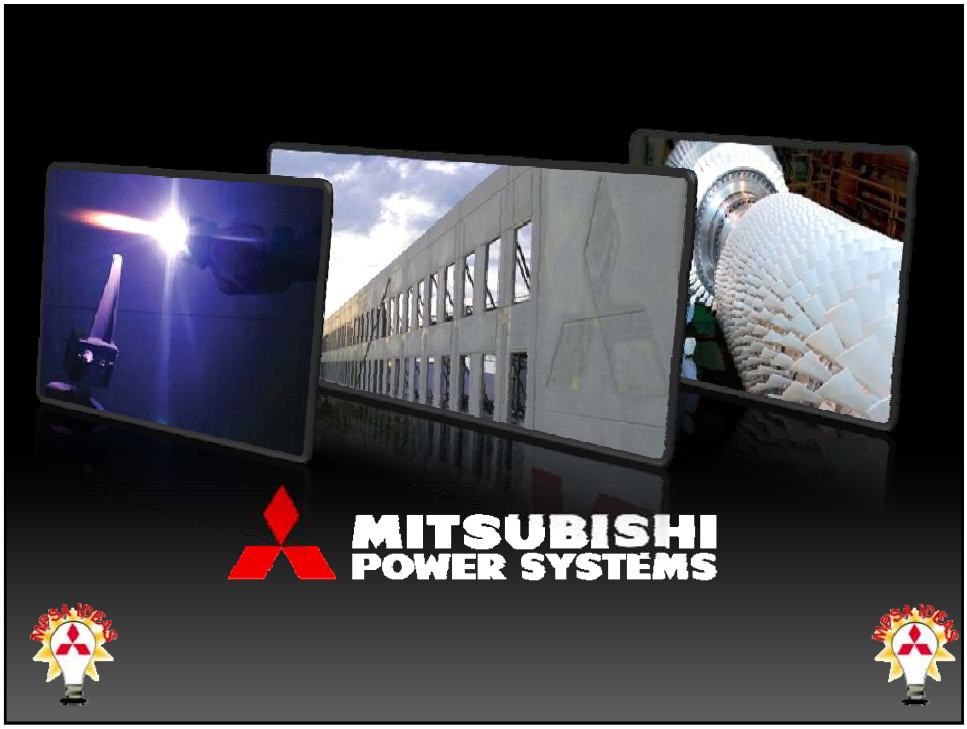


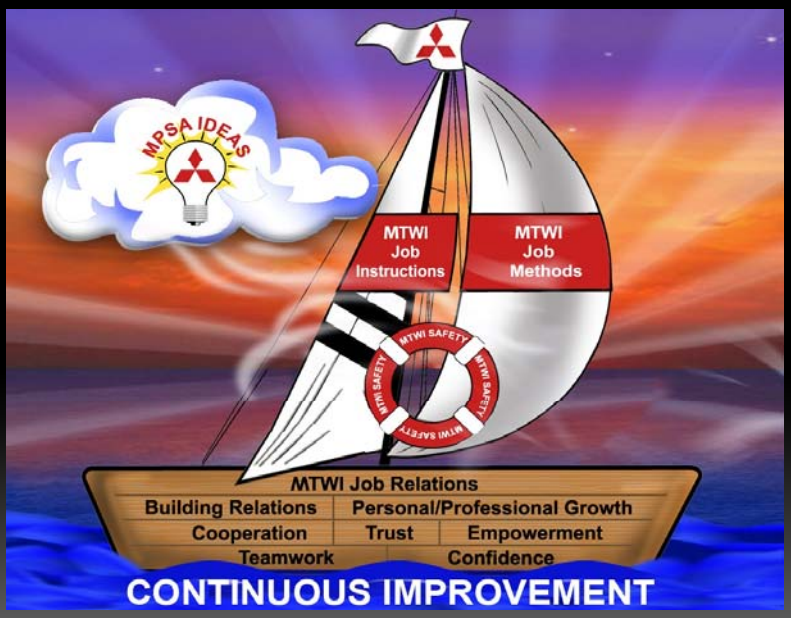
JOHN BARRETT

OPERATIONS MANAGER

MITSUBISHI POWER SYSTEMS

MPSA IDEAS

How a Successful Ideas Program Powers MTWI



Presentation Outline

1. Company Introduction
2. 2006 Vision
3. Improvement Timeline
4. Ideas Program Overview
5. Work Scenario Video
   (Audience Involvement)
6. MTWI Program Overview
7. Ideas / MTWI Integration

MITSUBISHI POWER SYSTEMS

Advanced Manufacturing Focus

Combined Cycle Power Plants

Mitsubishi Heavy Industries, Ltd.
(MHI)
Established in 1884
Employees: 34,000
2008 Sales: $31.9 Billion

Conventional Thermal Power Plants

Shipbuilding

Air Transportation

Heavy Structures

Aerospace

Flue Gas Desulfurization

Diesel / NG Generators

Printing Machines

Air Conditioning Units

Western Hemisphere - Power Generation Services

Headquarters

US Power Systems Headquarters:

Lake Mary, Florida

- Established 2001
- Full-time team: 110
- North American Power Systems sales, project management and design engineering

PGS Orlando Service Center

MPSA Orlando Service Center:

Orlando, Florida

- Established 2002
- 225,000 sq ft
- Full-time team: 525
- Component Repair & Overhaul Facility
- Blade and Vane Manufacturing Facility

MITSUBISHI POWER SYSTEMS

MPSA Components

- GT Component Inspection & Repair
  - Blades, Vanes & Ring Segments
  - Baskets & Transitions
  - Fuel Nozzles
- Blade & Vane Manufacture
- Basket & Transition Manufacture

Blades

Vanes

Baskets

MITSUBISHI POWER SYSTEMS

MPSA Imperative Statement

To support customer needs by safely providing quality components as quickly as possible.

MPSA IDEAS

MITSUBISHI POWER SYSTEMS

MPSA Priorities

1. *Environmental Health & Safety*
2. *Quality*
3. *Delivery*
4. *Improvement*
   - *Ideas Program*
   - *MTWI*
   - *Lean (6S, Kaizen, Flow)*

MITSUBISHI POWER SYSTEMS

MPSA Vision / Goals - 2006

- Improve our culture by providing a better means of communication between Employees and Supervision.
- Capture the creativity and ideas of those who know the work the best.
- Improve our productivity and standardize work across shifts.
- Continually improve our processes.

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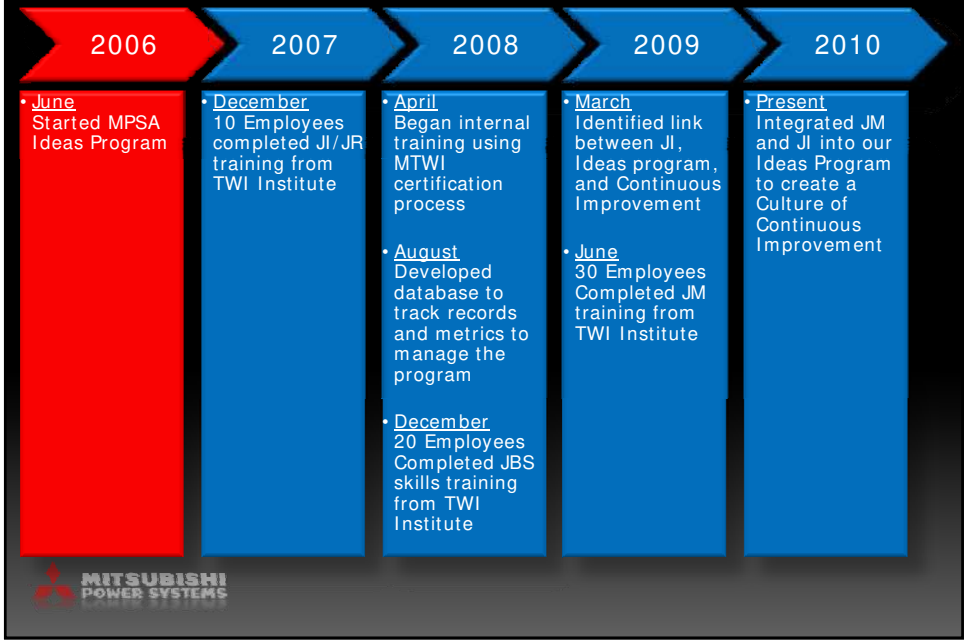
MPSA Continuous Improvement Timeline



IDEAS PROGRAM VIDEO – 01

MITSUBISHI POWER SYSTEMS

What is considered a MPSA Idea?

