Getting the Right Problem Statement

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Introduction

Bio

Education:

- Washington State University
  - BS Civil Engineering
- University of Colorado – Boulder
  - ME Engineering Management

Current Employer:

- Marathon Anacortes
  - Engineering Manager: Major Projects
  - Engineering Manager: Small Projects/Maintenance
  - Project Engineer
  - Tank Engineer

Previous Employment:

- Anvil Corp
  - Civil/Structural Engineer
  - Project Leader

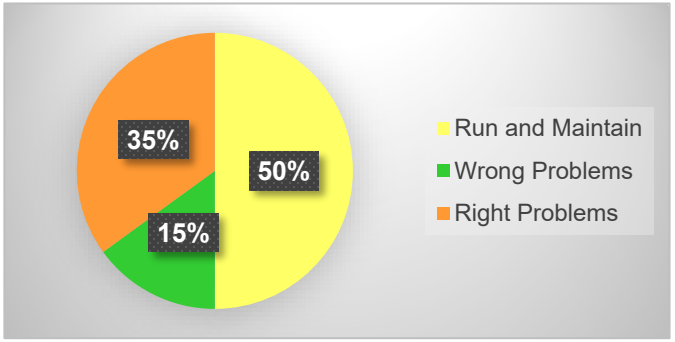
Background

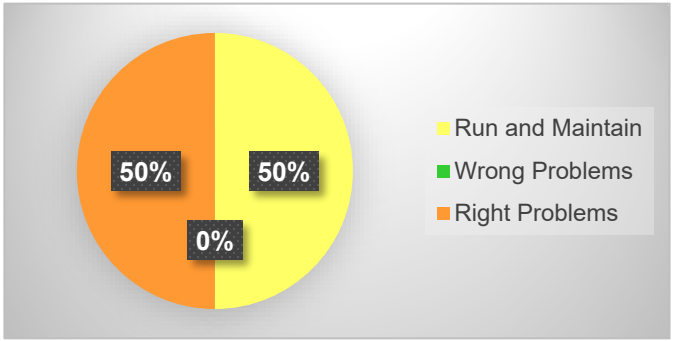
- Most new hires for MPC are college graduates entering the work force
  - Not sure what questions to ask due to the lack of experience
- Graduating engineers is declining
  - 25% of current engineers will retire in the next 5 yrs (2)
  - Outpacing the number of new graduates (2)
  - Engineering bachelor's degrees peaked in 1986 (1)

Sources:
1. power-eng.com
2. Hirecruiting.com

Why is it Important

- Run and Maintain
  - Difficult to influence
  - Ways to influence:
    - Improve reliability
    - Improve maintenance processes
- Working on the right the problems
  - Improve employee engagement
  - Don’t waste resources
  - Make noticeable changes
  - Improve the business
  - Gain creditability with Stakeholders





Context is Everything

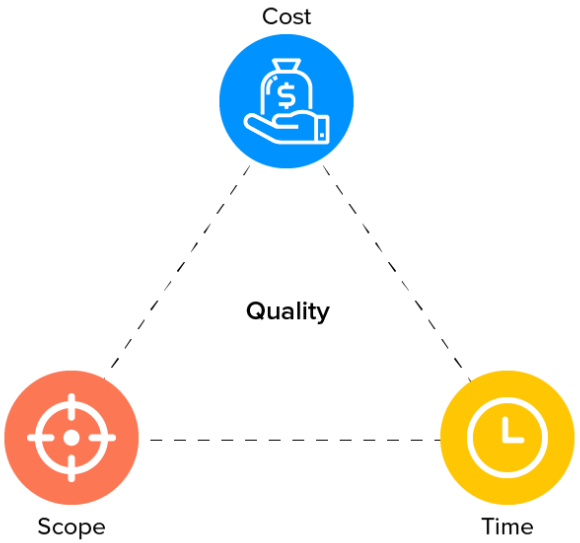
Please don’t hesitate to ask!

Please don’t, hesitate to ask.

