How is Good Defined? …..

…… How about Best Practices?…..

……Should Best Possible be the goal?...

Lubrication Asset Management

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Definition of Key Terms

Asset

- An item, thing or entity that has potential (future), or actual, value to an organization. - It can be:
  - Inanimate or human
  - Tangible or intangible
  - Financial or non-financial.

Asset Management

- Involves the balancing of costs, opportunities and risks against the desired performance of assets, to achieve the organizational objectives.

Asset Management System

- A system which provides a structured approach for the development, coordination and control of activities undertaken on assets by the organization over different life cycle stages, and for aligning these activities with its organizational objectives.

Asset Management maybe best understood through reflection when it's not there!...

Before Asset Management Confused Priorities

- Organizational Disharmony
- Flavor-of-the-month Initiatives
- Poor Communication
- Pet Projects
- High Management Turnover
- Blame Game
- Tribal Knowledge-based Work

Impact on Assets/Organization

- Wasted Resources (People, Materials, Production)
- Low OEE
- High Operating and Repair Costs
- High Cost of Ownership
- Hidden Plant (Lost Opportunity)
- Low Return on Net Assets

So why should anyone care about Asset Management?

Remember that Asset management involves the balancing of costs, opportunities and risks against the desired performance of assets, to achieve the organizational objectives

Standards that Define Excellence

Background: First PAS 55, then ISO 55000

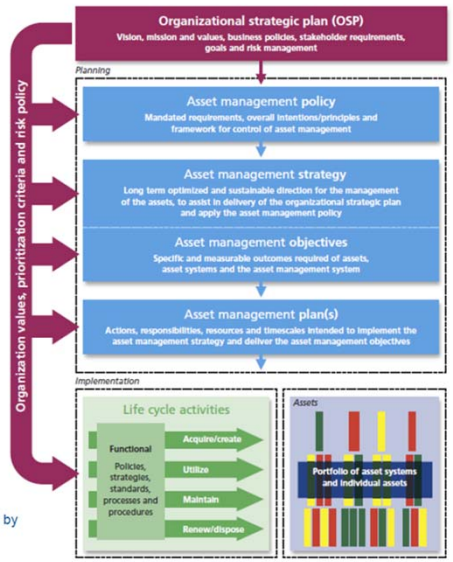
Structurally Derived from ISO 9001

PAS 55-1 Specification for the Optimization of Physical Assets

PAS 55-2 Guidelines for the Application of PAS 55-1

*Physical assets include mechanical machines, electronic devices, facilities and urban infrastructure

*PAS 55:2008 is withdrawn standard published by the British Standards Institute (BSI)



Condensed

Organizational Objective and Plan

Asset Management Policy and Objective

Asset Management Plan

Implementation of the Asset Management Plan

(1 Book; 3 Standards)

