



**WORLD BREWING CONGRESS**

August 13–17, 2016 • Denver, Colorado, U.S.A.

#ElevateBeer



# Do your Asset Failures come as a Surprise?

Time to change your maintenance strategy and turn maintenance into a contributor to your profitability

A World Class Manufacturing Presentation by Louis Houle, MBA  
Managing Partner – Systemex Industrial Consulting





# Purpose

Implementing an **Asset Management Strategy** that takes Maintenance from Cost Center to **Profit Center** Requires a Paradigm Shift.

**4<sup>th</sup> Generation Maintenance** can be Leveraged by Businesses of all Sizes to Accomplish this.

The goal is to manage **Consequences** rather than focusing on the **Failures**.

# Louis Houle | Systemex Industrial Consulting



## **Louis Houle – Managing Partner**

Based in Jacksonville, FL

MBA – Schulich School of Business

B. Sc. Mechanical Engineering – University of Waterloo

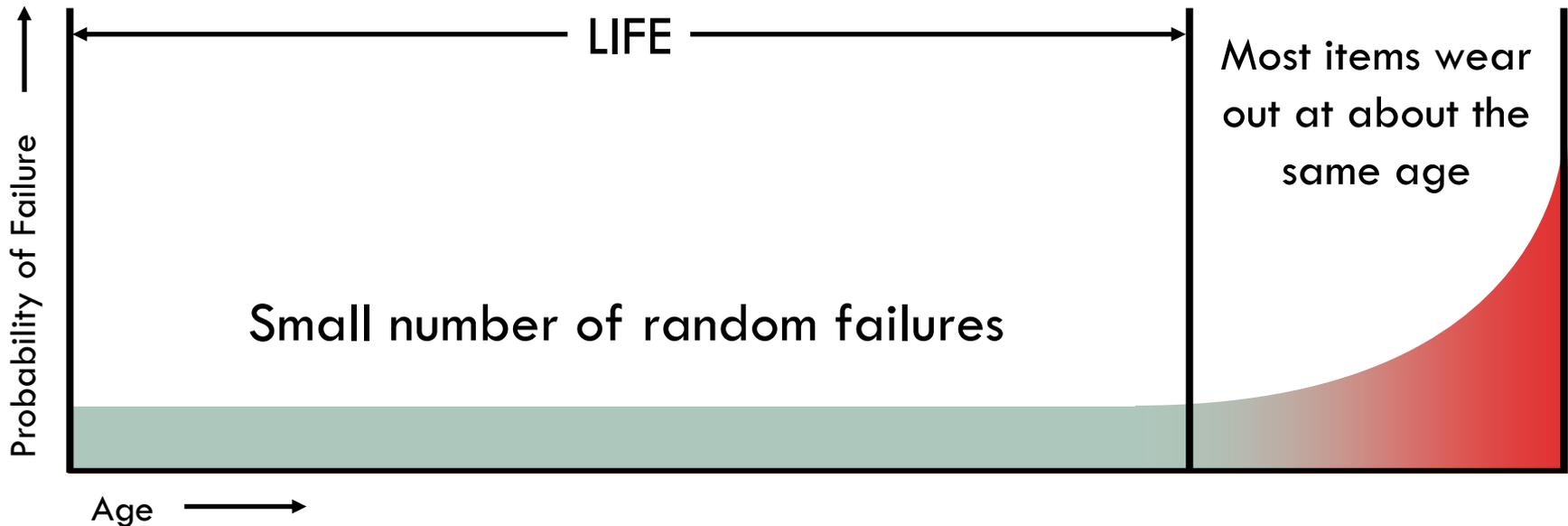
18 years in Operations & Maintenance

Incl. 8 years in Spirits Production

# Paradigm

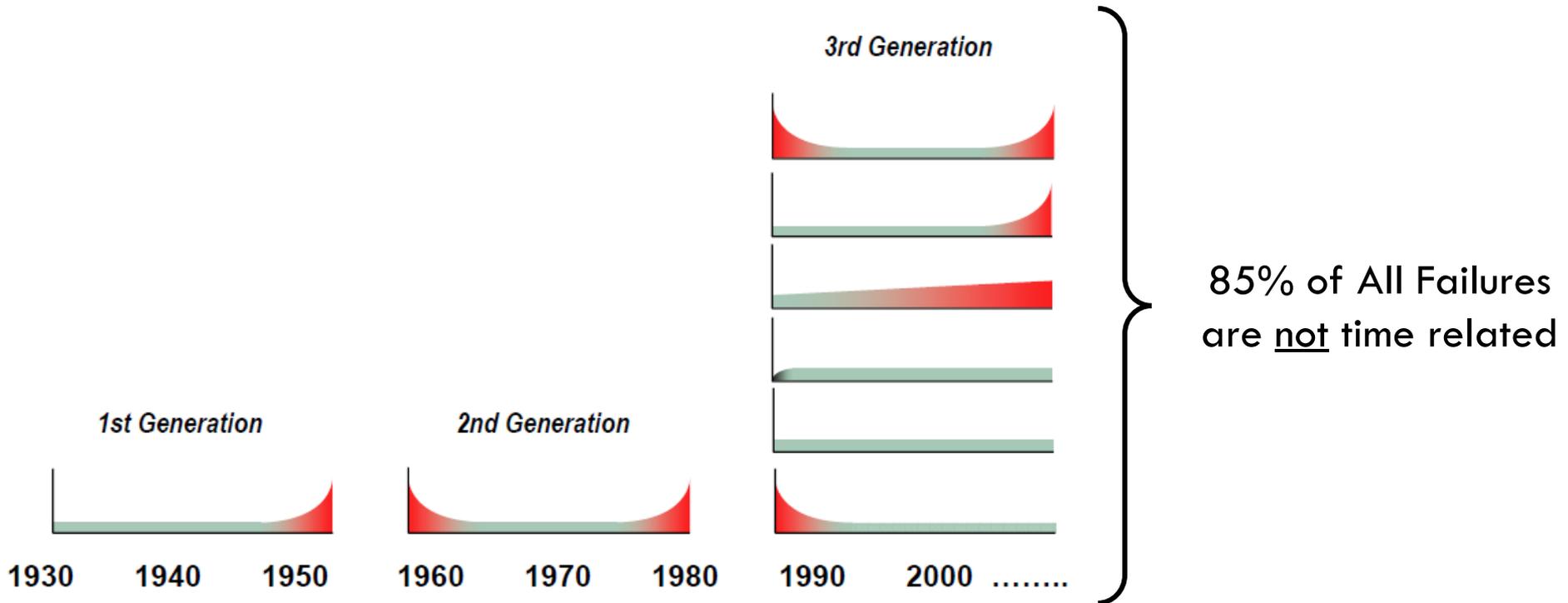
## True or False?

*“As equipment gets **older**, it is **more likely to fail**”*



# Paradigm Shift

**Experience** and **Data** show clearly that it is **not** the case  
**Successful Maintenance** must be **Rational**, not Emotional



