RELIABILITY EXCELLENCE

Your plant’s path to greater predictability and profitability

John Mleczewski, Linde Americas
Why Reliability?

- Is your plant safe?
  - Why or why not?

- Is your plant environmentally sound?
  - Why or why not?

- Is your plant consistently meeting operating goals?
  - Why or why not?

- A consistent commitment to Reliability is a foundational aspect of the top performing plants around the world.
WHAT IS RELIABILITY?

• Definition: The quality of being trustworthy or consistently performing well

• What does it mean in our plants?
  • The equipment works when we need it to
  • The equipment meets performance expectations
  • People perform and behave as expected
RELIABILITY MENTAL MODEL
EXAMPLE
COMRESSOR TRAIN
DAILY RELIABILITY
• What makes up Daily Reliability?
  • Things we do every day…
    • Equipment Rounds
    • Following procedures
    • Work execution (corrective & preventative maintenance)
    • Operating within design limits
    • Response to issues (communication and action)
    • Application of knowledge into action
COMPRESSOR TRAIN DAILY
PROACTIVE RELIABILITY

PROACTIVE

IMPLEMENT & MEASURE

REACTION

DAILY

PROGRAMS AND Equipment STRATEGIES

PROGRAMS AND Equipment STRATEGIES

PROGRAMS AND Equipment STRATEGIES
What is Proactive Reliability?

Things we do to anticipate failures in an attempt to prevent them or minimize their impact:

- Failure Modes Cause Analysis (FMCA)
- Process Hazard Analysis (PHA)
- Condition Based Monitoring (CBM)
- Project development
- Equipment performance trends
COMPRESSOR TRAIN
PROACTIVE
• What is Reactive Reliability?
  • Things we do to understand what went wrong and how we improve…
  • Failure/Incident Analysis
  • Lessons Learned
  • Post Issue/Incident Action Items
COMPRESSOR TRAIN
REACTIVE
PROGRAMS AND STRATEGY

- What are Programs and Equipment Strategies?
- Programs and Equipment Strategies provide the framework for long term success by defining the “spokes” of reliability
  - For a piece of equipment or process system, the program/strategy(ies) defines daily, proactive, and reactive tasks
  - Sets the organizational perspective (urgency/criticality) for task completion and condition evaluation
COMPRESSOR TRAIN
PROGRAMS & STRATEGY
• The hub of the Reliability Excellence concept…but why?
  • The best analysis efforts fall short if they are not implemented into the business.
    • Plans on paper do not improve reliability
    • Tasks and action do…
  • The only way to know if you’re making a difference is to measure your results
    • Misaligned commitment to the perceived important tasks waste dollars, efforts, and time
COMPRESSOR TRAIN
IMPLEMENT & MEASURE
• We have a great idea…but “management” won’t buy in.
• All businesses work on economics
  • Once a business reaches an acceptable safety and environmental compliance level…economics rule
• If you want your project or idea to be funded, then you must show the value to the organization
  • Future dollars saved
  • Future dollars to be earned
• Risk = Consequence * Likelihood

• The consequences are often easier to reach

• The likelihood is where a deeper challenge lies
  • Will the equipment make it?

• Define the opportunity 3 different ways:
  • Risk adjusted dollars
  • Internal Rate of Return (IRR)
  • Net Present Value (NPV)