- ***An idea is a response to a problem***
  - *A method to finding a solution*
  - *Effects Safety, Quality, or Productivity*

We also know that:

- Every idea improves MPSA in some way
- Many small ideas are more beneficial than a few large ideas
- Ideas spawn more ideas

MITSUBISHI POWER SYSTEMS

Improvement IDEA Submission Form

Employee Idea Submission Section			Idea # -	
Submission Date:	Name:	Employee ID#:	Dept:	Facility: (circle one) RPR - COE

Improvement Idea - Problem:

Improvement Idea - Solution:

Sketch or additional information:

IDEAS / MTWI WORK SENARIO VIDEO – 02

MITSUBISHI POWER SYSTEMS

MPSA's Ideas Program

Ideas Program Mission Statement:

The IDEAS program is designed to assist in meeting customer requirements while enhancing productivity through the introduction and implementation of employee ideas.

MITSUBISHI POWER SYSTEMS

Why Do We Have an Ideas Program?

- Improves Safety, Quality, and Productivity
- Opens Communication
  - Employees want to be heard
  - Front-line employees see improvements that managers don't see
- Increases Employee Morale & Involvement
- *Builds Trust, Confidence & Respect*
- Motivates Employees
  - Personal Satisfaction
  - Public Recognition

MITSUBISHI POWER SYSTEMS

MPSA Ideas Program History

- Initiated in June of 2006
  - Direct Team felt that nothing was being done about their ideas
  - Catalog the great things we are doing instead of losing our improvements
- *Ideas Are Free*
  - by Alan G. Robinson and Dean M. Schroeder
- First year just over 100 ideas - Now at over **5,800**
- Supported strongly by MPSA top management
- Two types of Ideas – "Regular" and "JDI"

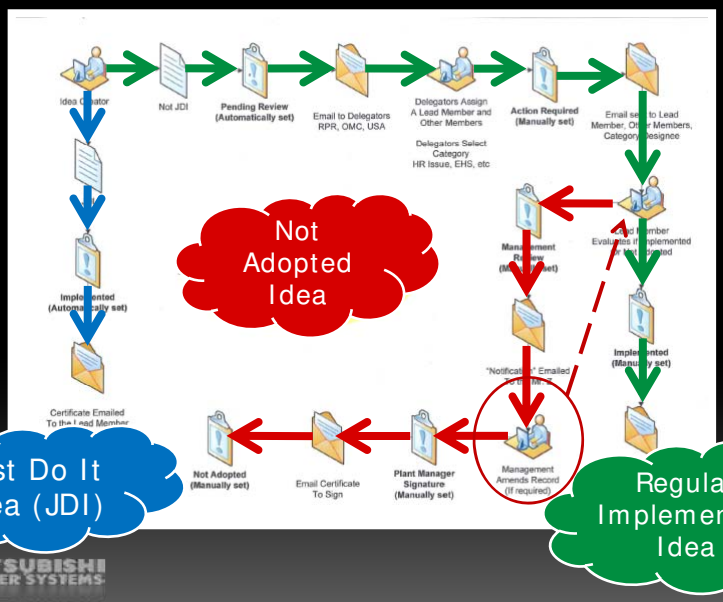
MITSUBISHI POWER SYSTEMS

IDEAS Management System

- Automated SharePoint Database System
- Emails: assignment, notification, and implementation status
- System doesn't allow Ideas to be deleted out or rejected without Top management approval
- Multiple user system
- Protects from data corruption
- Enables ideas delegation
- Makes inputting ideas simple
- Makes the management of many ideas easier

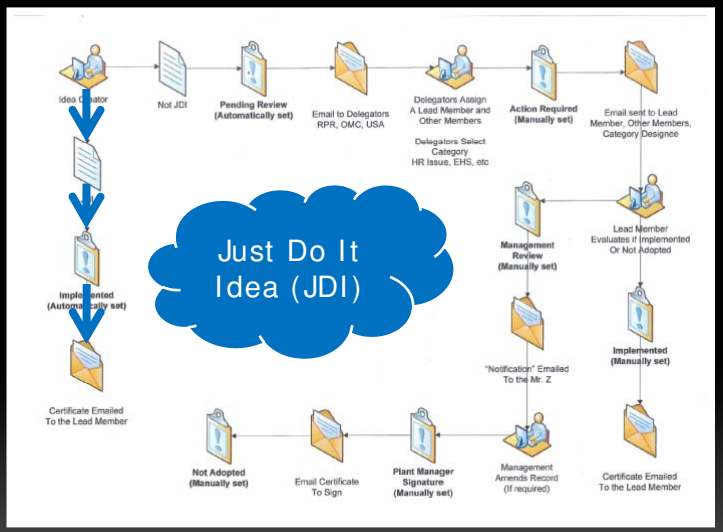
MITSUBISHI POWER SYSTEMS

MPSA Ideas Process



MITSUBISHI POWER SYSTEMS

MPSA Ideas Process



MITSUBISHI POWER SYSTEMS

Improvement IDEA Submission Form

Just Do It (JDI) Idea Example

Improvement Idea - Problem:

Problem – Tools needed to complete the job are not available, causing the operator to search.

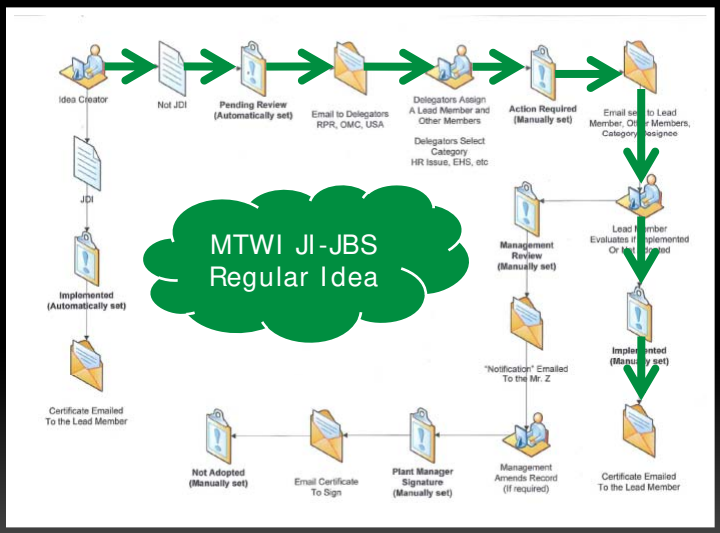
Improvement Idea - Solution:

