RELIABILITY ANALYSIS OF CRITICAL SYSTEMS
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CLIENT OVERVIEW
Global Biotechnology company that develops cancer treatments
14 Day continuous production cycle

SYSTEMS ANALYZED
- Process Gasses
- Purified Water
- Air Handling Units
- Water for Injection
- Clean Steam
- Reverse Osmosis
- Deionized Water (RODI)

DELIVERABLES

1. Equipment Master Sheet
   - System
   - Equipment
   - Asset #
   - Mfg
   - Model
   - Redundancy
   - Location

2. Ranking Equip. & Sensitivity Analysis
   - Google Form - Teams ranked 13 pieces of equipment based off their knowledge
   - Sensitivity Analysis
     - Weighing responses of 2 knowledgeable team members
     - Sensitivity Analysis - Criteria (business, quality, Mean Time To Failure, etc.)

3. Reliability Block Diagram (RBD) & Simio
   - Used annual CMs* & PMs* work orders for MTBF and MTTR
   - Used MTBF and MTTR to get the reliability for the system
   - Validating the RBD with a simulation (used Simio)

CURRENT STATE
- Inconsistent data entry in new data system
- Equipment failure -> emergency shutdowns
- Corrective & preventative maintenance done as needed
- Only one team member with comprehensive knowledge

GOAL
Improve Seagen’s understanding of critical equipment to reduce system failure and evenly distribute knowledge

OUR PLAN
- Standardize Knowledge
- Improve Visibility of Critical Systems
- Improve Reliability

IMPACT
- 100% Implementation of equipment ranking
- 11% of data flagged as inaccurate
- $1.2 mil cost savings per batch of product. Amount at risk during a system failure

RECOMMENDATIONS
1. Cross Check Data
2. Continuously Update Deliverables
3. Monitor priority equipment (low MTBF)
4. Increase Equipment Redundancy

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*CM = Corrective Maintenance, PM = Preventative Maintenance