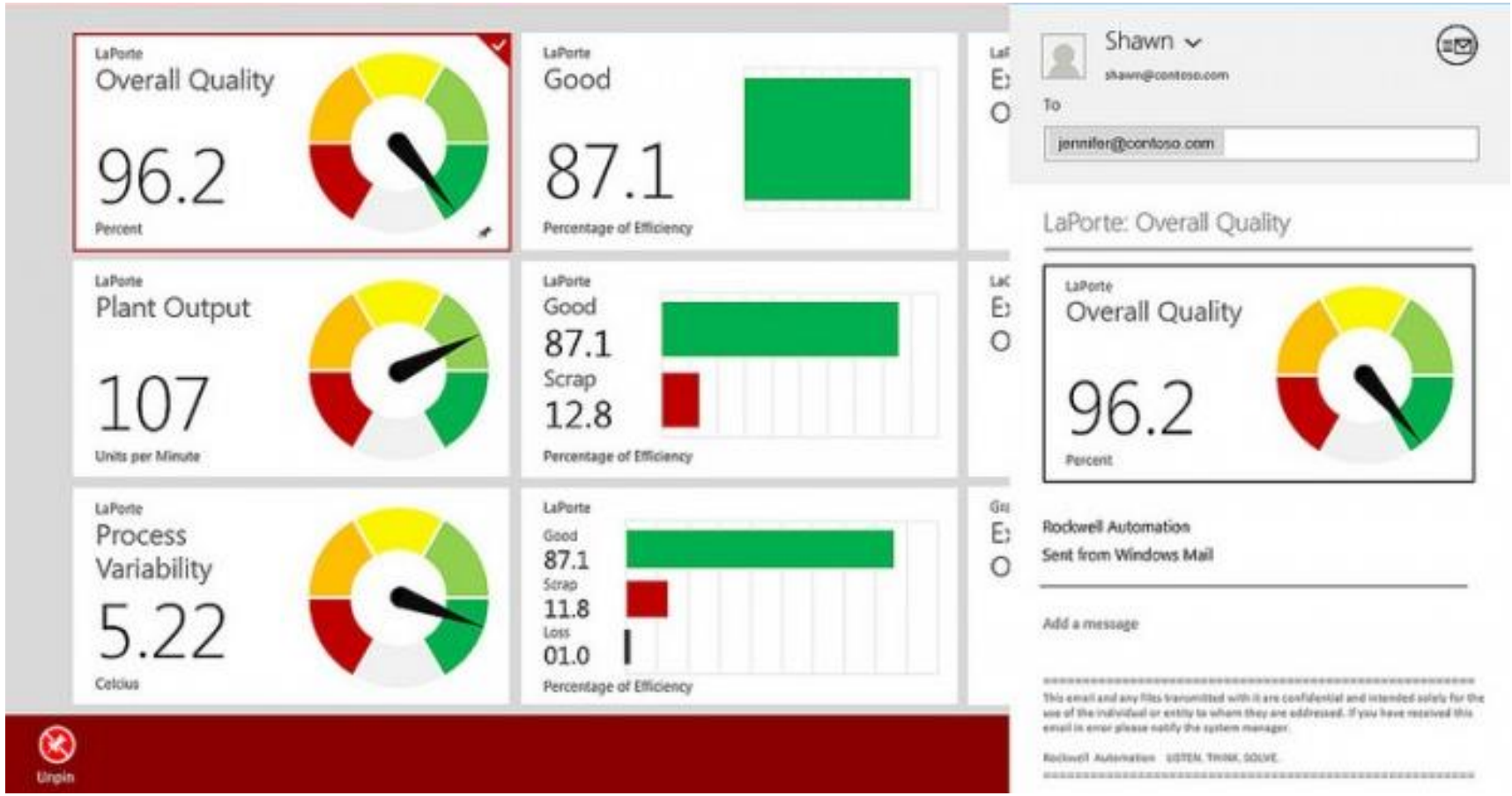


Keep Score

Dashboards


Recruitment
Employee Mgmt.
Timesheets
Documents
Absence Mgmt.
Reports
Views
Master
Dashboard
Dec
January 2013
Feb
Mon Tue Wed Thu Fri Sat Sun
31 1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30 31 1 2 3
4 5 6 7 8 9 10
Reminders
More >>
Tasks/Notes
Subject
Check Tenders
Employees by Dept.
3
4
3
2
2
4
15
Absences by Month
50
25
0
No. of Days
9
30
6
Dec
Jan
Feb
Month
Favourite Links
TimeSheet Field Base
Correspondence
Recruitment Advertisements
Fleets
Administration
More >>
Salary by Dept.
£84,400
£147,000
£49,900
£54,900
£127,660
£114,750
£467,510
Up Coming Absences
Date Employee Leave
15/01/2013 Cheryl Simon Maternity
15/01/2013 Edward Middleton Holiday
16/01/2013 Cheryl Simon Maternity
16/01/2013 Edward Middleton Holiday
17/01/2013 Cheryl Simon Maternity
17/01/2013 Edward Middleton Holiday
18/01/2013 Cheryl Simon Maternity
18/01/2013 Edward Middleton Holiday
19/01/2013 Cheryl Simon Maternity
20/01/2013 Cheryl Simon Maternity
News and Events
21 Aug 2012
Major Contract Win
07 May 2012
Resignation of COO Peter Smith
10 Apr 2012
New M&E Contract for Mcdonalds restuarants
17 Mar 2012
New Company Branding

Dashboards


LaPorte
Overall Quality
96.2
Percent
LaPorte
Good
87.1
Percentage of Efficiency
LaPorte
Plant Output
107
Units per Minute
LaPorte
Good
87.1
Scrap