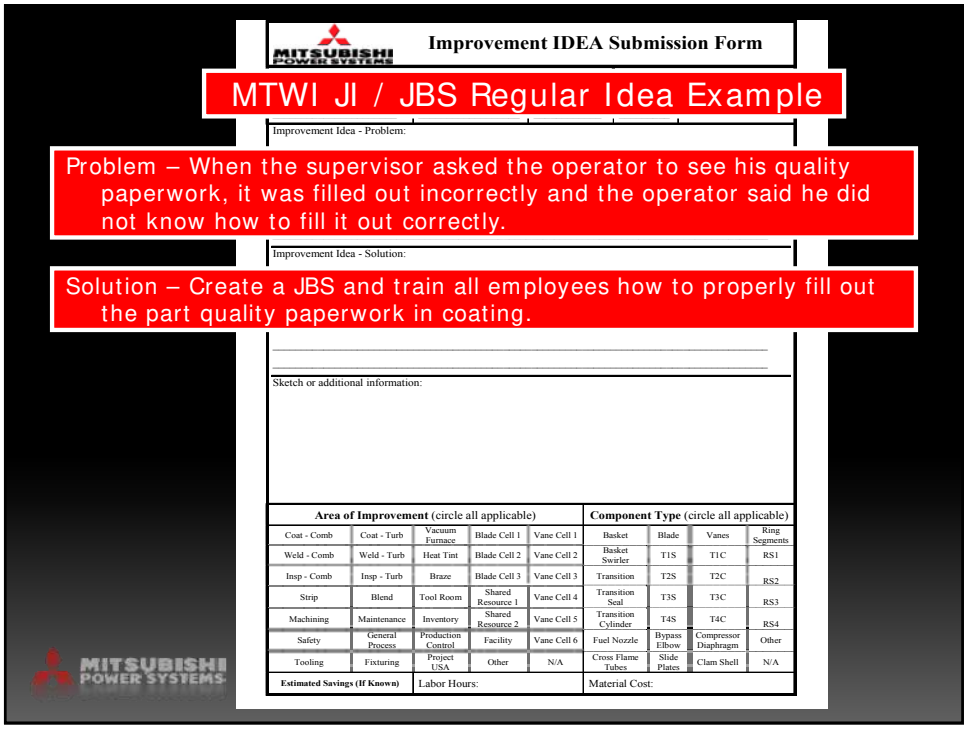
Solution – Supervisor to add a task to the daily 6S checklist for operators to verify that all tools are returned to the shadow board.

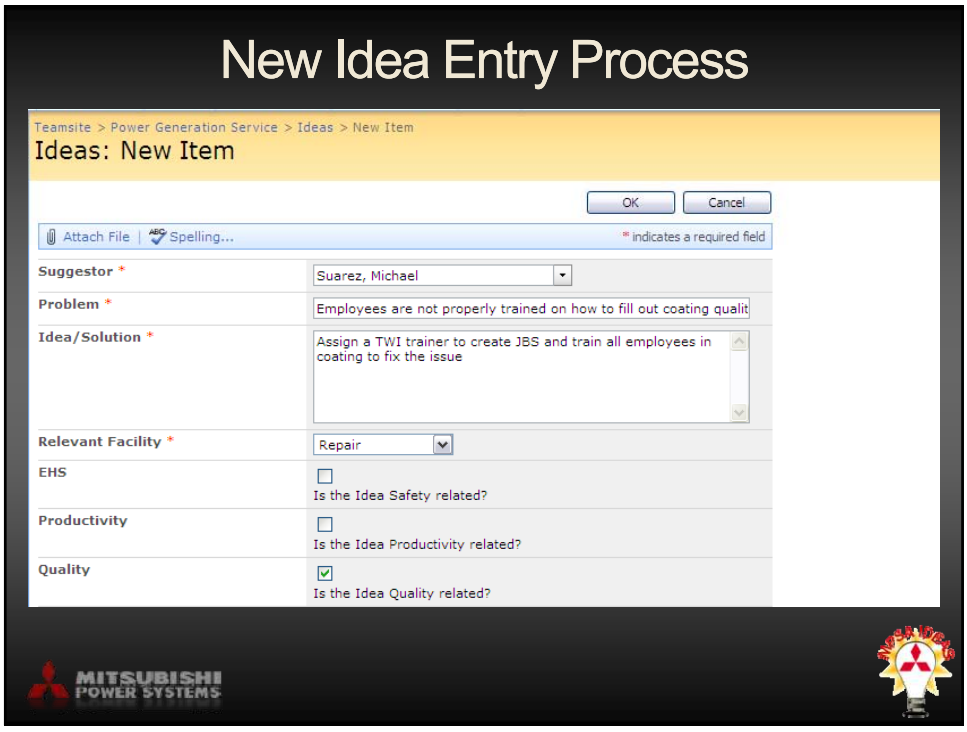
Sketch or additional information:

Area of Improvement (circle all applicable)					**Component Type** (circle all applicable)			
Coat - Comb	Coat - Turb	Vacuum Furnace	Blade Cell 1	Vane Cell 1	Basket	Blade	Vanes	Ring Segments
Weld - Comb	Weld - Turb	Heat Tint	Blade Cell 2	Vane Cell 2	Basket Swirler	T1S	T1C	RS1
Insp - Comb	Insp - Turb	Braze	Blade Cell 3	Vane Cell 3	Transition	T2S	T2C	RS2
Strip	Blend	Tool Room	Shared Resource 1	Vane Cell 4	Transition Seal	T3S	T3C	RS3
Machining	Maintenance	Inventory	Shared Resource 2	Vane Cell 5	Transition Cylinder	T4S	T4C	RS4
Safety	General Process	Production Control	Facility	Vane Cell 6	Fuel Nozzle	Bypass Elbow	Compressor Diaphragm	Other
Tooling	Fixturing	Project USA	Other	N/A	Cross Flame Tubes	Slide Plates	Clam Shell	N/A
Estimated Savings (If Known)		Labor Hours:			Material Cost:			

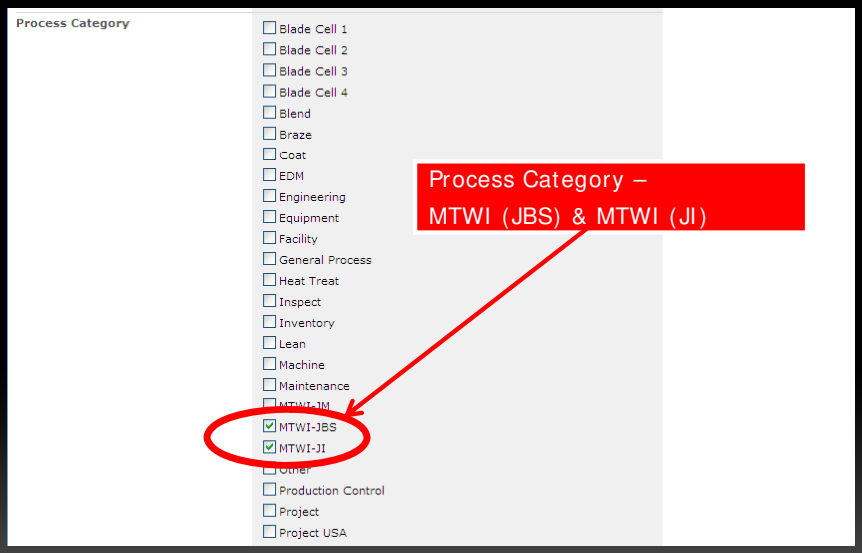
MPSA Ideas Process




Improvement IDEA Submission Form
MTWI JI / JBS Regular Idea Example
Improvement Idea - Problem:
Problem – When the supervisor asked the operator to see his quality paperwork, it was filled out incorrectly and the operator said he did not know how to fill it out correctly.
Improvement Idea - Solution:
Solution – Create a JBS and train all employees how to properly fill out the part quality paperwork in coating.
Sketch or additional information:
Area of Improvement (circle all applicable)
Component Type (circle all applicable)
Coat - Comb
Coat - Turb
Vacuum Furnace
Blade Cell 1
Vane Cell 1
Basket
Blade
Vanes
Ring Segments
Weld - Comb
Weld - Turb
Heat Tint
Blade Cell 2
Vane Cell 2
Basket Swirler
T1S
T1C
RS1
Insp - Comb
Insp - Turb
Braze
Blade Cell 3
Vane Cell 3
Transition
T2S
T2C
RS2
Strip
Blend
Tool Room
Shared Resource 1
Vane Cell 4
Transition Seal
T3S
T3C
RS3
Machining
Maintenance
Inventory
Shared Resource 2
Vane Cell 5
Transition Cylinder
T4S
T4C
RS4
Safety
General Process
Production Control
Facility
Vane Cell 6
Fuel Nozzle
Bypass Elbow
Compressor Diaphragm
Other
Tooling
Fixturing
Project USA
Other
N/A
Cross Flame Tubes
Slide Plates
Clam Shell
N/A
Estimated Savings (If Known)
Labor Hours:
Material Cost:
MITSUBISHI POWER SYSTEMS