Understanding the Drivers

- Understand, “Why are we doing this?”
  - Be curious and ask questions
  - What problem are we trying to solve?
  - Treating symptoms vs root cause
- What are the constraints?
- What makes this safe to implement?
- How does it impact the other?
  - Scope: Cost Schedule
  - Cost: Scope Schedule
  - Schedule: Cost Scope
- Prioritizing work

Project Management Triangle



Source: https://appinventiv.com/blog/project-management-triangle-balance-for-business/

Understanding the Justification

Justification

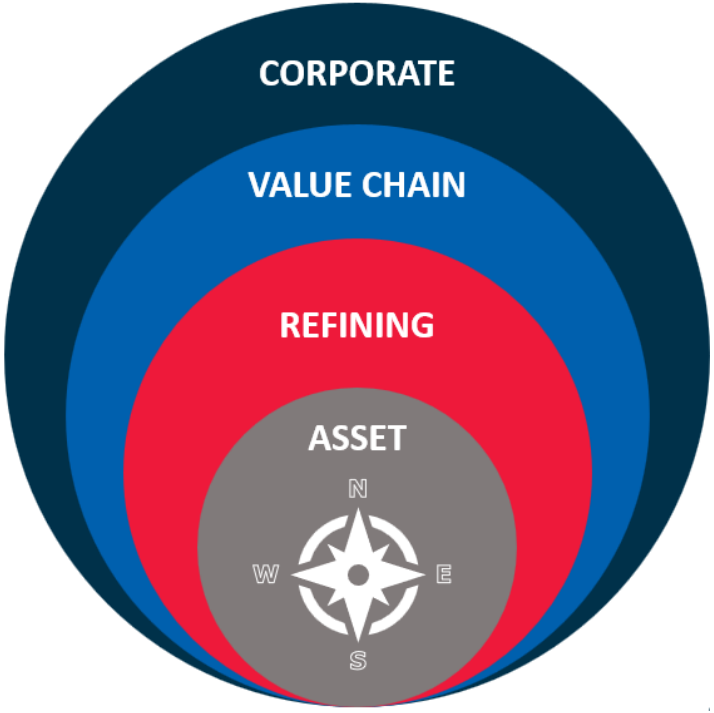
- Safety (Personnel, PSM)
  - Schedule
  - Managing Risk
- Environmental
  - Scope
- Reliability
  - Scope, Schedule
- End of Life
  - Cost
- Margin Enhancement
  - Scope, Schedule, Cost

Key Items to Consider

- Stake Holder alignment
- Organizational alignment

Strategic Positioning Alignment

- What is the vision for your Company?
  - Do the project objectives align with that vision?
- What is the vision for the Business Unit?
  - Do the project objectives align with that vision?

