

Assessing Lean Maintenance Excellence in an ISO 9000 Facility



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ABIDIAN

Business-Speak for Excellent Change

Mike Chambers

- Abidian, Inc. (Montgomery, AL & Florence, SC)
 - + CMRP, SSBB, and Lean Master with 25+ years of Plant and Corporate Experience in Maintenance, Engineering, and Operations Management
- Work experience includes ExxonMobil and Milliken
- Engineering and Maintenance Manager during a plant's successful ISO 9001 registration



Objectives

- Understand why it's important to assess our performance
- Explanation of the categories that help define Maintenance Excellence
- Insight as to how ISO 9000 considerations are incorporated
- Practical application of the tool and the type of results that might be expected



History of Process

- Has been used dozens of times at dozens of ISO/non-ISO plants over the last seven years
 - + Quantitative (have/don't have) performance levels
 - + Numerical results that can be compared over time across departments and plants
 - + Incorporates qualitative suggestions to guide improvement



History of Process Continued

- Well received by the plants
 - + MS Excel or by hand
 - + Easily adapted to changing technology and techniques
 - + Great way of performing a “non-threatening” self assessment
 - + Quick and easy!
- Similar assessment tool for “Operating Excellence”



Importance of Assessing Performance



Imagine a
world without
speedometers!



Life without speedometers ...

- Some will go fast
- Some will go slowwwww
- Progress and safety will suffer



Similar
problems would
exist in a life
without
scoreboards and
scorecards

PAGE OF PLAY	:15 :30 :45 :55 1:10 1:20 1:35 1:50 2:05									P L A Y E R	2:20 2:35 2:45 3:00 3:15 3:30 3:40 3:55 4:10													
	HOLE	1	2	3	4	5	6	7	8		9	OUT	10	11	12	13	14	15	16	17	18	IN	TOT	HCP
BLUE	510	307	333	165	521	143	404	365	401	3234		415	534	171	403	429	325	161	393	426	3249	6483		
BLACK	504	377	325	153	505	133	395	329	376	3098		378	517	153	392	378	311	151	392	408	3150	6148		
WHITE	487	357	314	145	490	122	386	321	352	2983		355	501	145	362	327	257	140	340	397	2184	5667		
HANDICAP	5	9	13	15	1	17	7	11	3			6	2	16	8	10	13	14	12	4				
PAR	5	4	4	3	5	3	4	4	4	36		4	5	3	4	4	4	3	4	4	15	71		
RED	464	311	293	121	397																			
HANDICAP	5	9	13	15	1																			
SCORER																								
ATTEST																								



It's human nature to want to know ...

- How are we doing?
- Are we getting better?
- How are we doing relative to the competition?
- And most of all, are we “winning?”



Maintenance Excellence Assessment

- ✓ Tells us how we're doing in our pursuit of Maintenance Excellence
- ✓ Let's us know if we're getting better
- ✓ Gives us a feel for how we're doing relative to competition
- ✓ ... and let's us know if we're winning the game!



Maintenance Excellence Assessment



Safety	Improvement Needed (0 Pts)	Average (1 Pt)	Good (5 Pts)	Maintenance Excellence (10 Pts)
OSHA Total Incident Rate (TIR, Last 36 Months)	> 5.0	2.0 to 5.0	< 2.0	0.0
Consecutive days with two or less recordables	< 90	90 days to 2 years	2 to 10 Years	> 10 Years
Same-Day Resolution of Safety WO's	< 50%	50 to 80%	81 to 95%	> 95%
Average 6S workplace scan of shop (25 possible)	< 10	10 to 15	16 to 20	> 20

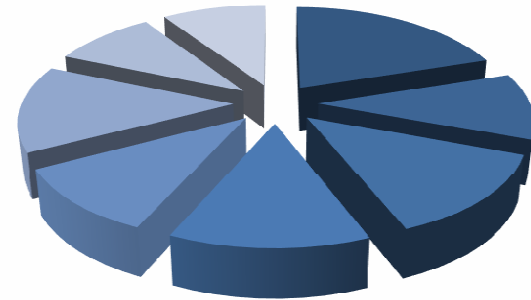
Traits of Maintenance Excellence in the Safety Area

- + ALL safety WO's are completed that day or the equipment is shut down until steps are taken to ensure safe operations can be resumed
- + Outstanding safety issues are tracked and posted with weekly status updates
- + Effective daily safety meetings at the start of each shift led by mechanics and attended by all maintenance hourly and salaried employees
- + Anyone is empowered to shut down an unsafe piece of equipment
- + Cross-functional same-day investigation of incidents and near misses ... published database of all incident and near miss follow-up actions
- + JSA's/SSP's are written for all equipment (shop, production, and support) and posted on the equipment
- + As appropriate, HECP's and MSDS's are associated with each piece of equipment and are available/printed with each work order
- + Routine 6S and housekeeping audits re-emphasize need for cleanliness, organization, and labeling
- + 6S & Visual Workplace techniques are routinely applied to the shop and plant work areas to improve safety, eliminate clutter, reduce motion, and improve organization