New Idea Entry Process
Teamsite > Power Generation Service > Ideas > New Item
Ideas: New Item
OK
Cancel
Attach File | Spelling...
* indicates a required field
Suggestor *
Suarez, Michael
Problem *
Employees are not properly trained on how to fill out coating qualit
Idea/Solution *
Assign a TWI trainer to create JBS and train all employees in coating to fix the issue
Relevant Facility *
Repair
EHS
Is the Idea Safety related?
Productivity
Is the Idea Productivity related?
Quality
Is the Idea Quality related?
MITSUBISHI POWER SYSTEMS

New Idea Entry Process



MITSUBISHI POWER SYSTEMS

New Job Breakdown Sheet (JBS)

Operation:	**Coating-Agb Pressure & Vacuum Check TMP#9**	**JBS# R314**	
Parts:	**n/a**	**OSC#**	**1127**
Tools and Materials	**n/a**		
Common Key Points	1/ Verify the serial number on the part matches the serial number on the traveler. 2/ Check Traveler to see where the part is on the work sequence	1/ To ensure you are working on the correct part because we need traceability. 2/ To ensure you are working on the correct operation and all previous operations have been signed off.	

IMPORTANT STEPS		KEY POINTS		REASONS	
WHAT	A logical segment of the operation when something happens to advance the work	**HOW**	Things in steps that will: 1. Make or break the job 2.Injure the worker 3.Make the work easier	**WHY**	List reasons for the key points
0/ Common key point		1/ This procedure should be performed every time its TPM alarm is triggered.		1/ To improve efficiency of the machine.	
1/ Check pressure gage		1/ With the reclaim on, check the pressure gage to ensure that it reads between 2-8 psi.		1/ If pressure is over 8 psi, then the filters needs replace.	
2/Check vacuum gage.		1/With the reclaim on, check the vacuum gage to ensure that it reads a minimum of 10 psi.		1/ If vacuum reads lower than 10 psi, the filters need replaced.	
3/Reset TPM alarm.		1/Only Supervisors & Leads can rest the alarms.		1/This is for accountability	
		Job Instructions are available with pictures and more details			

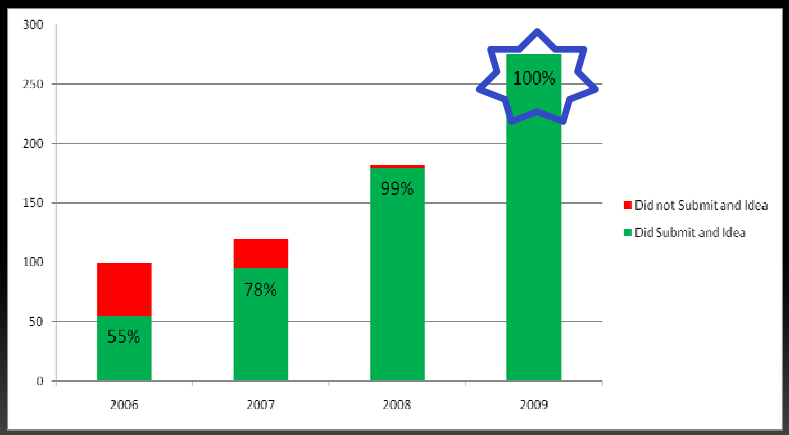
MPSA Ideas Program 2010 Goals

- 100% participation for both facilities
  - 1 idea per month per employee
  - Average 200 ideas submitted monthly
  - Average 200 ideas closed monthly
- Successfully manage the growth of our IDEAS program
  - Effectively use IDEAS teams
  - Implement Quarterly Idea Themes

MITSUBISHI POWER SYSTEMS

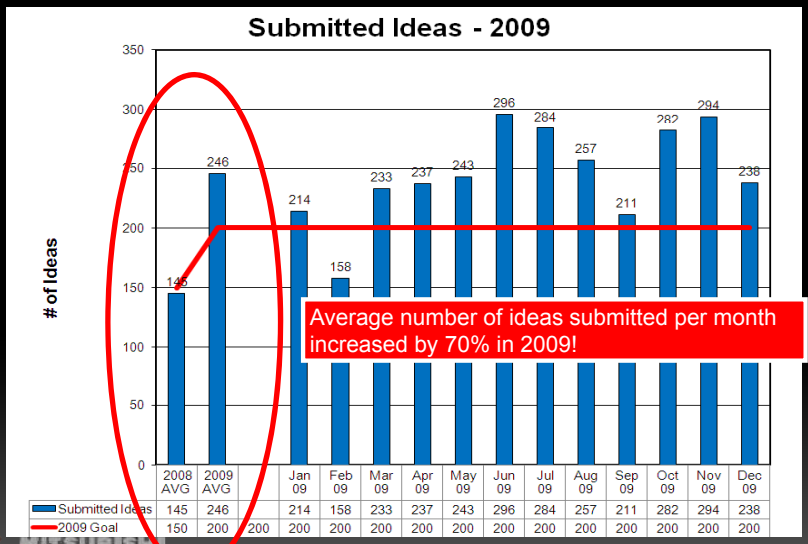
Ideas Program Growth

Employee Participation



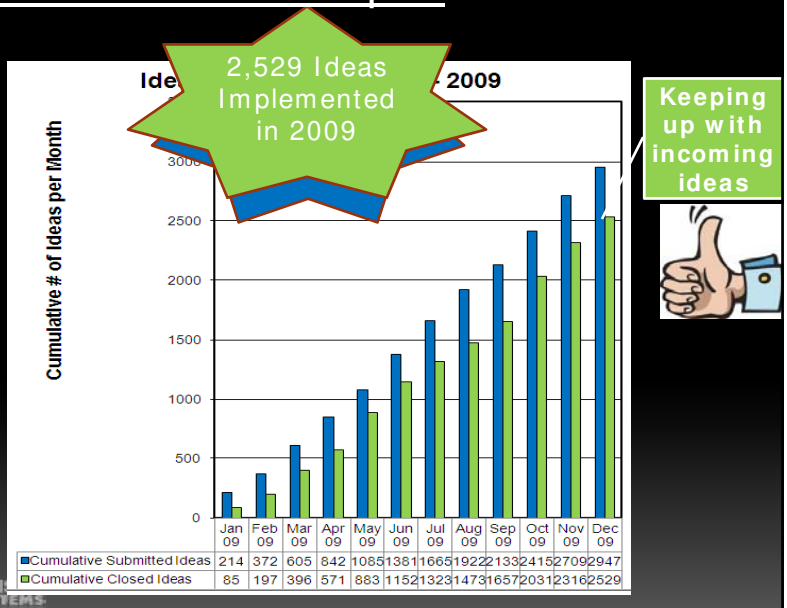
MITSUBISHI POWER SYSTEMS

2009 New Ideas Trend



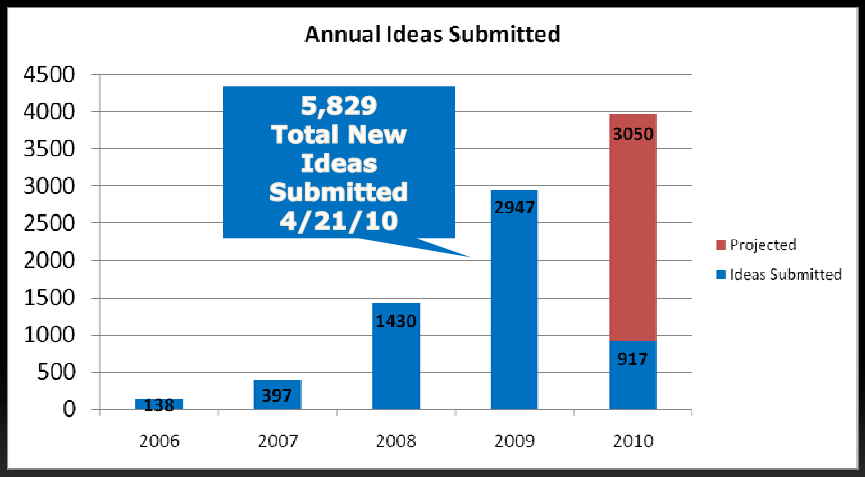
	2008 AVG	2009 AVG		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sep 09	Oct 09	Nov 09	Dec 09
Submitted Ideas	145	246		214	158	233	237	243	296	284	257	211	282	294	238
2009 Goal	150	200	200	200	200	200	200	200	200	200	200	200	200	200	200