12.8
Percentage of Efficiency
LaPorte
Process Variability
5.22
Celcius
LaPorte
Good
87.1
Scrap
11.8
Loss
01.0
Percentage of Efficiency
Unpin
Shawn
To
jennifer@contoso.com
LaPorte: Overall Quality
LaPorte
Overall Quality
96.2
Percent
Rockwell Automation
Sent from Windows Mail
Add a message

Weys Agility Explorer

File Layouts View Window Help

CHEMAID Applications

- CH Shop Order Audit-PW
- CH Bulk Mfg Scheduler
- Set Macola Dropped Bulk Flag
- CH Update Shop Orders Bck Flus...
- CH Planning and Purchasing
  - CH Sales Order Update Grid
- CH Warehouse
  - CH IIT Picking Requirements
  - View By LPN
  - LPN transaction Hist
  - View By Bin
  - CH IIT Picked Comp Log
  - Move Rejects from NJ to QC V1
  - Inventory Trx Hist View
  - Lab Samples Taken By Month
  - Bin Inventory Status
  - Set Macola Raw Material Receivi...
  - Set Macola Component Receivin...
  - Inventory Loc Item Multi Level
- Quality Assurance Process
  - CH QA LPN Approval/Rejection

Favorites

CHEMAID Applications

Financial

Planning & Forecasting

Inventory/BOM/PO

Order Processing

Warehouse Management

Pick Pack

Manufacturing

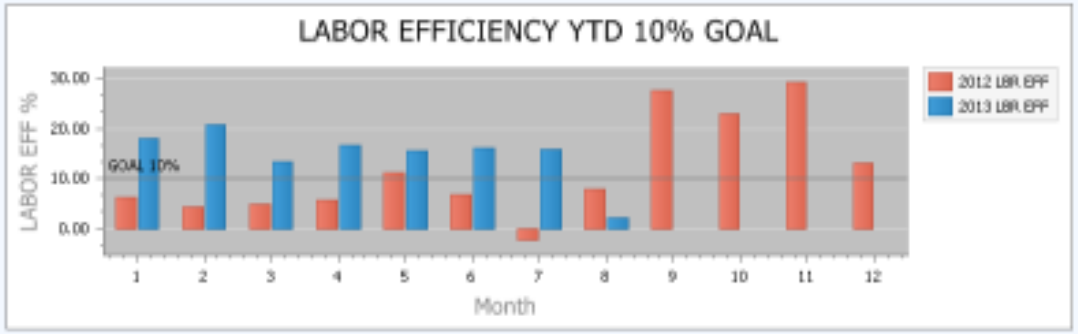
System

Utilities

Operations KPI Dashboard

Labor EFF % YTD

Labor EFF 2012 vs 2013 YTD



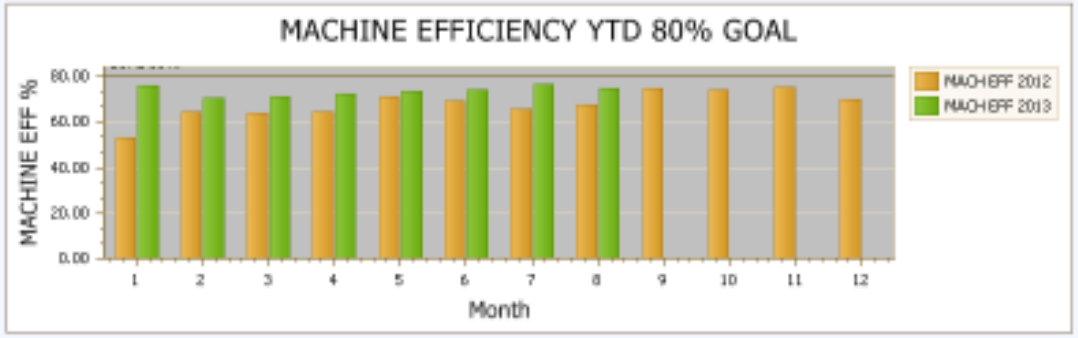
Yesterday's Production Data

Alerts NOT BAD! MISS! GOAL!