ISO 55000, Asset Management

PAS 55*, British Standards Institute
- Asset Management Standard-

*Withdrawn Standard

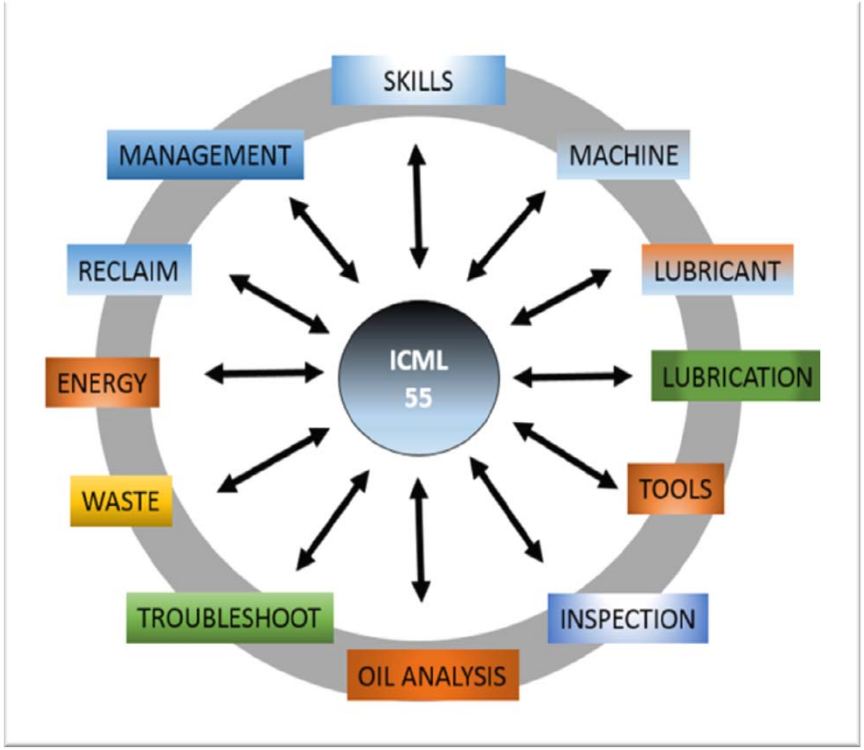
ISO 55000
Principles and Terms

ISO 55001 (43 Clauses)
Requirements for Certification

ISO 55002
Narrative on How to Achieve Compliance

Key Elements of Lubrication Asset Management Described

- ICML 55 Standard -



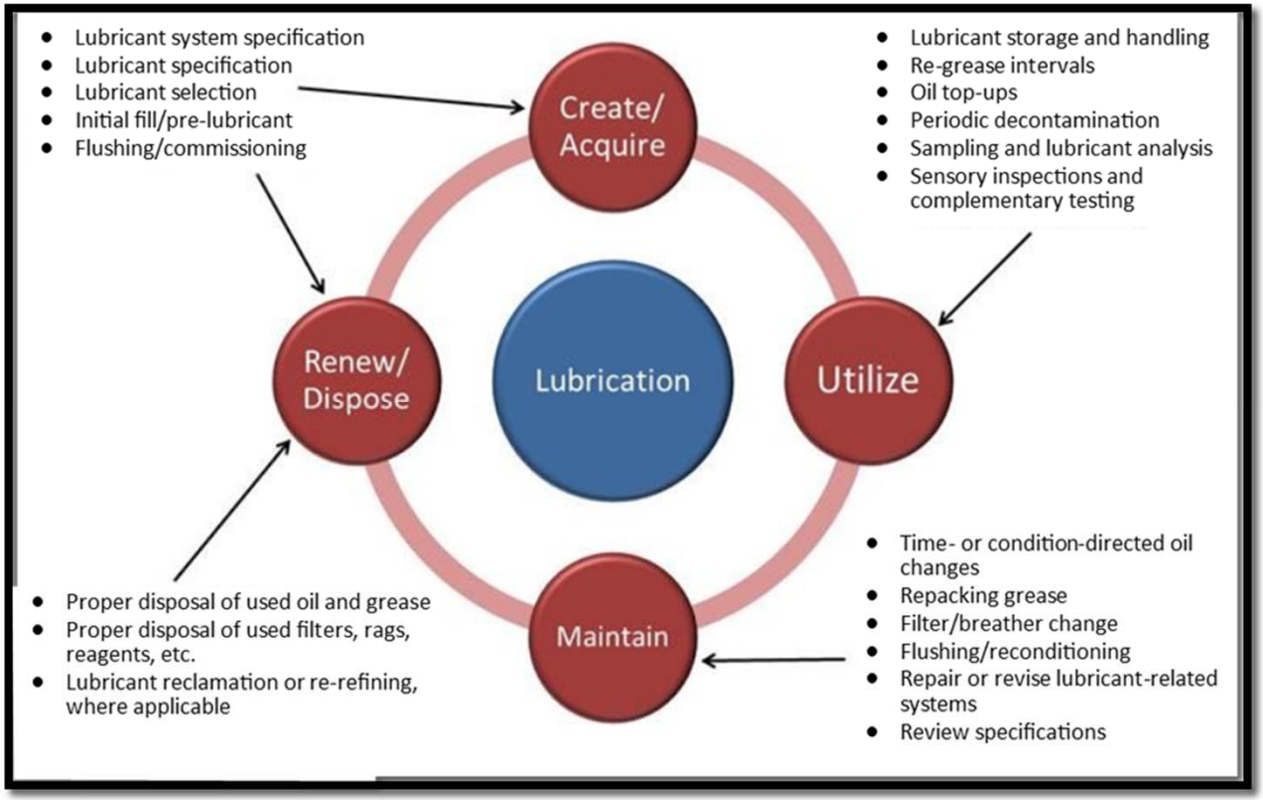
12 Key Program Elements

- SKILLS: Job/Task Skills, Training and Competency
- MACHINE: Machine Lubrication and Condition Monitoring Readiness
- LUBRICANT: Lubricant Selection
- LUBRICATION: Routine and Periodic Lubrication Tasks
- TOOLS: Lubrication Support Facilities and Tools
- INSPECTION: Machine and Lubricant Inspection
- OIL ANALYSIS: Lubricant Analysis and Condition Monitoring
- TROUBLESHOOT: Fault/Failure Troubleshooting and RCA
- WASTE: Lubricant Waste Handling and Management
- ENERGY: Energy Conservation and Environment
- RECLAIM: Oil Reclamation and System Decontamination
- MANAGEMENT: Program Management and Metrics

Asset Management requires an ongoing lifecycle management philosophy for each of the twelve focus areas

Example: Lubricant Management, Handling and Waste Management

- The specification and/or acquisition and/or analysis of lubricants and/or lubrication-related systems.
- The receipt and/or storage of lubricants and/or lubrication-related systems.
- Application and/or maintenance of lubricants and/or lubrication-related systems.
- Disposal, reclamation, and/or reuse of lubricants and/or lubrication-related systems.



Recall:

How is Good Defined? …..

…… How about Best Practices? ……...

……Should Best Possible be the goal?...

Some Attributes of the 12 Program Elements

Job Task Skills, Training and Competency

- Organization priority to have skilled and knowledgeable staff