2009 Cumulative Idea Report



	Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sep 09	Oct 09	Nov 09	Dec 09
Cumulative Submitted Ideas	214	372	605	842	1085	1381	1665	1922	2133	2415	2709	2947
Cumulative Closed Ideas	85	197	396	571	883	1152	1323	1473	1657	2031	2316	2529

Annual Submitted Ideas



MITSUBISHI POWER SYSTEMS

Recognition

- Certificates (Public Recognition)
  - Handed out on the floor from lead member for every implemented idea
  - At employee meeting for every 10, 25, 50, 75, 100.
- Random drawings
  - Japan Trip to MHI / FPL Trip
  - Monthly Parking Spots (Only Two)
- Group celebrations
  - BBQ
  - 1,000 ideas; 3,000 ideas; 6,000 ideas

TOM DEVATY

MANUFACTURING MANAGER

MITSUBISHI POWER SYSTEMS

MPSA IDEAS

MPSA Continuous Improvement Timeline

2006	2007	2008	2009	2010
• June Started MPSA Ideas Program	• December 10 Employees completed JI/JR training from TWI Institute • Team practiced among themselves using training simulations . Developed key JBS for each department • Began development of MTWI Certification process	• April Began internal training using MTWI Certification process • August Developed database to track records and metrics to manage the program • December 20 Employees Completed JBS skills training from TWI Institute	• March Identified link between JI, Ideas program, and Continuous Improvement • June 30 Employees Completed JM training from TWI Institute	• Present Integrated JM and JI into our Ideas Program to create a Culture of Continuous Improvement

MITSUBISHI POWER SYSTEMS

MPSA's Approach to TWI

- A team of 8 Employees representing all skill sets and 2 Supervisors attended the week-long TWI training in JR & JI
- Created 2 teams, each led by a Supervisor
- Held weekly meetings to discuss plans of action and progress
- Created and evaluated JBS (Job Breakdown Sheets) from each trainer

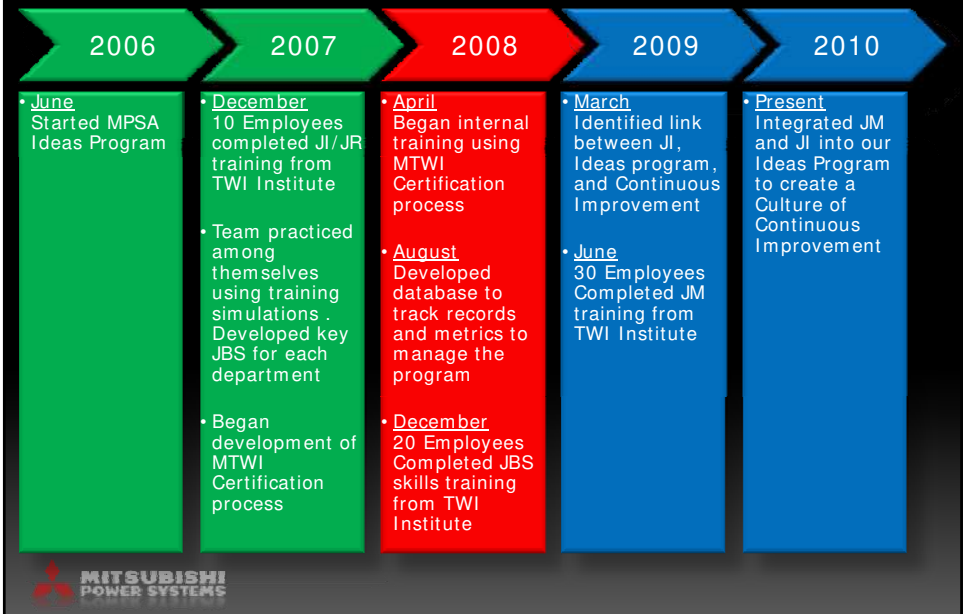
MITSUBISHI POWER SYSTEMS

MPSA's Approach to TWI

- Team members practiced the TWI method of training, following the principles learned
- Each trainer performed 3 live simulations (minimum) and were critiqued by the team members using rating sheets
- Upon unanimous approval, "MTWI Certified Trainer" was added to their security badge

MITSUBISHI POWER SYSTEMS

MPSA Continuous Improvement Timeline



MPSA's Approach to MTWI

- 4 new trainer candidates volunteered or were chosen to participate in the internal MTWI training
- Candidates were each mentored by a team of 2 TWI certified trainers
- Breakdown sheets were created and evaluated by their Mentors each week
- Data base was created in Sharepoint to store and retrieve MTWI Breakdown sheets, track revisions, training completions

MITSUBISHI POWER SYSTEMS

MPSA's Approach to MTWI

- Candidates perform 3 live training simulations (minimum) and are evaluated by the core group before being deemed as certified MTWI trainers
- Training forms are completed each time an Employee is trained using MTWI method – forms are signed and scanned to a file
- All Production Supervisors are also MTWI certified trainers

MITSUBISHI POWER SYSTEMS

MPSA's Approach to MTWI

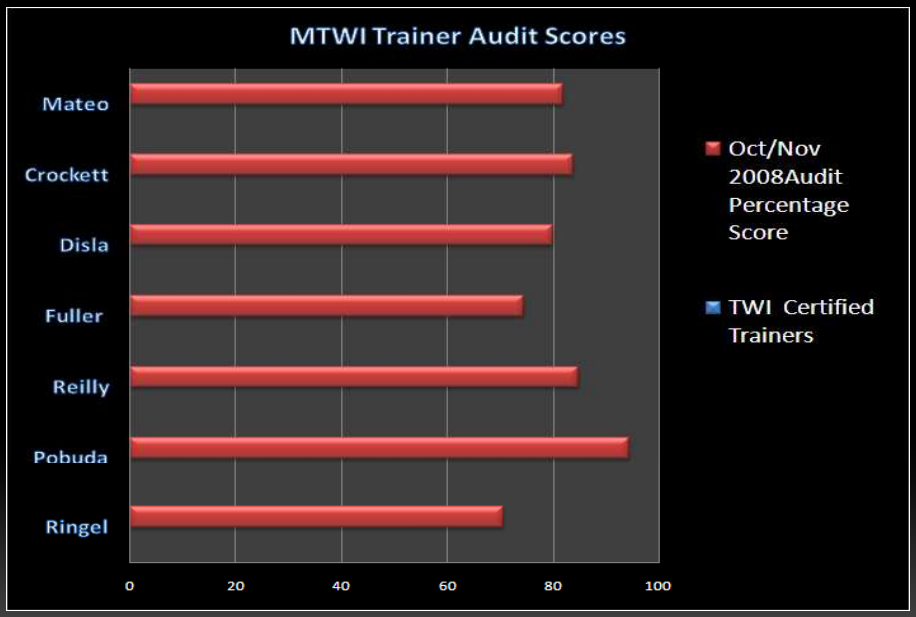
- Continuous discussions with Manager to clarify vision, training strategies, program foundation (JBS), evaluation of trainees
- MTWI Audit of trainees/trainers
- Maintained Trainer participation & proficiency Records