- Eight major categories plus an ISO section
- Scoring is heavily weighted toward Safety, Bottom Line Performance, Planning, and Predictive/Preventive Maintenance
- Average score has been about 30%
- Low score was 4% and highest 86%

Eight Major Categories

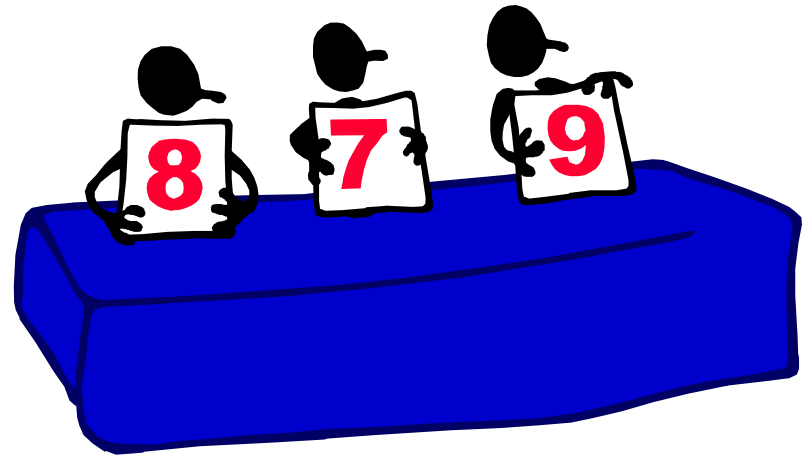
- Safety
- Organization, Involvement and Training
- Bottom Line Performance
- Planning and Scheduling
- Financial Control
- Predictive/Preventive Maintenance
- CMMS
- Misc.



Safety, Bottom Line Performance, Planning, and Preventive/Predictive Maintenance make up 2/3 of the total score

Four Levels of Performance

- Improvement Needed
- Average
- Good
- Maintenance Excellence



Example of the “Safety Section”

	Improvement Needed (0 Pts)	Average (1 Pt)	Good (5 Pts)	Maintenance Excellence (10 Pts)
OSHA Total Incident Rate (Last 60 Months)	> 5.0	2.01 to 5.0	.01 to 2.0	0.00
Consecutive Days w/ 2 or less Injuries	< 90	90 Days to 2 Years	2 Years to 10 Years	> 10 Years
Same Day Resolution Safety WO's	< 50%	50 to 80%	81 to 95%	> 95%
Average 5S+1 Scan (25 Possible)	< 10	10 to 15	16 to 20	> 20

Qualitative Safety Comments

- All Safety WO's are completed that day or the equipment is shut down until steps are taken to ensure safe operations can be resumed
- Anyone is empowered to shut down a piece of equipment they feel is unsafe
- 5S+1 and Visual Workplace techniques are routinely applied to the shop and plant work areas to improve safety, eliminate clutter, reduce motion, and improve organization



Qualitative Safety Comments Cont.

- Same-day cross-functional investigation of incidents and near-misses ... published database of events and follow-up actions
- Effective daily safety meetings at the start of each shift led by mechanics and attended by all maintenance hourly and salaried employees
- As appropriate, HECP's and MSDS's are associated in the plant's CMMS with each piece of equipment and are available/printed with each WO



“Planning and Scheduling Section”

	Improvement Needed (0 Pts)	Average (1 Pt)	Good (5 Pts)	Maintenance Excellence (10 Pts)
% Planned Work	<50 %	50 to 80%	80 to 95%	> 95%
# of Mechanics per Planner	25 (Or no Planners)	18 to 25	12 to 18	< 12
Work Sched Provided to Customers	Not Provided	Daily to < 3 Days	3 or More Days	Preceding Week
% Walk-In/ Unscheduled Breakdown Work	> 50%	10 to 50%	2 to 10%	< 2%

Planning and Scheduling Comments

- Before incorporating into a proposed schedule, each work request is evaluated for safety, parts needs, skill requirements, equipment training, interface issues, drawing needs, in-house troubleshooting expertise, engineering involvement, vendor assistance, rental equipment needs, tools required, permit needs, etc.
...jobs are then kitted prior to giving them to mechanics
- Costs and resource impacts are provided upfront to customers and maintenance leadership to assist them in approving and then prioritizing their maintenance needs



Planning and Scheduling Comments

- Priorities are set by customers with input (cost, downtime requirements, resource impact, practicality, impact on other work, etc.) from maintenance staff ... schedule is developed with customers to incorporate production, project, and other non-maintenance needs ... concerted effort is made to synchronize work with other business requirements
- Interruptions, breakdowns, and/or emergency break-ins to the agreed schedule are few and are tracked and scrutinized by the plant and corporate leadership groups



