



# Implementing PM Principles by Analyzing Your Company's Maturity

PMI of Northern Nevada

Presentation

September 2013



# Review of Today's Presentation

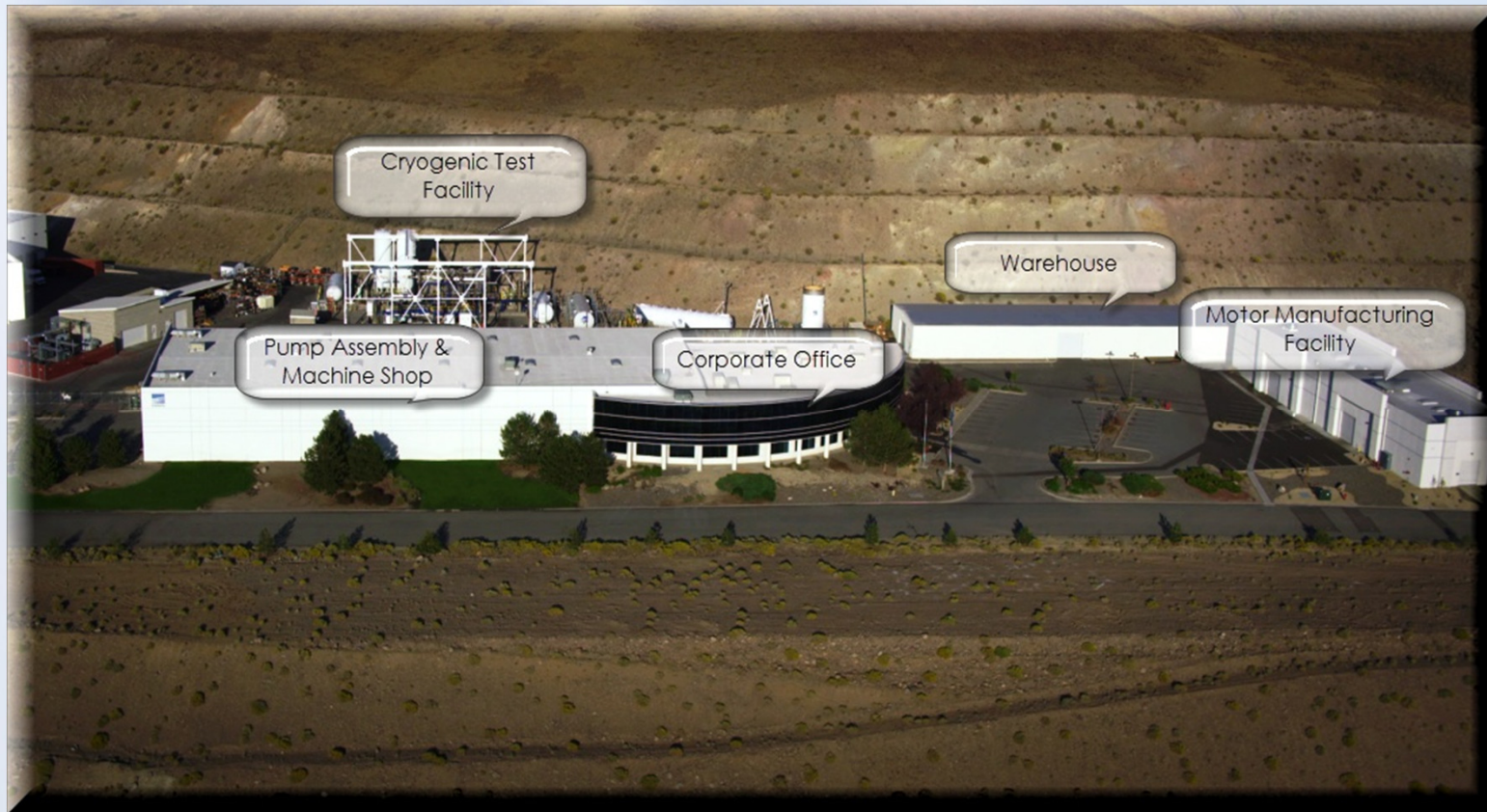
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- Part 1
  - Overview presentation of the local company I currently work
- Part 2
  - Open discussion regarding implementing PM Principles in a company that is currently maturing





# Ebara International – Cryodynamics Division Sparks, Nevada, USA







# Company Profile

- Manufacturer of custom engineered liquefied gas pumps
- Located in Sparks, Nevada, USA
- Division of Ebara Corporation of Japan
- 30,000 ft<sup>2</sup> (2790 m<sup>2</sup>) factory with a modern, dedicated liquefied gas test facility
- Current annual revenue ~\$125 million
- 170 employees at main factory
- 50 employees at newly acquired machine and fabrication shop
- 9 employees in London Sales/Service office
- 3 employees in our Shanghai Sales/Service office
- ISO 9001 Certified (DNV)
- Over 6000 submerged motor liquefied gas pumps and expanders built to date
- 3 out of 4 submerged LNG pumps installed were built by Ebara.
- Over 3400 pumps for LNG, LPG carriers