MITSUBISHI POWER SYSTEMS

MTWI PROFFIECIENCY TRAINING RECORD								IF THE WORKER HASN'T LEARNED THE INSTRUCTOR HASN'T TAUGHT
Name: John Crockett Date: 7/15/08	Operation: WI# OSC 6280 - Weld Repair of Mating Surfaces							
Step 1 - PREPARE THE WORKER:								Comments
	Avg	Total	1	2	3	4	5	
1/ Did the Trainer introduce themselves and their position	5	20					4	Need to position trainee
2/ Did the Trainer state the job ?	5	20					4	Good job mentioning safety issues
3/ Did the Trainer find out what the person already knows	5	20					4	Mention the tools that are going to be used
4/ Did the Trainer place the person in the correct position	2	8	1	2	1			
5/ Did the trainer put the trainee at ease ?	4.75	19				1	3	
Step 2 - PRESENT THE OPERATION								
1/ Did the trainer tell, show and illustrate one important step at a time ?	4.3	18				2	2	Make sure trainee can see
2/ Did the Trainer do it again stressing the key points ?	4.75	19				1	3	Great job presenting
3/ Did the trainer do it again stating the reason for the key points ?	5	20					4	Nice job being organized
4/ Did the trainer instruct clearly, completely and patiently but don't give them more information than they can master at one time ?	5	20					4	Great use of terminology, and good voice tone Mentioned key points and important steps together, be careful
Step 3 - TRY OUT THE PERFORMANCE								
1/ Did the trainer correct and guide the trainee	5	20					4	They had good retention, repeat information back to him
2/ Did the trainee repeat each important step back to the trainer	4.75	19				1	3	
3/ Did the trainee repeat the key points back to the trainer	5	20					4	
4/ Did the trainee repeat the reasons for the key points back to the trainer	4.5	18				2	2	
5/ Did the trainee understand the reasons for the key points fully	5	20					4	
Step 4 - FOLLOW UP								
1/ Did the trainer assign a designated person to answer questions if he or she was not available	4.75	19				1	3	
2/ Did the trainer encourage and answer questions during the training session ?	4.5	18				2	2	Please don't forget to talk about the Work Instruction at the end.
3/ Did the trainer let the person know that there are more detailed work instructions available for reference ?	1.5	6	2	2				
4/ Do you believe the trainee retained information from this training session ?	4.5	18				2	2	
TOTAL	4.47							Great Job

1) Did not display skill set
2) Not a strong understanding of the skill set requirments
3) Skill set needs further refinement
4) Skill set was properly displayed, could have been improved upon
5) Skill set was properly, and fully displayed

MITSUBISHI POWER SYSTEMS



MITSUBISHI POWER SYSTEMS

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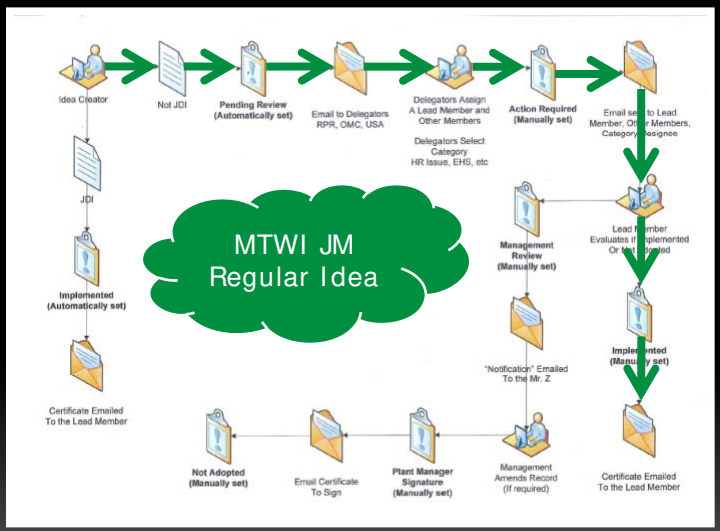
MITSUBISHI POWER SYSTEMS

MPSA Ideas Process



MITSUBISHI POWER SYSTEMS

MTWI JM Regular IDEA Example

Problem – Increased volume of product required to flow through coating booth due to new customer orders.

Solution – Complete a JM for the process and present it out to management by 5/31/2010 with improvement ideas.

Improvement IDEA Submission Form

Improvement Idea - Problem:

Improvement Idea - Solution:

Sketch or additional information:

Area of Improvement (circle all applicable)					**Component Type** (circle all applicable)			
Coat - Comb	Coat - Turb	Vacuum Furnace	Blade Cell 1	Vane Cell 1	Basket	Blade	Vanes	Ring Segments
Weld - Comb	Weld - Turb	Heat Tint	Blade Cell 2	Vane Cell 2	Basket Swirler	T1S	T1C	RS1
Insp - Comb	Insp - Turb	Braze	Blade Cell 3	Vane Cell 3	Transition	T2S	T2C	RS2
Strip	Blend	Tool Room	Shared Resource 1	Vane Cell 4	Transition Seal	T3S	T3C	RS3
Machining	Maintenance	Inventory	Shared Resource 2	Vane Cell 5	Transition Cylinder	T4S	T4C	RS4
Safety	General Process	Production Control	Facility	Vane Cell 6	Fuel Nozzle	Bypass Elbow	Compressor Diaphragm	Other
Tooling	Fixturing	Project USA	Other	N/A	Cross Flame Tubes	Slide Plates	Clam Shell	N/A
Estimated Savings (If Known)		Labor Hours:			Material Cost:			