# Maintenance Evolution: Pre-1950



1<sup>st</sup> Generation Maintenance  
**Reactive Maintenance**

Run to Failure

*“If it ain’t broke, don’t Fix it!”*

# Maintenance Evolution: 1950-75

2<sup>nd</sup> Generation Maintenance

**Preventive Maintenance**

Scheduled Overhauls

Systematic Replacements

Maintenance Planning



# Maintenance Evolution: 1975-2000



3<sup>rd</sup> Generation Maintenance

**Predictive Maintenance**

Condition Monitoring

Design for Reliability

Design for Maintainability

Total Productive Maintenance

Multi-Skilled Labor

# Predictive Maintenance Examples



Thermography



Oil Analysis



**Don't Forget your 5 Senses!**

# Maintenance Evolution: 2000-on

4<sup>th</sup> Generation Maintenance

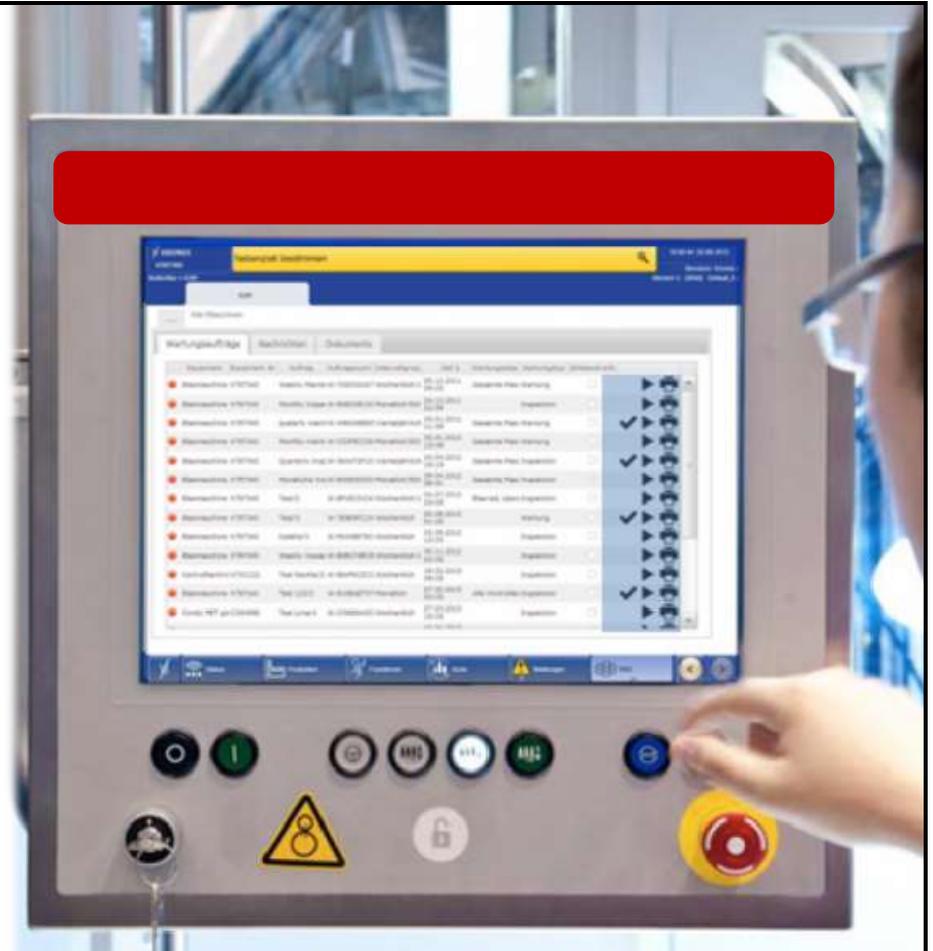
**Proactive Maintenance**

Global Cost

Life Cycle Optimization

Risk Management

Corporate Responsibility



# Proactive Maintenance Examples

The Goal of Proactive Maintenance is to **Identify** and **Eliminate** the **Cause** of a Failure to Avoid the **Consequences** and, ultimately, **Extend the Life of the Equipment**