# Local Community Outreach

- Kerak Shrine Circus
- Star Spangled Sparks Children's game Area Sponsor
- Sparks Chamber of Commerce - Best Kid's Sponsorship - Two Schools
- Sparks Chamber of Commerce - Scholarship Sponsor
- Reno/Sparks Gospel Mission
- Big Brothers/Big Sisters of Northern Nevada
- Local Bowling Team/Club - Bryan Blank Sponsorship
- Marvin Picollo Elementary School
- SYFL JV Reed Raiders
- Galena High School Football Program
- Reno Sunrise Rotary: Edible Pedal 100
- Sky Tavern Junior Ski Program
- Boys & Girls Club of Truckee Meadows





# Company History

- Established in 1973 as an American Corporation (Cryodynamics), located in Southern California
- 1979: Relocated facilities to Sacramento, California, built first test facility
- 1979-1984: Division of Worthington Pump Corporation
- 1984-1989: Joint venture partnership with Ebara Corporation
- 1989-Present: Wholly owned by Ebara Corporation
- 1994: Relocated to Sparks, Nevada







# Summary of Customers

Bechtel  
BP  
Brunei LNG  
CB&I  
Chevron  
Chiyoda  
Daewoo Shipbuilding  
Darwin LNG  
Egypt LNG  
Enagas  
Equatorial Guinea LNG  
Fujian LNG  
Hammerfest Snohvit LNG  
HQCEC  
Hudong Zhongua Shipyard  
Hyundai Heavy Industries  
IHI  
Japan Gas  
JGC  
KBR  
Korea Gas  
Samsung Heavy Industries  
Shell  
Malaysia LNG  
MHI  
Nigeria LNG  
Oman LNG  
Pertamina  
QatarGas  
Ras Laffan LNG  
Saipem  
Sakhalin LNG  
Sofregaz  
Sonatrach  
Technigaz  
Tractebel  
Woodside LNG





# Types of Liquid

- LNG or methane (-162°C, -258°F)
- Propane (-42°C, -44°F)
- Butane (+0.6°C, +33°F)
- Ethylene (-104°C, -155°F)
- Nitrogen (-196°C, -320°F)
- Propylene (-48°C, -54°F)
- Ethane (-89°C, -128°F)
- Ammonia (-33°C, -28°F)

Basically, any liquefied gas that is non-conductive and has a low temperature boiling point at atmospheric pressure.







# Test Stand





# Test Stand

## **Ebara's Stand is the largest one of its kind in the world**

- Five pump test tanks
- One Expander tank
- Up to 6 tests per day
- Customized to specific requirements
- Some of the parameters tested:
  - Flow Rate (Rated, Minimum & Max)
  - NPSHR
  - Discharge Pressure (head) and Temperature
  - Suction Pressure and Temperature
  - Voltage, Amperage and motor input power
  - Vibration Level