Date	Work Center	Actual MHrs	Produced EA	LBREFF	MCHEFF
8/21/2013	ASSY	10.50	621.00	-1.4%	69.0%
8/21/2013	C1	199.00	1,416.00	-90.7%	33.7%
8/21/2013	C2	86.50	7,008.00	26.0%	82.0%
8/21/2013	L4	30.00	0.00	0.0%	0.0%
8/21/2013	L6	65.50	2,520.00	-55.9%	46.7%
8/21/2013	L7	65.00	5,580.00	17.4%	57.4%
8/21/2013	ML1	65.50	9,696.00	24.9%	71.8%
8/21/2013	ML2	78.50	9,456.00	-38.4%	60.8%
8/21/2013	ML3	39.00	3,672.00	-21.4%	58.8%
8/21/2013	S2	14.00	1,603.00	12.7%	93.4%
8/21/2013	T3	23.75	6,048.00	47.0%	66.7%
8/21/2013	T4	4.00	900.00	-3.7%	75.0%
8/21/2013	T5	12.00	6,517.00	26.3%	75.4%
8/21/2013	T7	50.25	4,248.00	15.2%	58.0%

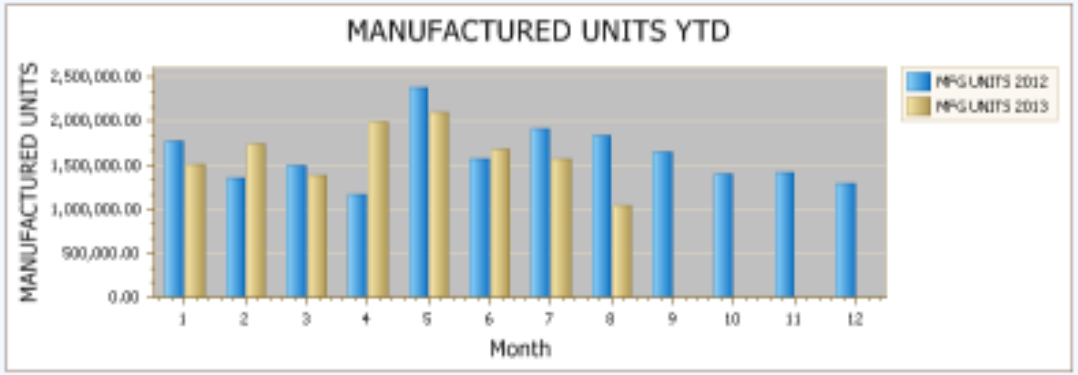
Machine EFF % YTD

Machine EFF 2012 vs 2013 YTD

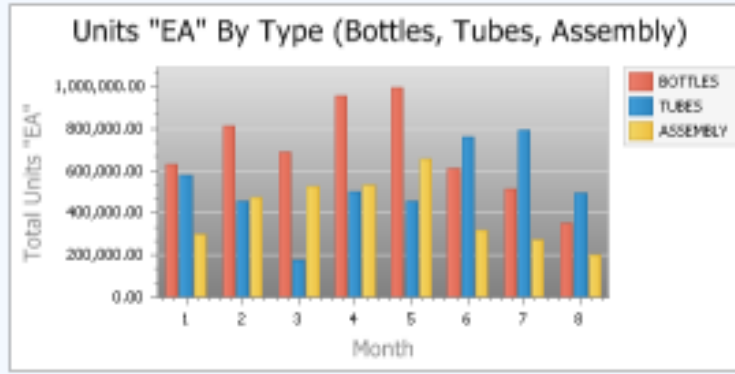


Productivity % YTD

Units Produced 2012 vs 2013 YTD



Units by Category (Bottles, Tubes, Assembly)



Progression chem-app01 DATA rcortes Administrator Agility Vers

Dashboards

- www.domo.com
- www.klipfolio.com
- www.lzenda.com
- www.gooddata.com

RECAP

- Focus on what you can control (Effective Direct Labor)
- Search out Hidden Efficiencies
- Apply fixes
- Implement group incentives
- Keep Score