Emergency Pull Cord



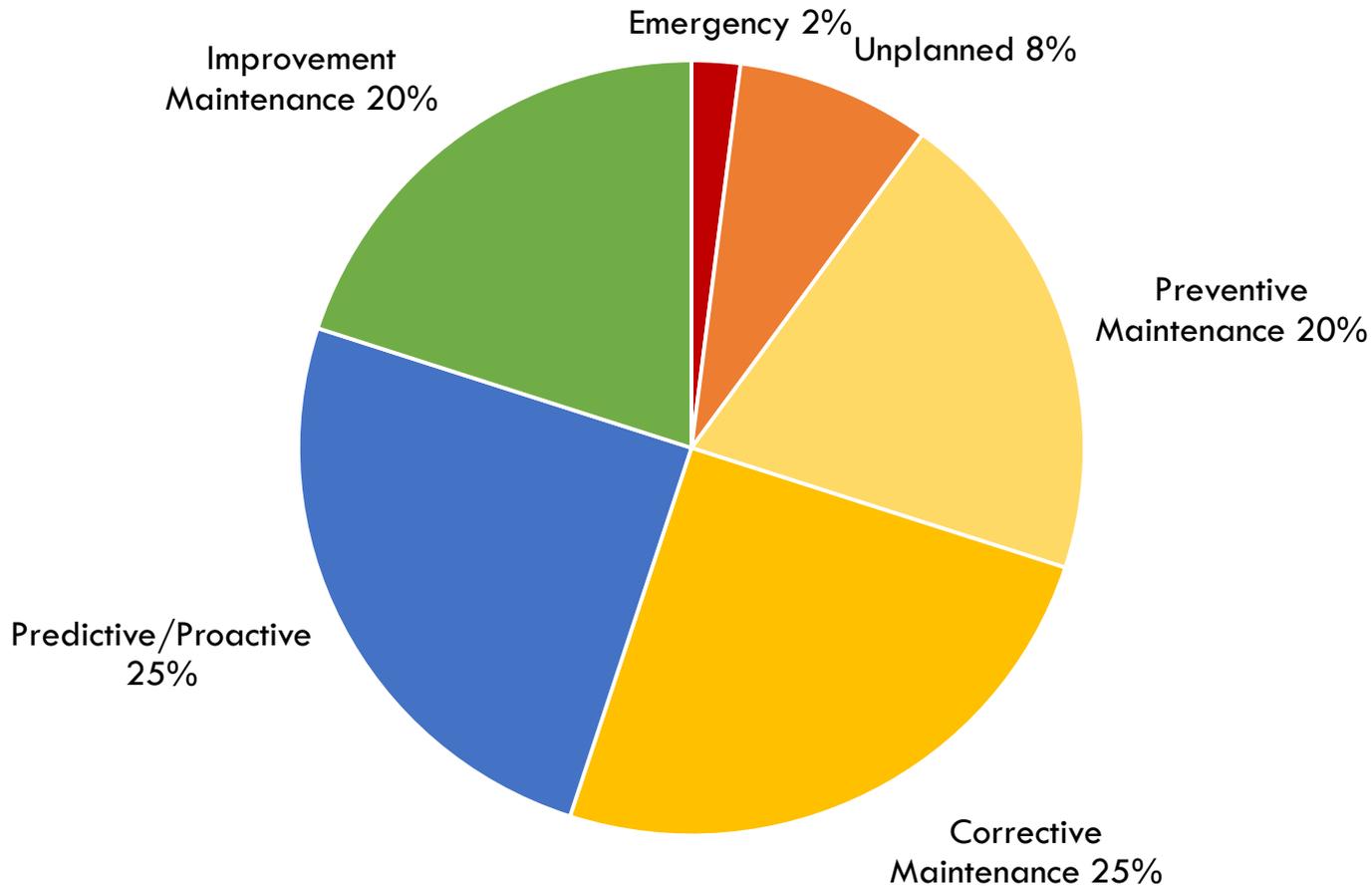
Back-up Generator



Conveyor Belt

# Balanced Maintenance Strategy

A Balanced Maintenance Strategy **Leverages all 4 Generations**



# Asset Criticality

Asset Criticality is the **Link** between **Strategy** and **Plan**

CORPORATE  
OBJECTIVES

MAINTENANCE STRATEGY

FAILURE  
CONSEQUENCES

ASSET CRITICALITY

## Maintenance & Reliability Plan

Critical Assets  
~20%

100% Coverage

FMEA

Risk Management

Non-Critical  
Assets  
~80%

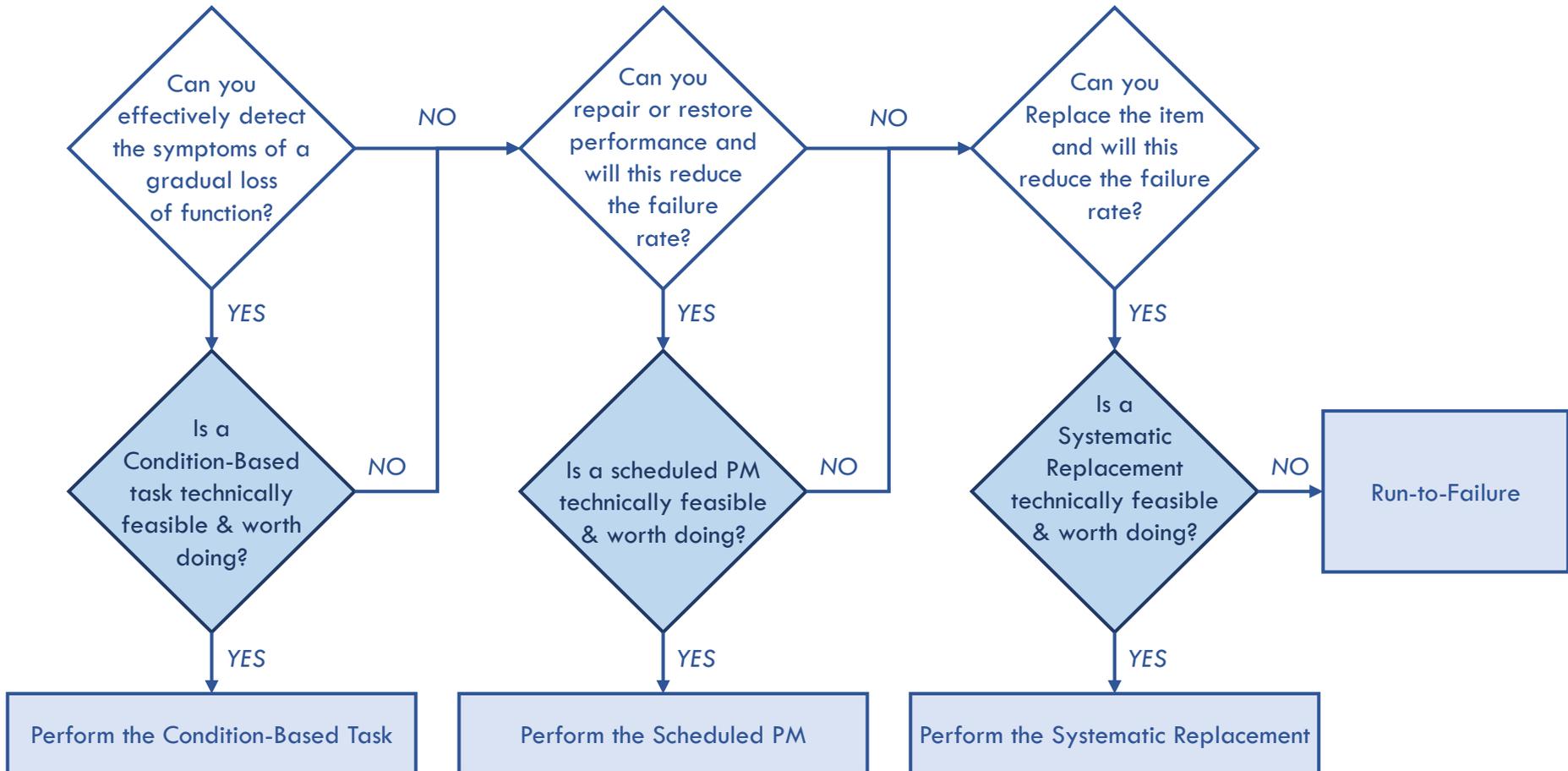
95% Coverage

REX

- ✓ Maintenance Program
- ✓ Job Prioritization
- ✓ MRO Strategy
- ✓ Master Calendar
- ✓ Workforce Requirements

# Maintenance Task Selection

Selection is based on **Failure Consequences & Task Cost-Effectiveness**



# From Cost Center to Profit Center

## Cost Center

Unstable Management

### REACTIVE MAINTENANCE

High Expense Variability

Inconsistent Equipment Availability

High Operating Costs

Emotional Decision-Making

Elevated Risk

Low Department Credibility

## Profit Center

Boring Management

### PROACTIVE MAINTENANCE

Budget Adherence

Equipment Availability >90%

Optimal Operating Costs

Rational Decision-Making

Controlled Risk

Recognized & Efficient Department

A photograph of a bar setting. In the foreground, a tall, clear glass filled with golden beer and a thick head of white foam sits on a dark, reflective bar top. The background is filled with a dense array of colorful beer taps, each with its own unique label and handle, creating a bokeh effect of light and color. The overall atmosphere is warm and inviting.