## Product Line

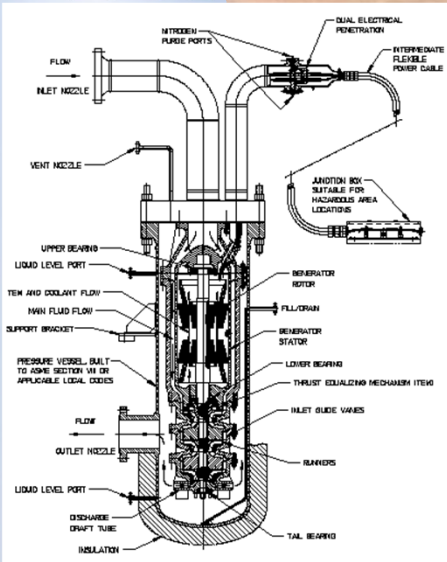
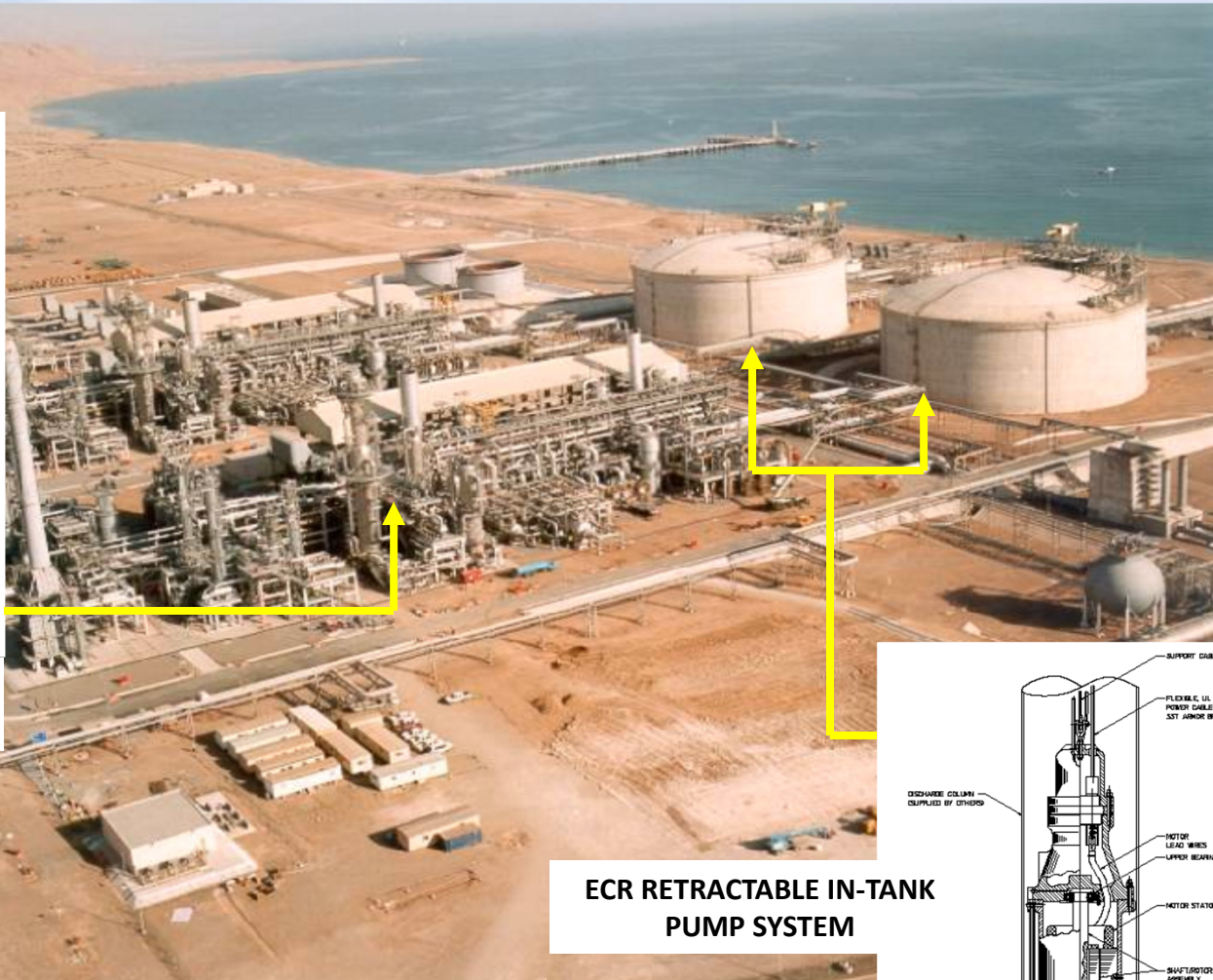
- Retractable (In-Tank) Pumps - Model ECR
- Suction Vessel Mounted Pump - Model ECC
- Marine Cargo Handling Pumps - Model EC
- Aggressive Fluid Pumps - Model ACR
- Cryogenic Turbine Expanders - Model LX and VX



