



Reliability Information Management

Reliability Information Management

BEST PRACTICES

RIM Program

- Single Database
- Actionable Info
- Program Value
- Basic Reliability Metrics

Asset Health

- Condition Based Inspections
- Integrated Dashboard
- Basic Care
- Asset Health Metrics

Work Management

- Reds Meetings
- RCFA Corrective Actions
- Work Management Metrics

Life Optimization

- Repair Vendor Interface
- Failure Analysis
- Bad Actor List
- Equipment Metrics



Best Practice #1

ONE Master Reliability Database

- Must allow entry from ALL SOURCES of information
- Must allow access to ALL USERS that need the information

Current State of Reliability Management

Many separate pieces of reliability information in reports, databases, computer folders, spreadsheets

No Standardization

No Integration

Poor Communication

Poor Accountability

No Ability to Analyze Performance

Reliability Management is Information Management

Identification and Design data

Design documentation

Purchase

Stores and stores testing/ task

Install and location details

Condition Test and Results

Contractor Management

Failure, Repair, and Warranty

Collective analysis

Isn't that what my CMMS does?

In most cases -

CMMS is tightly controlled by IT, not easy to adapt to new needs, limited access for many in plant

Focus on accounting priorities vs. maintenance & reliability needs

Not built to asset component level, or to house for condition status

Equipment design parameters at nameplate level only

Reports not visually oriented; difficult & time intensive to get useful Reliability metrics

What are the major obstacles?

For too many plants:

Varying report formats coming from different condition monitoring sources, communicated by e-mail to different groups of plant contacts

Information such as equipment design and calibration details is held in 'cubbyholes' developed by different departments, or they are buried in large systems such as CMMS

Information originating from service contractors & repair shops who can't get through firewalls to a plant database – do you have people available to transfer this valuable information from e-mails?

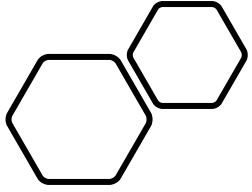
What are the typical results?

In too many cases:

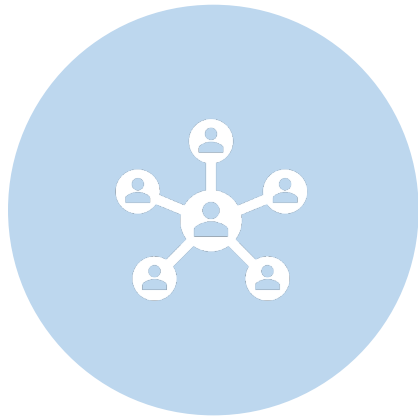
Difficulty in knowing the true condition status of critical equipment, due to non-standardized fault & severity descriptions coming from various monitoring reports

Poor accountability for maintenance action on condition-based calls – low visibility for mid & upper management on condition problems leads to ‘squeaking wheel’ relationships

Inability to retrieve useable failure mode and MTBF information to feed reliability analysis



Practical with web-based technology



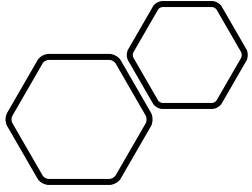
DOCUMENT RESULTS FROM DIFFERENT
PDM SOURCES



'FORCE' CONSISTENCY IN
DEFINITIONS & NOMENCLATURE



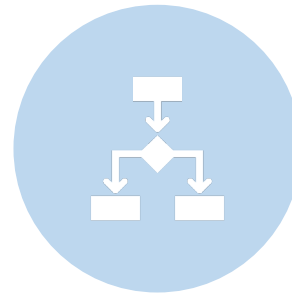
COMMUNICATE STATUS INFORMATION
THROUGH A WEB-BROWSER



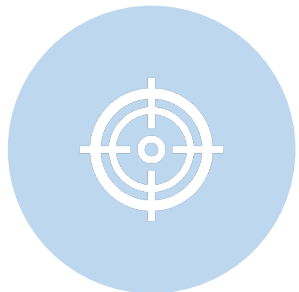
Handling the standardization issue



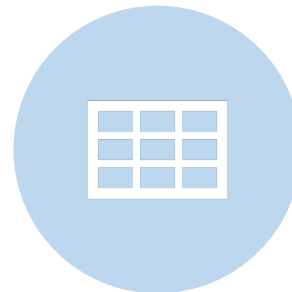
Make result documentation easy for the analysts – don't make extra work



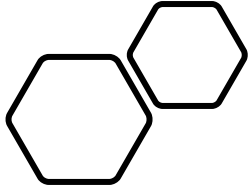
Standardize location names, equipment faults, & severity scale with drop-down lists



Force concise description of findings & recommendations



Let the formatting of results reporting happen dynamically “behind the scenes”