# Q&A

# Key Takeaways

1

The goal is to manage **Consequences** rather than focusing on the **Failures**.

2

Experience and Data shows that **85%** of failures are **not** time related.

3

4<sup>th</sup> Generation Maintenance Focuses on:

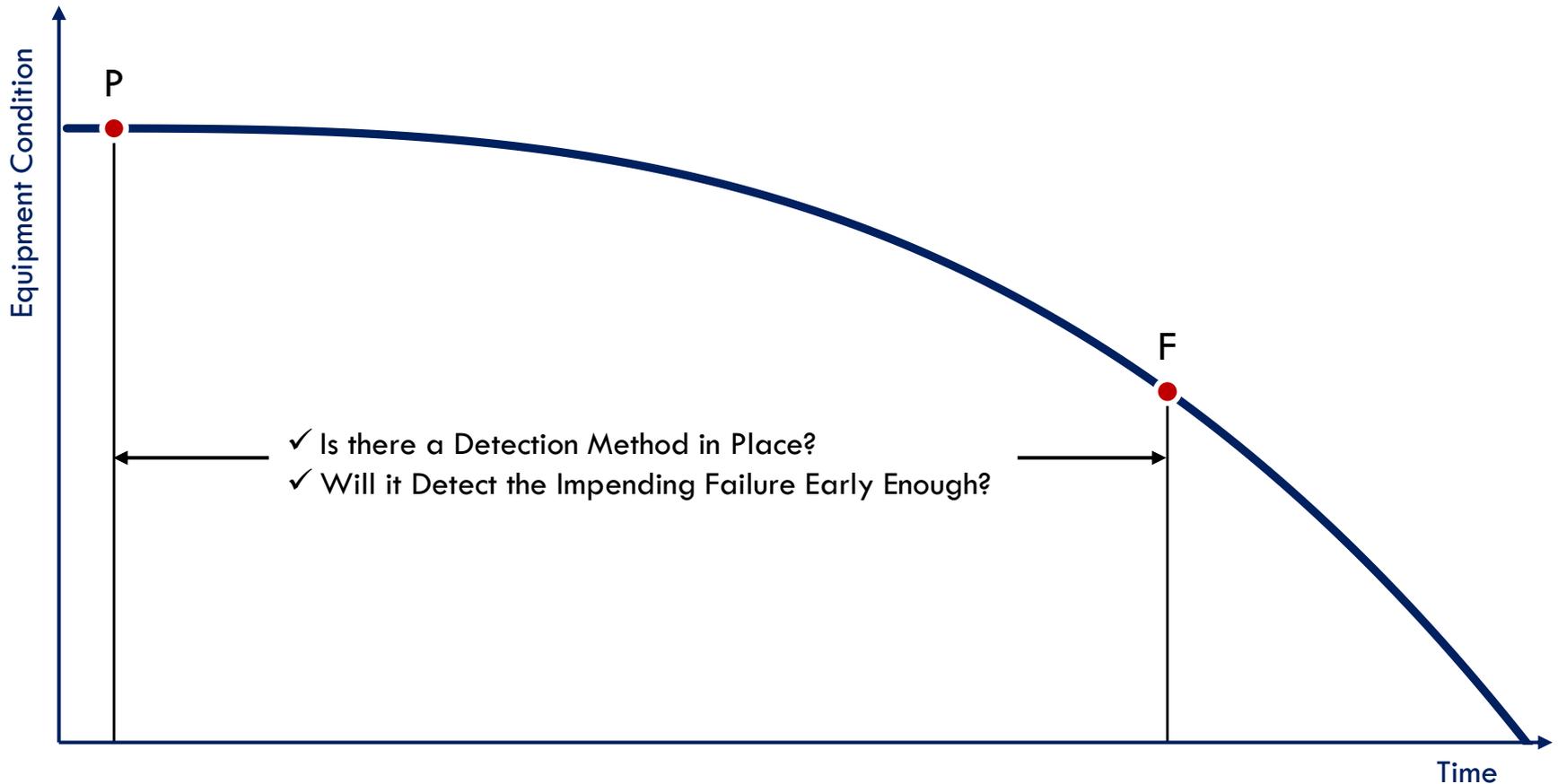
- ✓ Proactive Maintenance
- ✓ Global Cost
- ✓ Life Cycle Optimization
- ✓ Risk Management
- ✓ Corporate Responsibility