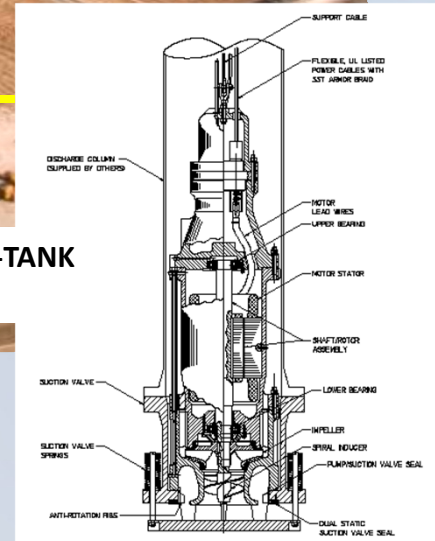




# Submerged Motor Pump Types



**TG RADIAL FLOW TURBINE GENERATOR**

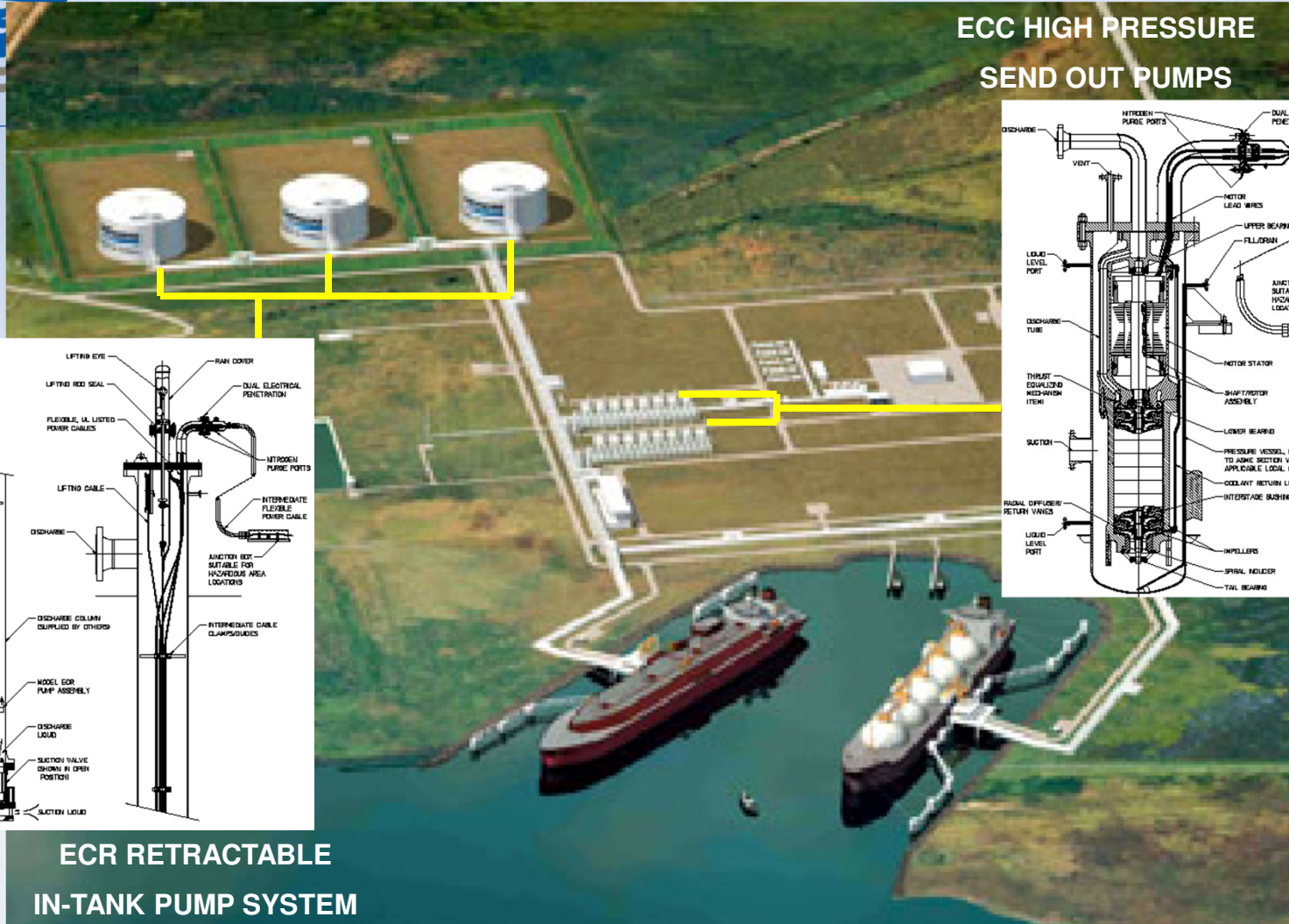


**ECR RETRACTABLE IN-TANK PUMP SYSTEM**

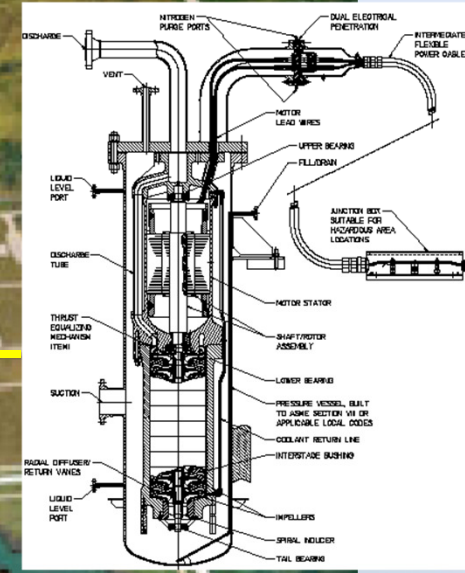
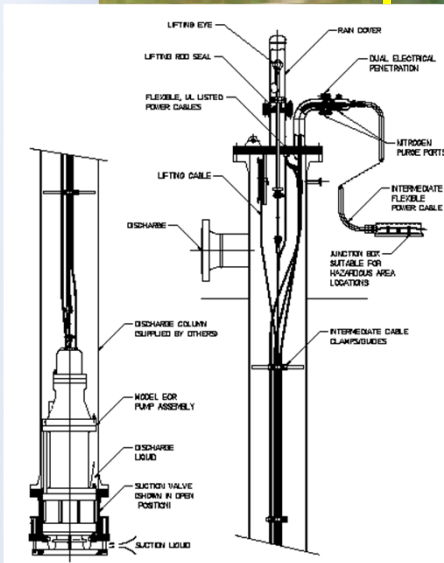