MITSUBISHI POWER SYSTEMS

Teamsite > Power Generation Service > Ideas > New Item

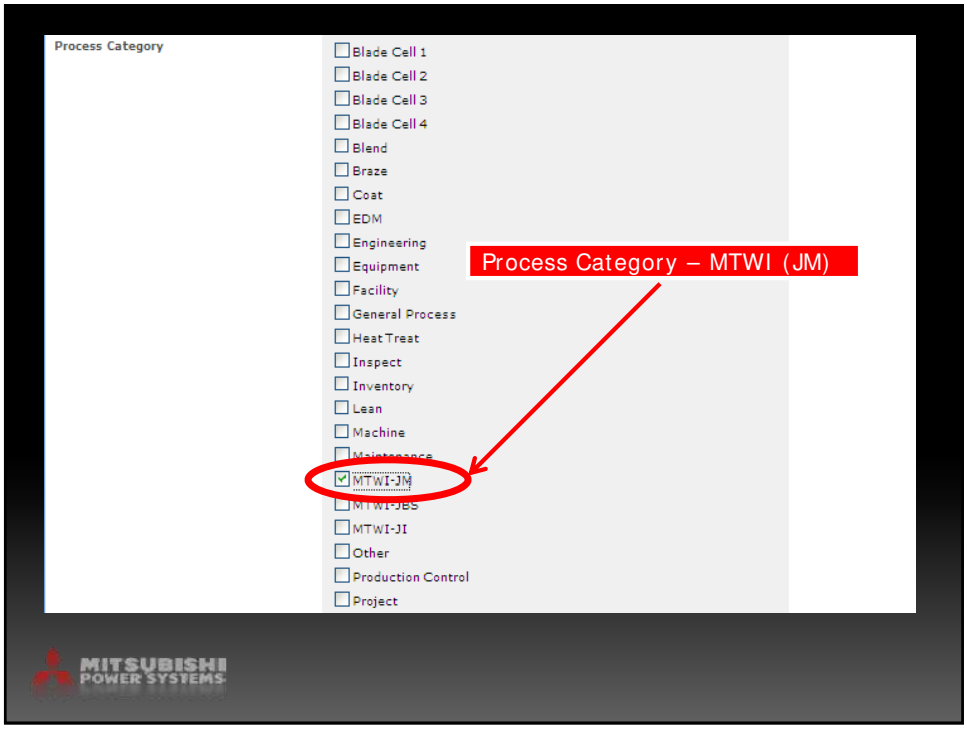
Ideas: New Item

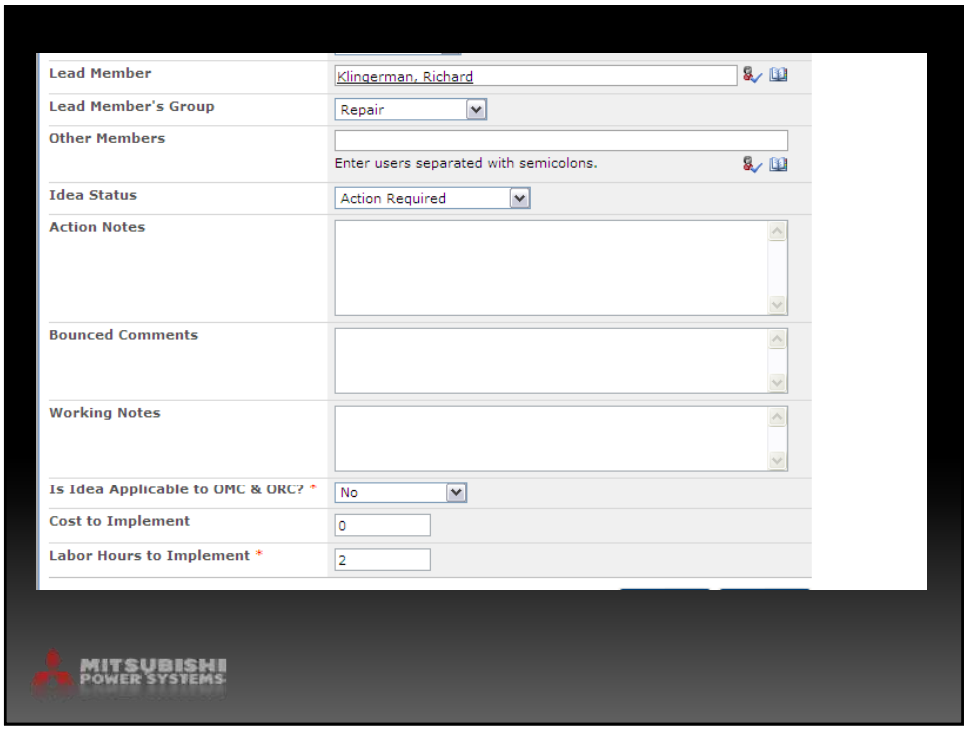
OK | Cancel

Attach File | Spelling... * indicates a required field

Suggestor *	Barrett, John
Problem *	Increased volume of product to flow through coating area due to n
Idea/Solution *	Complete a JM for the area and present it out to management by 5/8/2010
Relevant Facility *	Repair
EHS	☐ Is the Idea Safety related?
Productivity	☑ Is the Idea Productivity related?
Quality	☐ Is the Idea Quality related?

MITSUBISHI POWER SYSTEMS


Process Category
Blade Cell 1
Blade Cell 2
Blade Cell 3
Blade Cell 4
Blend
Braze
Coat
EDM
Engineering
Equipment
Facility
General Process
Heat Treat
Inspect
Inventory
Lean
Machine
MTWI-JM
MTWI-JI
Other
Production Control
Project
Process Category – MTWI (JM)
MITSUBISHI POWER SYSTEMS


Lead Member
Klingerman, Richard
Lead Member's Group
Repair
Other Members
Enter users separated with semicolons.
Idea Status
Action Required
Action Notes
Bounced Comments
Working Notes
Is Idea Applicable to OMC & ORC? *
No
Cost to Implement
0
Labor Hours to Implement *
2
MITSUBISHI POWER SYSTEMS

JM - Form

JM – Generates Ideas

Job Methods Sheet (JMS)

OSC-F040, REV.

Product(s): M501F3 T2C, Batch Cart of 8 Vanes | **JM Team:** John Barrett, Chuck Vu, James Brookins, Reggie Ward

Operation(s): Initial Grit Blast Prep | **Dept(s):** Acid Room | **Date Completed:** 25-Aug-2009

JM STEP #1			JM STEP #2						JM STEP #3		
CURRENT METHOD DETAILS: XX PROPOSED METHOD DETAILS:	Distance Traveled (ft)	Time (min or sec)	REMARKS TIME / TOLERANCE / REJECTS / SAFETY	1 - WHY/ WHAT?	2 - WHERE? / WHEN? / WHO?	3 - HOW?	IDEAS IDEA #	Write them down now, don't try to remember. If accepted later, submit to Ideas Database and enter idea #.	1 - Eliminate	2 - Combine / Rearrange	3 - Simplify
1 Put on PPE (gloves)						X		Put on all PPE at one time.			X
2 Pick up router from part and verify serial # & previous operations			Check OP for Work Instruction #			X	3782	Need better method for identifying all part serial numbers.			X
3 Walk to front of GB-199 and pull WI 6010. Check process settings	10		Pressure (60-70 psi). Stand-off (3-6")			X	3784	Move parts cart closer to GB-199. (CLOSED)			X
4 Press Power Buttons			Control Power and Reclaim Start								
5 Check sight window on front of GB-199			Replace film 3x per shift for sight			X	3786	Currently takes 10 minutes. Improve to 2 minutes.			X
6 Check pressure gage on front of GB-199			Reads 75 psi								
7 Walk to rear of GB-199	20			X				Should be able to use front gage.	X		
8 Check pressure gage on rear of GB-199			Read 70 psi. OK per supervisor.	X	X		3790	Fix gage on front of machine so rear gage doesn't have to be checked.	X	X	
9 Walk from rear to side of GB-199	10					X		Same as # 3			X
10 Walk to bay door wall to obtain ear plugs	40				X	X	3792	Move Ear plug dispenser to machine. (CLOSED)		X	X
11 Pick up and insert ear plugs				X					X		
12 Walk back to side of GB-199	40			X					X		
13 Open GB-199 Door						X	3794	Simplify by running batches of 4 parts. (CLOSED)			X
14 Walk to cart	5					X		Same as # 3			X
15 Pick up part											
16 Walk to GB-199 from cart	5					X		Same as # 3			X
17 Insert part on table standing up on its side with IS down						X					
18 Close door											
19 Walk to front of GB-199	10										X
20 Insert Arms in GB-199 sleeves											

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MPSA Continuous Improvement Timeline

2006

- June
  Started MPSA Ideas Program

2007

- December
  10 Employees completed JI/JR training from TWI Institute

2008

- April
  Began internal training using MTWI certification process
- August
  Developed database to track records and metrics to manage the program
- December
  20 Employees Completed JBS skills training from TWI Institute

2009

- March
  Identified link between JI, Ideas program, and Continuous Improvement
- June
  30 Employees Completed JM training from TWI Institute

2010

- Present
  Integrated JM and JI into our Ideas Program to create a Culture of Continuous Improvement