    - Proper and up-to-date knowledge and skills are a foundational element

Machine Lubrication and Condition Monitoring Readiness

- Knowledge of machine design and operation
- Optimal use and lubricants
- Application of condition monitoring technology

Lubrication System Design and Selection

- Safe machine access for inspection to include monitoring
- Effective supplier alliances for lubricants
    - Avoid purchasing lubricant as commodities based upon price

Planned and Corrective Maintenance Lubrication Tasks

- Effective use of time based and corrective maintenance tasks
    - How scheduling is used
- Standardized work instructions

More Attributes of the 12 Program Elements

Lubrication Support Facilities and Tools

- Well maintained and calibrated equipment, instrumentation and consumables
- Lubricant storage and management process

Machine and Lubricant Inspection

- A clear defined and carefully developed inspection plan
- Inspection components may include PdM, logs and operator rounds
    - Address both machine and lubricant condition

Condition Monitoring and Lubricant Analysis

- Program designed to account for failure modes
- Program capable of deferring the onset of failures
- Includes data trending and designed to support failure analysis

Fault / Failure Troubleshooting and Root Cause Analysis

- Fault analysis (maybe machine or programmatic)
- Troubleshooting
- Challenge failures - Root Cause Analysis

More Attributes of the 12 Program Elements

Lubricant Waste Handling and Management

- (Example discussed in detail previously)

Energy Conservation and Environmental Impact

- Energy conservation through reduction of fluid friction
- Environmental Impact
- Condition directed replacement
    - Reduced manufacturing costs, waste streams and pollution
    - CHANCE FOR BIG GLOBAL WIN with reduced climate change impacts!