# APPENDIX

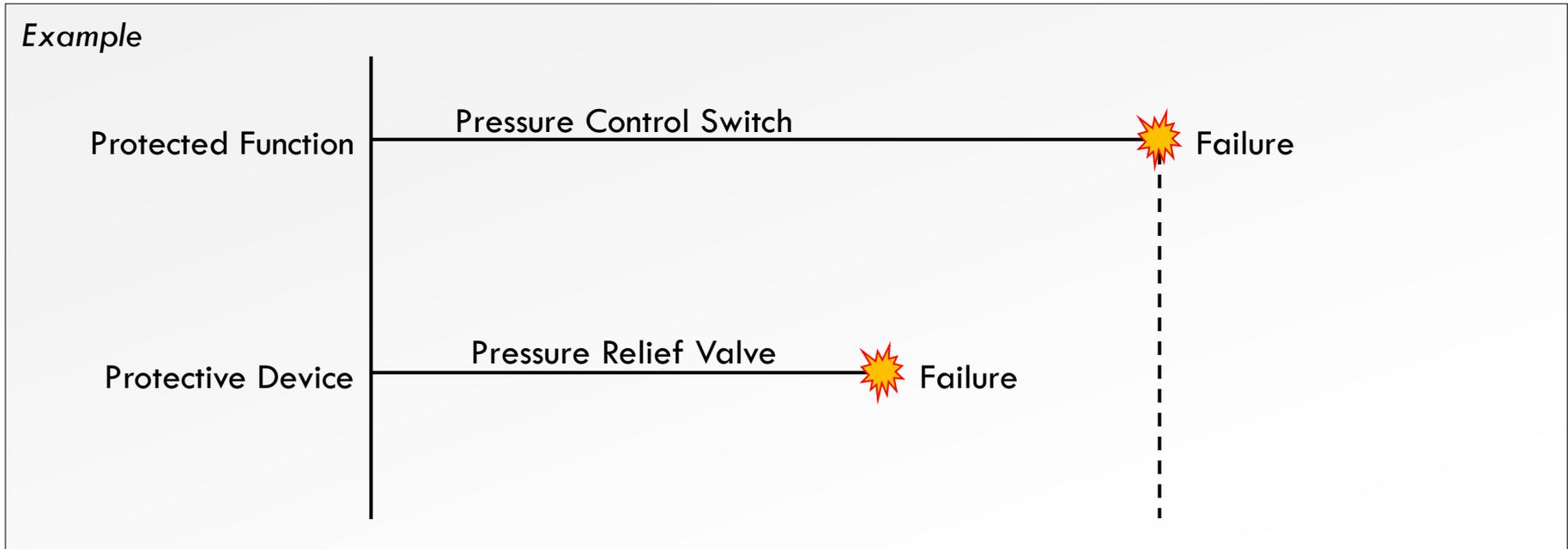
# Condition-Based Maintenance

Detecting the **Symptoms** of an Impending **Failure** in Time to **Prevent** it



# Proactive Maintenance

Consequences of a Failure can be **Eliminated** with a **Protective Device**



If a Failure of the Protective Device goes undetected,  
the consequences will not be Eliminated