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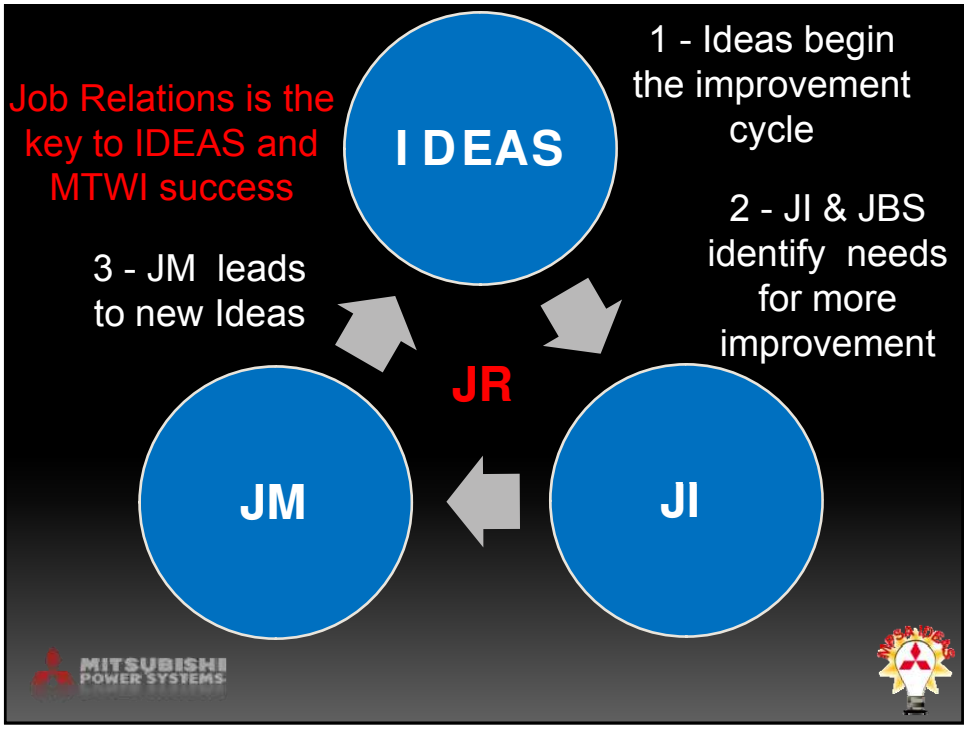
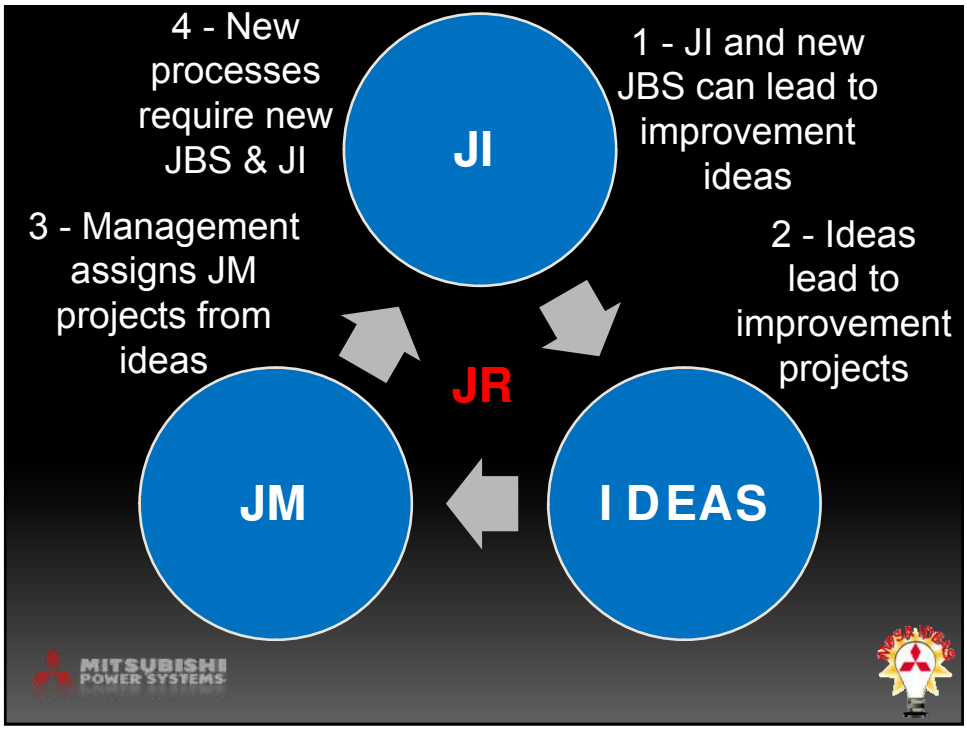

Job Relations is the key to IDEAS and MTWI success
IDEAS
1 - Ideas begin the improvement cycle
2 - JI & JBS identify needs for more improvement
JI
JR
JM
3 - JM leads to new Ideas
MITSUBISHI POWER SYSTEMS


4 - New processes require new JBS & JI
JI
1 - JI and new JBS can lead to improvement ideas
3 - Management assigns JM projects from ideas
2 - Ideas lead to improvement projects
JR
JM
IDEAS
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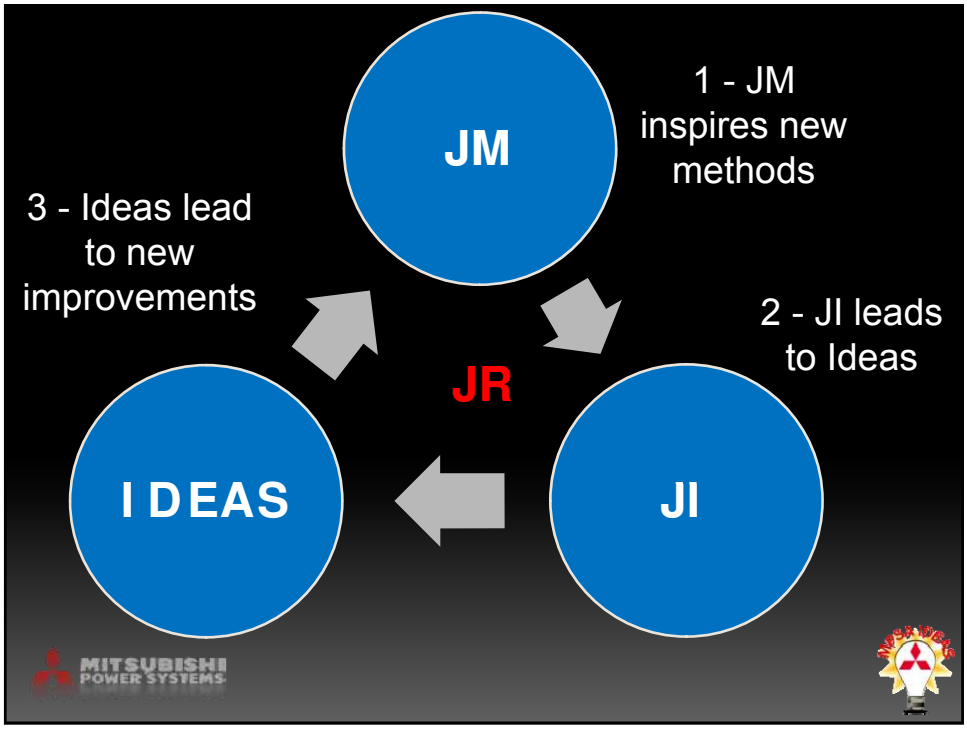

MTWI/Ideas INTEGRATION

- Job Relations (JR)
  - Idea is turned into Leadership team
  - Idea is entered into system and assigned
  - Lead member works with employee to implement Ideas
- Job Instructions (JI)
  - Idea implementation creates improvements which changes standard
  - JBS must now be created or modified to train employees
- Job Methods (JM)
  - Management assigns JM to find improvements
  - New JBS must now be created.

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MPSA Continuous Improvement Timeline

2006	2007	2008	2009	2010
• June Started MPSA Ideas Program	• December 10 Employees completed JI/JR training from TWI Institute	• April Began internal training using MTWI certification process • August Developed database to track records and metrics to manage the program • December 20 Employees Completed JBS skills training from TWI Institute	• March Identified link between JI, Ideas program, and Continuous Improvement • June 30 Employees Completed JM training from TWI Institute	• Present Integrated JM and JI into our Ideas Program to create a Culture of Continuous Improvement

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BEFORE MTWI VIDEO – 03

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How a Successful Ideas Program Powers MTWI