Oil Reclamation and System Decontamination

- Oil reclamation
- Lubricant system de-contamination and maintaining oil cleanliness

Program Management and Metrics

- Defined and agreed upon structure, authority and responsibility
    - Outsourcing can disrupt each of these and their effectiveness
    - Communicate, Metrics and change management

Continuous Improvement Process

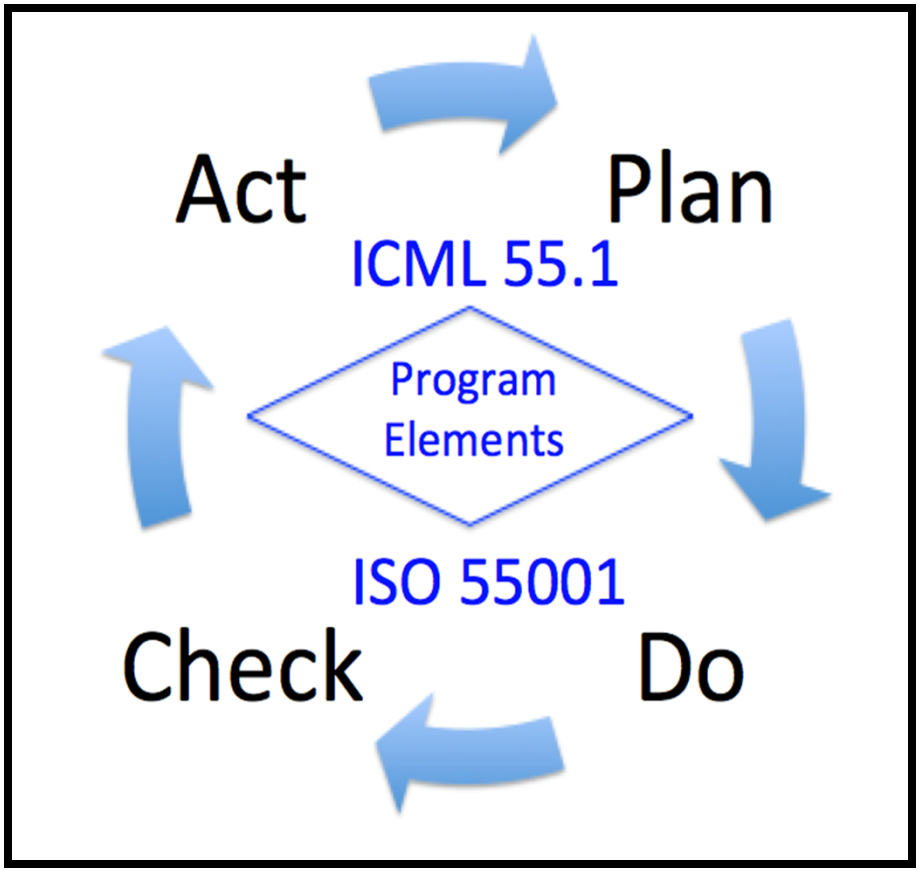
Let's argue that the program goal …

'should be' Best Possible …

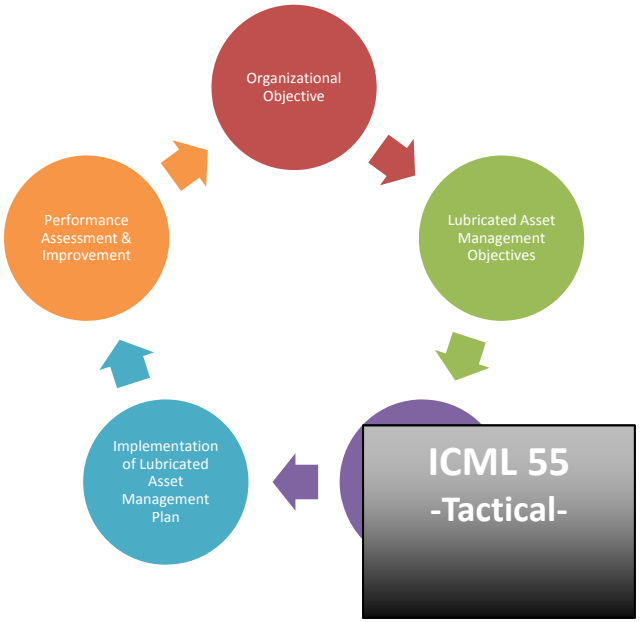
…… but that this can't be obtained without a continuous improvement process to the 12 structured program elements ……

…. And that continuous improvement can't happen without element 12,

--Program Management and Metrics—



From High Level Concepts……to Applying a Process…… and then onto Site Implementation



-IMCL 55-

International Council for Machinery Lubrication

Questions?