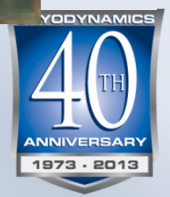
# Submerged Motor Pump Types



**ECC HIGH PRESSURE  
SEND OUT PUMPS**



**ECR RETRACTABLE  
IN-TANK PUMP SYSTEM**







# Ebara Pumps

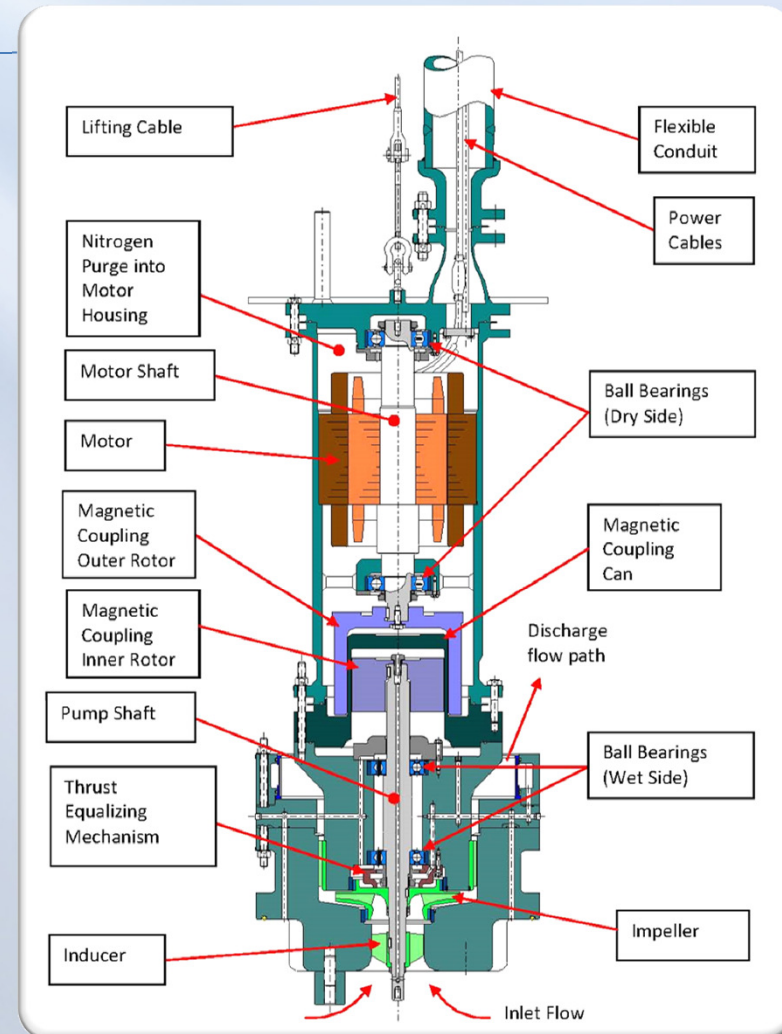






# Aggressive Fluid Design Model AC

- Magnetic Coupling
- Sealed Grease filled bearings in dry side
- Product lubricated bearings in wet side
- Motor in sealed, nitrogen purged housing
- Motor in sealed, nitrogen purged housing
- Materials comparable with corrosive or aggressive chemical applications





# Accomplishments

- Developed unique “Thrust Equalizing Mechanism” to balance thrust loads in cryogenic fluids (1973)
- Developed first variable speed turbine expander for LNG service (1995)
- Developed first magnetic coupling pump used in ammonia service (1996)
- Developed only UL listed flexible cryogenic power cables (1990)
- EIC was the first to develop fuel gas pumps used for dual fuel LNG carriers
- First two-phase LNG expander (2001)





# Company Summary

- Highly Engineered for customer specific applications
- Self own many companies that provide necessary components: Motor Shop, Weld Shop, Machine Shop, and Test Facility
- Product market is extremely limited so customer satisfaction is priority.
- On time shipment, under budget, and scope change/creep are still difficult to manage!







# Open Discussion – Implementing PM Principles

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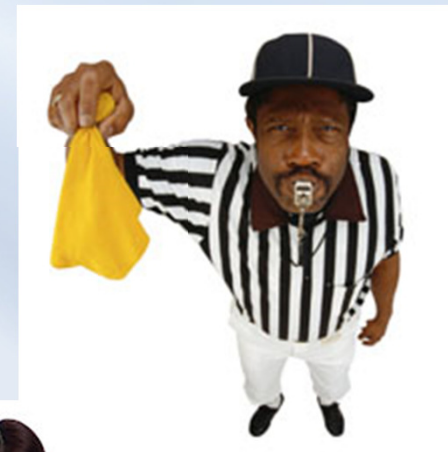
- Questions to begin with:
  - What are the challenges that exist with a company that has limited or no experience with PM Principles?
  - What are your options to present and implement these principles?
  - How does one identify the solutions that best fit your company's maturity?
  - How do you handle failures and continue to move forward?





# Where to begin - Analyzing your companies PM maturity

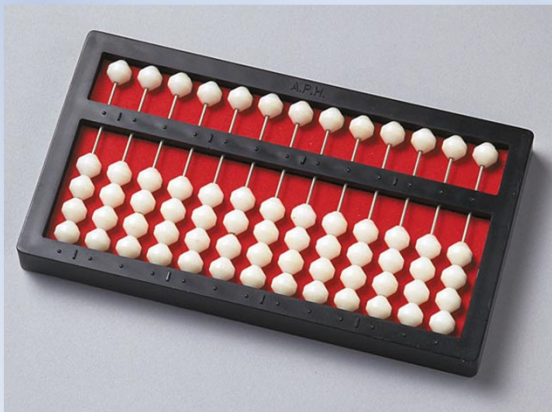
- Do you often feel like your job title entails everything but project management?





# Where to begin - Analyzing your companies PM maturity

- Are the tools that you have been given not adequate to assist you with your work?







## Where to begin - Analyzing your companies PM maturity

- Are team members and management aware of the basic building blocks of project management?
  - Project Phases
  - Charter
  - Project Plan
  - Etc.
- What is the status of current work procedures?
  - Are they detailed with work instructions?
  - Are they available, but lacking important details and processes
  - Procedures? What's a procedure?