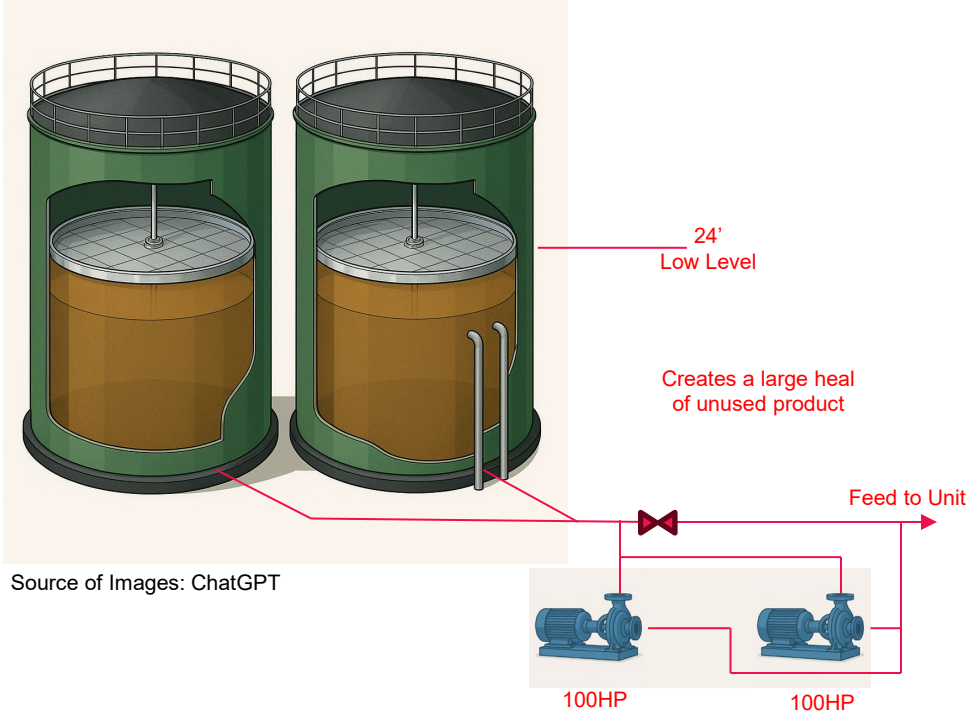


Storage Tank Levels Project

Problem Statement

Problem Statement:

- There are 2 tanks that have Low Level of 24’
- Install Pumps to allow the Low Level in the tanks to be lowered
- Goal was to be functional before our 2018 Turnaround
  - Would provide flexibility with unit start ups
  - Became a schedule driven project



Source of Images: ChatGPT

Storage Tank Levels Project

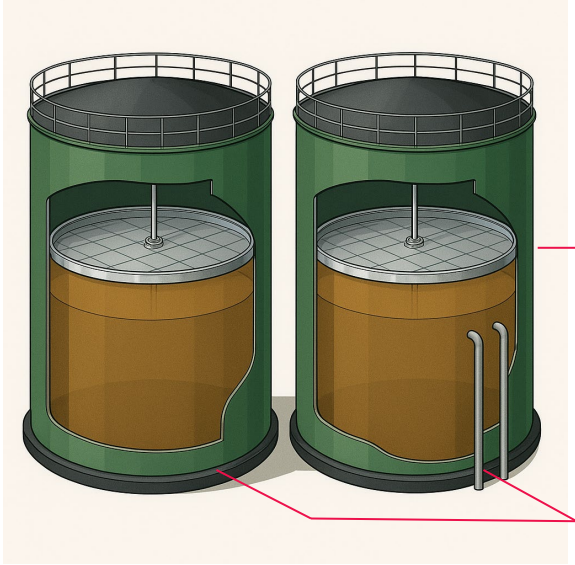
The Error

Work Completed:

- Ordered pumps
- Finished P3 Engineering
- Preparing for full funding request

The Error:

- It was assumed that flowing to the pumps wasn't a problem
- Hydraulics completed were from the pump discharge to the unit
- Couldn't flow the product to the pumps



Source of Images: ChatGPT

Storage Tank Levels Project

Silver Lining

- The manufacture shipped us the 2 – 100 HP motors.
  - There was a maintenance emergency, and these were used within weeks of receiving.
  - They accidentally sent us 2 additional 100 HP motors.
    - We ended paying for instead of returning because there was another immediate needs.
- We know what the issue is and working to address it.
  - This is still a priority, and we have people looking into it.
- I’m here presenting on the Topic
  - Spreading the awareness to hopefully prevent it to happen to others.

Working in a Silo

The “Blue Rhino” Story

- Employee was injured while filling a propane bottle as a local gas station
- Propane was a low profit item
- The Company decided to switch to Blue Rhino to provide propane
- Created impacts to the local refinery, same company
- Drove away business to other stations that would fill propane bottles

Process Improvement Project

- Implemented a project to improve crude processing in our recent 25TAR.
- Scope required process equipment changes
- Had input and buy in from all parties
- During TAR scope review, some of the process equipment modifications were located in areas of high risk from Inspection for potential repair.
  - With a high possibility in extending the duration of the event.
  - Result: Replace the upper 1/3 of the vessel with the modified already completed.

Conclusion

- Understanding the true problem is important
  - To combat the work force shortages
  - To stay competitive
- Ask questions
  - Not to be combative or difficult
  - To drive the best solution
- Involve all parties

Closing