Standardization in a single database



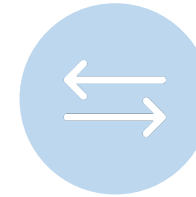
Nomenclature –

Use the same terminology across independent sources



Equipment Locations –

Track movement through the life of plant equipment



Names –

Eliminate miscommunication with consistent identification



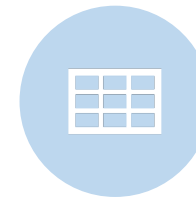
Faults –

Set fault & corrective action lists for all findings



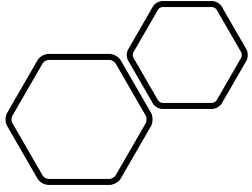
Severity Levels –

Consolidate a severity for all information sources



Reports –

Standardize the look of content from all sources



Integration

INTEGRATION CAN ONLY BE ACCOMPLISHED AFTER STANDARDIZATION IS IMPOSED



INTEGRATING CONDITION RESULTS FROM ALL TECHNOLOGIES UNDER EACH SPECIFIC MACHINE LOCATION IS THE FIRST STEP TOWARD ASSET-CENTERED COMMUNICATION OF HEALTH STATUS



INTEGRATING RCFA, EQUIPMENT REPAIR, AND EQUIPMENT LIFECYCLE INFORMATION REQUIRES STANDARDIZED FAULTS, LOCATIONS, AND EQUIPMENT DESIGN DATA TEMPLATES

The single database should be web-based




Condition results can be collected in a single web-hosted database, independent from the proprietary databases housing the technical data



In-plant technicians and outside PDM contractors enter plain language findings and recommendations into this web-hosted database via the Internet, bypassing any issues about outside vendors having to cross security

Manager's dashboard of reliability status

An Example of the Benefits of One Master Reliability Database

Asset Health Report Current Status (on Nov-07-2016) Sorted by: Criticality		All Functional Groups											
		Oil - Lab	Electrical - Offline	Visual Inspection	Electrical - Online	Vibration	Infrared - Mechanical	Infrared - Electrical	UE - Mechanical	UE - Electrical	Lubrication	NDE	Overall
													
Percent of Plant Locations in GREEN condition		78.95%	95.65%	64%	75%	89.83%	100%	97.51%	95.86%	99.62%	93.49%	46.23%	88.31%
Percent of Plant Locations in YELLOW condition				3%	16.67%	1.45%			0.69%				0.56%
Percent of Plant Locations in RED condition		21.05%	4.35%	33%	8.33%	8.71%		2.49%	3.45%	0.38%	6.51%	53.77%	11.13%
Total Locations Assessed		19	46	100	12	482	13	1444	145	1060	952	106	1959
Crit	Alias Location												
400	BOILER HOUSE >> UTL BOILER FEED SYSTEM >> 003-09097 - BOILER FEED WATER PUMP #1					Oct-24-2016		Oct-18-2016		Oct-25-2016	Aug-31-2015		Oct-25-2016
400	BOILER HOUSE >> UTL DEMIN WATER SUPPLY >> 003-09041 - ST DMW TRANSFER PUMP NORTH			Jun-07-2016		Oct-03-2016		Oct-17-2016		Oct-25-2016	Apr-04-2016		Oct-25-2016
400	BOILER HOUSE >> UTL ION REGENERATION SYSTEM >> 003-08025 - CAUSTIC MIX TANK											Apr-19-2016	Apr-19-2016
400	Latex >> LTX 2ND STAGE BD RECOVERY SYSTEM >> 301-05002 - XA BD RECOVERY ABSORBER											Apr-08-2016	Apr-08-2016
400	Latex >> LTX BST1, 2, 3 >> 301-29040 - AGITATOR - BULK LATEX STORAGE TANK					Sep-21-2016		Nov-02-2016		Oct-28-2016	Sep-20-2015		Nov-02-2016
400	Latex >> LTX HEATERS, VENTILATION & AIR CONDITIONERS >> 301-10011 - EXHAUST FAN - CHEM PREP AREA			Sep-21-2016		Sep-21-2016		Nov-02-2016		Oct-28-2016	Sep-21-2016		Nov-02-2016
400	Latex >> LTX HEATERS, VENTILATION & AIR CONDITIONERS >> 301-32001 - XA 2ND FLOOR WEST EXHAUST FAN (LARGE)					Sep-21-2016		Nov-02-2016		Oct-28-2016	Jul-07-2016		Nov-02-2016
400	Latex >> LTX HOMO FEED STORAGE TANKS 1-4 >> 301-09045 - PUMP - HFT					Sep-21-2016		Nov-02-2016		Oct-28-2016	Sep-20-2015		Nov-02-2016
400	Latex >> LTX HOMOGENIZER 3 SYSTEM >> 301-09144 - PUMP, HOMOGENIZER #3 FEED			Apr-29-2016		Sep-21-2016		Jul-08-2015		Oct-28-2016	Sep-20-2015		Oct-28-2016