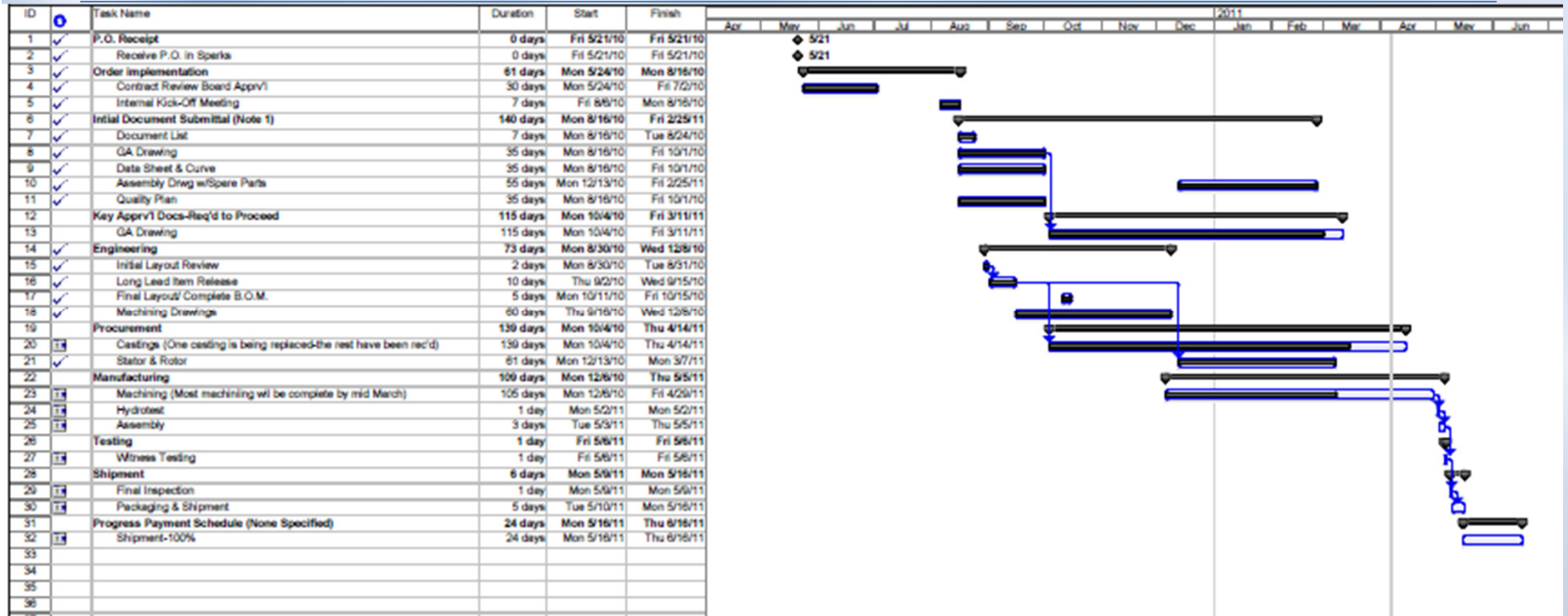
# Where to begin – PM Department Evolution

- Project Manager – The beginnings
  - Work consisted of:
    - Customer/internal communicator
    - Create Monthly reports with schedule
    - Complete the “WBS” template in our ERP system with dates provided by internal departments
  - Viewed internally as:
    - Customer Liaison
    - Score Keeper between departments
    - Document Expeditor
    - Clean up crew for all work left without a “defined” home





# Where to begin – Typical Schedule







# Where to begin – WBS Template

- Golar West Java FSRU
  - A15 ADMIN
  - A20 PROJECT MANAGEMENT
  - A25 PROJECT MEETINGS
  - A30 QUALITY
  - C10 ENGINEERING DESIGN
  - E10 RELEASE TO PRODUCTION
  - F10 PRODUCTION
  - F20 NON CONFORMANCE
  - G10 TEST