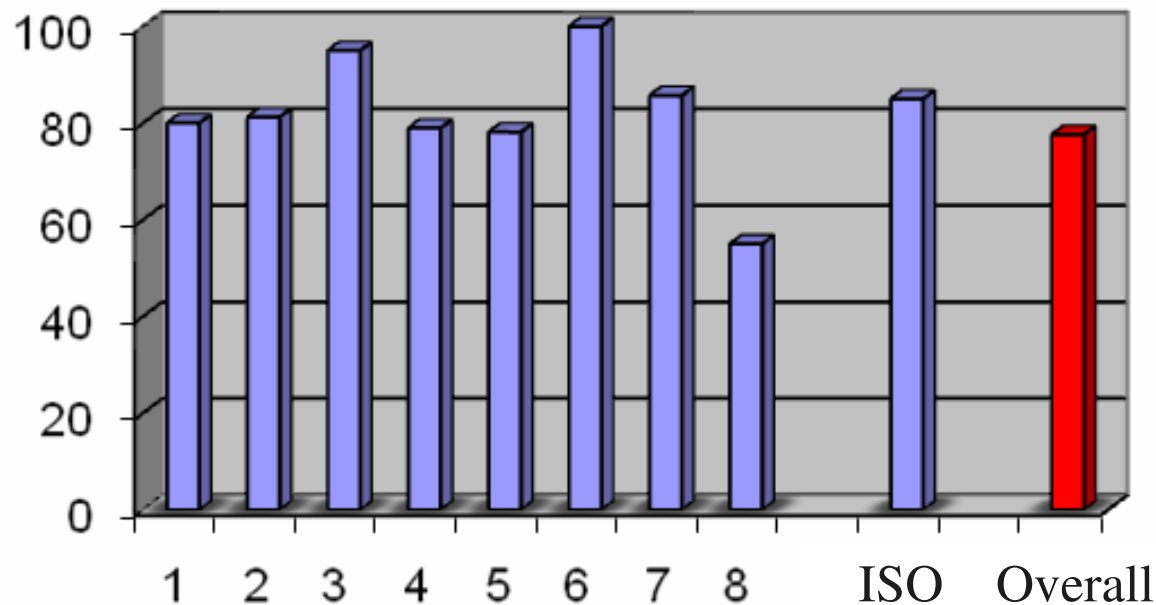
ISO Considerations

- Assessment tool should be used to compliment existing compliance assurance processes
- Incorporate checkpoints from the appropriate ISO standard
- For an ISO 9001 registered plant, these might include ...
 - + The typical “Say what you’re to do, do what you say, prove it, and continuously improve it!”
 - + Review of actual work practices vs. Work Instructions
 - + Completeness of “Lean” Work Instructions (i.e., safety and environmental considerations, photographs, job kitting, engineering/supplier specifications, etc.)



Graphical Results

Percent of Lean
Maintenance Excellence Achieved



Resulting graph helps to identify additional areas of opportunity

Suggested Use

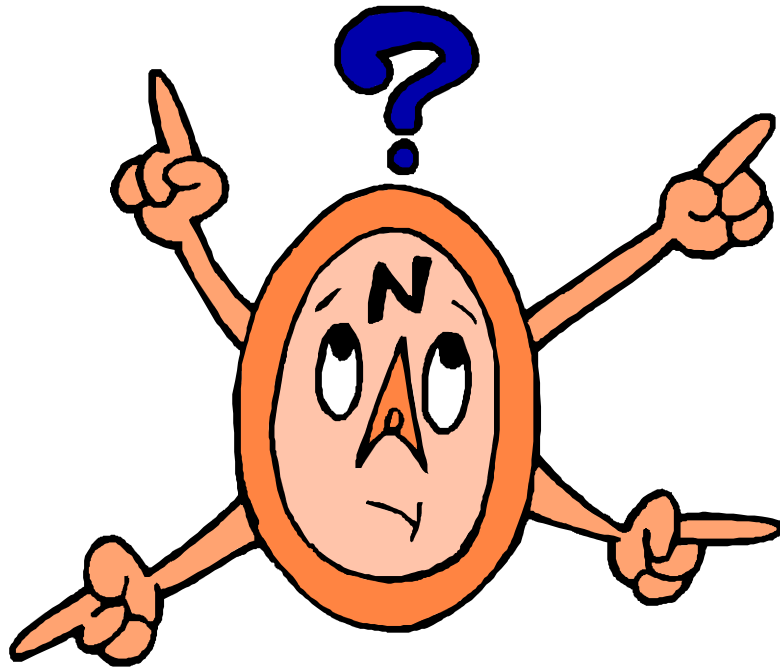
- Again, as a compliment to existing ISO compliance processes
- Initially, as part of a bi-annual comprehensive maintenance assessment
- Freely modify the format and ratings to suit the plant ... in the beginning, you're after buy-in!
- Leadership and/or the hourly re-visit the assessment quarterly
- As time passes, “raise the bar” by incorporating new techniques and technologies



Results Seen

- On average, we've seen about 10% a quarter when there's a concerted effort to improve
- One plant improved from a score of 50 to 72 in a year ... and added several million dollars to the bottom line in OEE and productivity credits!





Questions ...

Comments?

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