Gantt	Sub Project	Activity List	Activity	Resource	Tasks	Analysis	Summary	History	Planning	Valid Report Codes	Activity Hours	Project Document
			Activity ID	Responsible ID	Activity Description	Activity Sequence	Early Start	Early Finish	Baseline Start	Baseline Finish		
			010	BSCHEIN	Reports	100061920	1/1/2011	1/15/2021	1/1/2011	1/15/2021		
			020	BSCHEIN	Customer Correspondence	100061921	1/1/2011	1/15/2021	1/1/2011	1/15/2021		
			030	BSCHEIN	Internal Correspondence	100061922	1/1/2011	1/15/2021	1/1/2011	1/15/2021		
			040	BSCHEIN	Supplier Correspondence	100061923	1/1/2011	1/15/2021	1/1/2011	1/15/2021		
			100	RDALBOL	Customer Monthly Progress Report	100061924	1/31/2011	1/31/2011	1/31/2011	1/31/2011		
			101	RDALBOL	Customer Monthly Progress Report	100061925	2/28/2011	2/28/2011	2/28/2011	2/28/2011		
			102	RDALBOL	Customer Monthly Progress Report	100061926	3/28/2011	3/28/2011	3/28/2011	3/28/2011		
			103	RDALBOL	Customer Monthly Progress Report	100061927	4/28/2011	4/28/2011	4/28/2011	4/28/2011		
			104	RDALBOL	Customer Monthly Progress Report	100061928	5/24/2011	5/24/2011	5/28/2011	5/28/2011		
			105	RDALBOL	Customer Monthly Progress Report	100061929	6/28/2011	6/28/2011	6/28/2011	6/28/2011		
			106	RDALBOL	Customer Monthly Progress Report	100061930	7/28/2011	7/28/2011	7/28/2011	7/28/2011		
			107	RDALBOL	Customer Monthly Progress Report	100061931	8/28/2011	8/28/2011	8/28/2011	8/28/2011		
			200	RDALBOL	Internal Monthly Progress Meeting Report	100061936	1/31/2011	1/31/2011	1/31/2011	1/31/2011		
			201	RDALBOL	Internal Monthly Progress Meeting Report	100061937	2/28/2011	2/28/2011	2/28/2011	2/28/2011		
			202	RDALBOL	Internal Monthly Progress Meeting Report	100061938	3/28/2011	3/28/2011	3/28/2011	3/28/2011		
			203	RDALBOL	Internal Monthly Progress Meeting Report	100061939	4/28/2011	4/28/2011	4/28/2011	4/28/2011		
			204	RDALBOL	Internal Monthly Progress Meeting Report	100061940	5/24/2011	5/24/2011	5/28/2011	5/28/2011		
			205	RDALBOL	Internal Monthly Progress Meeting Report	100061941	6/23/2011	6/23/2011	6/28/2011	6/28/2011		
			206	RDALBOL	Internal Monthly Progress Meeting Report	100061942	7/28/2011	7/28/2011	7/28/2011	7/28/2011		
			207	RDALBOL	Internal Monthly Progress Meeting Report	100061943	8/25/2011	8/25/2011	8/28/2011	8/28/2011		
			900	BSCHEIN	Milestone - Kick Off Meeting	100061906	1/27/2011	1/27/2011	1/27/2011	1/27/2011		
			901	BSCHEIN	Milestone - GA Drawings/Data Sheet Submittal	100061907	3/1/2011	3/1/2011	2/24/2011	2/24/2011		
			902	BSCHEIN	Milestone - ITP/WITP Submittal	100061908	3/4/2011	3/4/2011	3/5/2011	3/5/2011		
			906	BSCHEIN	Milestone - Major Components on Order	100061912	2/14/2011	2/14/2011	2/14/2011	2/14/2011		





# Where to begin – WBS Template

- Key takeaways from the WBS:
  - WBS was very departmentalized and not project focused
  - Activities were set to the entire project duration
  - Meant for time reporting and not a tool during project execution
  - The tool was there, but was not being utilized





# First Step – Understanding All Department Procedures/Processes

- How well do you understand all department procedures and processes that interact with your project?







## First Step – Process Mapping

- Analysis: Project Plan, Project Schedule and Company Department Procedures were lacking
- Created a charter template and **introduced the term “Charter” to the company**
- Obtained GM signature and Department Manager Sign off.
- Mapped overall project process and every department process





# First Step – Process Mapping

- Charter Presented

1<sup>st</sup> EIC Charter

- High Level Process Flow Developed

Tier I Process Flow

- Created “Tier II” Process Flows to understand each department’s processes
- Inadequate WBS/Schedule for the High Level Process created





# First Step – Process Mapping

- Outcome:
  - Introduced PM Principles to the company without changing any current processes
  - All departments were included and educated as to each step in the project and the PM tools being used
  - PM Department had processes mapped in order to establish a complete project schedule







# PM Principle Introduction – Evolving the Role

- Initiated further Process Improvements to better execute projects
  - PM's collaborated to create the first detailed Project Schedule using Tier I Process Map, department SME's, and knowledge of the typical projects

1st Project Schedule

- Project Management involvement played a key role during the "Project Execution" Process Improvement Kaizen which led to a much more streamlined Project Schedule and introduction to "Phase Gate" project execution.

Final Project Schedule

- An infant Project Plan was also introduced at this time. It contained a Communication Plan, Risk/Mitigation Plan, Escalation Plan, and housed all internal Meeting Minutes.





# PM Principle Introduction – Evolving the Role

- Managing Projects by Phase Gates
  - Each gate is a hold point in the project
  - Management and Team review activities, costs, and schedule at each Gate Review

PROJECT EXECUTION STAGE GATE REVIEW PROCESS								
	PO EXECUTION PLANNING	DESIGN & DEVELOPMENT - LL BOM	DESIGN & DEVELOPMENT - BALANCE	PRODUCTION PLANNING AND BUILD	FINAL ACCEPTANCE TESTING	READY FOR SHIPMENT	DOCUMENTATION COMPLETE	
Pre-Work	Scope Review Meeting	Long Lead Pump Layout Meeting w/DFMA Point Kaizen	Final Layout (Pump, System) and Meeting w/DFMA Point Kaizen	Verify Receipt of Major Materials (PO Req's)	Factory Acceptance Test Completed	As Built Documents Submitted	Submit Final Documentation	Gate 7
	Complete Initial Customer Documents	LL BOM and DWG Release	Final BOM release (Pump, System) and supporting Ops documents (ITNDS, JBDI, etc)	Confirm Certifications on Material for build	Engineering Sign Off	Punch List Closed	Prep for Project Closeout Meeting	
	Project Schedule Completed	Long Lead System Layout Meeting w/DFMA Point Kaizen	LL Purchase Orders Issued	Complete Material Budget Review	Final Acceptance Budget Review	Inspections Completed	Final Budget Review	
	WBS in IFS (Budgets, Dates, Owners)	LL System BOM and DWG release with Finish Schedule	Receive Supplier Schedules	Scope vs Baseline Review	Scope vs Baseline Review	Items Packaged	Scope vs Baseline Review	
	Project Templates completed (Risk Plan, Communication Plan, etc)	Release Weldment Drawing (Headplate/Vessel)	Balance Budget Review			Shipment Budget Review		
	Payment Milestone Completion	LL Budget Review	Scope vs Baseline Review			Scope vs Baseline Review		
	Initial Budget Review	Scope vs Baseline Review						
Exit Criteria	Checklist Complete	Checklist Complete	Checklist Complete	Checklist Complete	Checklist Complete	Checklist Complete	Checklist Complete	Gate 7
	Project Schedule Approved by Departments	Operations Confirmation of LL BOM Releases	Operations Confirmation of Balance BOM Releases	Confirmation of Production Supporting Project Schedule	FAT/Engineering Sign Off Complete			
	WBS in IFS Baseline	Scope vs Baseline Approval	Confirmation of Production Supporting Project Schedule	Confirmation that Project is Ready for FAT	Scope vs Baseline Approval	Scope vs Baseline Approval	Scope vs Baseline Approval	
	Customer Documents Submitted	LL Budget Approval	Scope vs Baseline Approval	Scope vs Baseline Approval	Customer Documents Submitted	Customer Documents Submitted	Customer Documents Submitted	
	Initial Budget Approval	Approved Changes Reviewed	Balance Budget Approval	Customer Documents Submitted	Final Acceptance Budget Approval	Shipment Budget Approval	Final Budget Approval	
	Approved Changes Reviewed		Approved Changes Reviewed	Complete Material Budget Approval				
			Project Pump/System Complete BOM Released				Documentation Submitted/Project Closed	
				Receipt of all Material		Pump/System signed off		







# PM Principle Introduction – Evolving the Role

- Brief Recap:
  - Charter is now introduced
  - A typical project schedule created
  - The beginnings of a Project Plan are being utilized
  - Phase Gates have been introduced
- What areas are missing that should be focused on?
  - Change Management Plan
  - Cost Management Plan
  - Others?





# PM Principle Introduction – Iterative Attempts

- Next two are examples of implementing PM Principles using iterative attempts.
  - Plan, execute, evaluate, and adjust
- Implementing PM Principles is a good first step, but you have to make sure you evaluate the effectiveness and adoption amongst the company and within every department.





# PM Principle Introduction – Iterative Attempts

- Change Management Plan
  - Recently Introduced and met with huge departmental resistance

## Change Management Process Flow

- CEO and department managers bought off and were supportive of the procedure
  - Remember: Always have the correct support to sign off on your initiative.
- It is also important to have all impacting players included in development of new PM procedures for site acceptance
  - Change Management Procedure left out key personnel during development which led to further iterations before release
- If you have to reevaluate your process/procedure don't view this as a failure. This is how processes are improved!
- Plan, execute, evaluate, and adjust!







# PM Principle Introduction – Iterative Attempts

- Cost Management Plan
  - Management driven request which spawned the creation of this plan
  - No visibility to monthly expenditures, over budgets, or labor costs
  - Costs were only tracked at the end of a project or if a project was over it's budgeted total
  - A tool was created that worked for us instead of working for it!
  - Still required to export data out of the database and manipulate in Excel. Data integrity may be an issue in the future.
  - Management response was very positive as this information was previously not visible





## Company's Maturity – Next Steps

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- The transformation of the PM Department has been extensive in the last two years. The role of the Project manager has expanded and they are responsible for a much greater depth in the project than ever before.
- What does the future hold for further development of this role?





## Company's Maturity – Next Steps

- This company has accepted the need for implementing PM Principles.
- These principles were introduced slowly at first in order to gain understanding and acceptance.
- After management understood and became used to the terms they saw a need for further development.
- This has lead to an explosion in new processes with further development ahead on the horizon.







# Company's Maturity – Next Steps

- Management is driving towards the PM as the internal “customer” to other departments.
- Future Steps:
  - PM initiates the schedule based on needs and departments assign resources based on availability
  - Creation and implementation of RACI's to drive ownership and accountability
  - Expansion of PM roles for internal process improvement projects and participation in the Product Development Department





# Summary

- PMP certifications play a crucial role in providing individual PM's and PM Departments with the knowledge and credibility to implement such changes
- Successfully implementing PM Principles is often correlated to how a company understands the role of a Project Manager.
- As the company matured in understanding PM Principles additional processes were implemented
- Management needs to be involved and included.
- Leave room for adjustments based on company feedback.
- Ensure that the processes empower the employee/PM.
- Plan, execute, evaluate, and adjust!





# Summary

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- What are some of your success stories?
- Questions?

