



TAILWATER
TECHNICAL CONSULTING

Tailwater Technical Consulting

Your Full Service Engineering Solutions Provider

HOW CAN WE ADD VALUE TO YOUR BOTTOM LINE TODAY?



Why TTC?

Key Challenges:

- Finding and implementing the right technical support
- Setting up the scope of work with the epc contractors

Tailwater Capital recognized the need of the portfolio companies. Tailwater technical consulting (TTC) was created to help overcome key challenges.



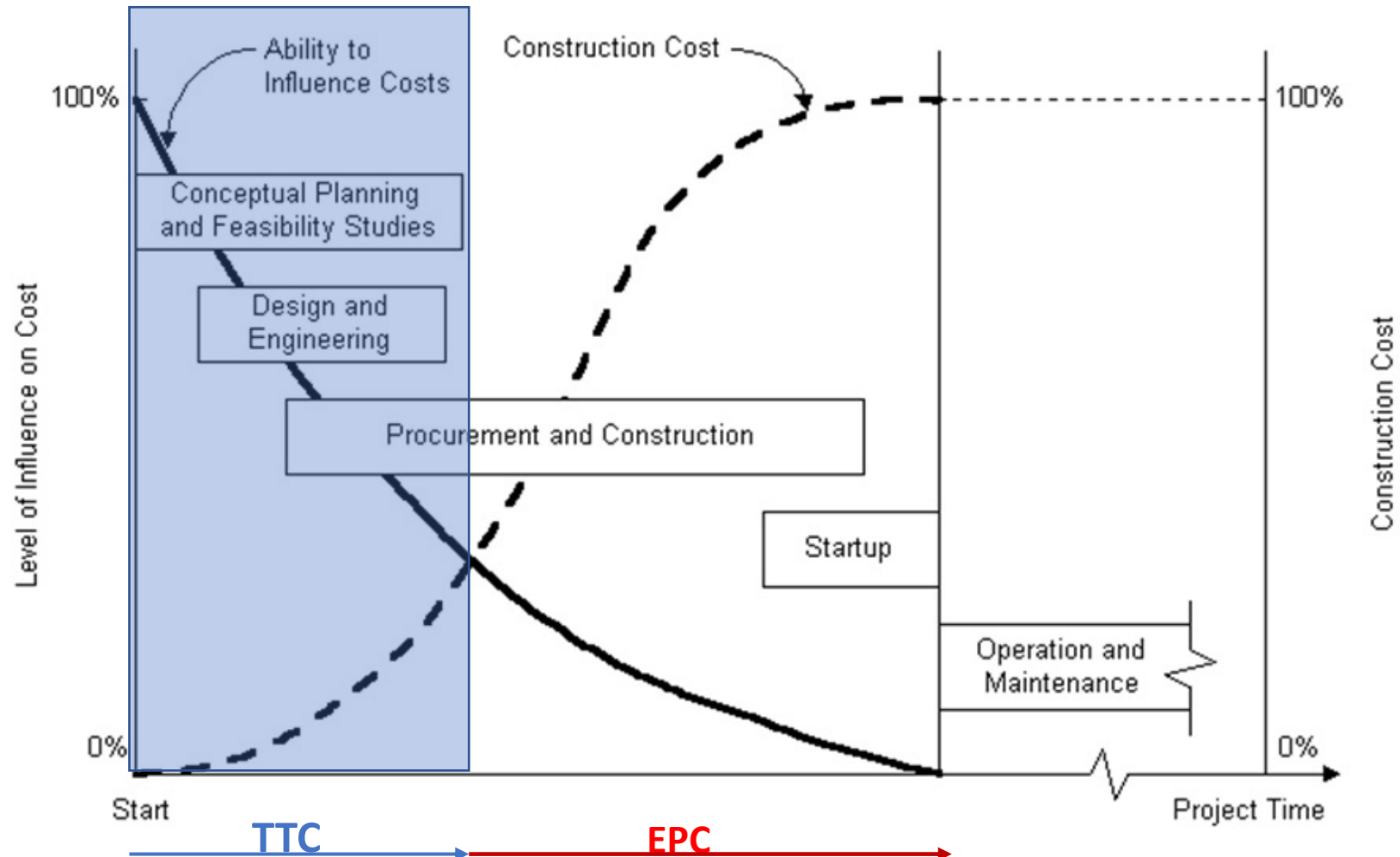
What Can We Do For YOU?

- Strategies on how to overcome obstacles and grow
- Conceptual scopes and estimates to facilitate decisions
- Engineering packages and cost estimates to facilitate funding
- Construction packages for project execution
- Commissioning and startup plans
- Solutions for operating issues
- Optimizing your assets to minimize capex/opex

OUR TEAM HAS DONE IT ALL!



Project, Cost, Influence and Schedule





Our Mission

- ✓ Provide engineering solutions that add value to YOUR bottom line
- ✓ Enable you to maximize profitability of your assets
- ✓ Provide answers so you can make informed decisions
- ✓ Provide guidelines for safe and reliable operation of your assets



What Makes Us Different?

- Most engineering firms lack an operations background; WE don't.
- We understand business drivers and design systems to maximize asset runtime and profitability.
- We look beyond “on time/on budget” and focus on operability and reliability of assets.
- We get to the root cause of process issues and fix them right the first time.



Our Expertise

Our Core team has over 95 years of cumulative experience in the Energy industry, including:

- ✓ Process Design
- ✓ Troubleshooting and Debottlenecking
- ✓ Plant and Pipeline Optimization
- ✓ Operations and Start-Up Support
- ✓ High-Fidelity Simulation Studies using CFD and FEA
- ✓ Project Management
- ✓ Due Diligence Studies
- ✓ Asset Management
- ✓ Contract Negotiations

What is CFD and What can We Can Do with it



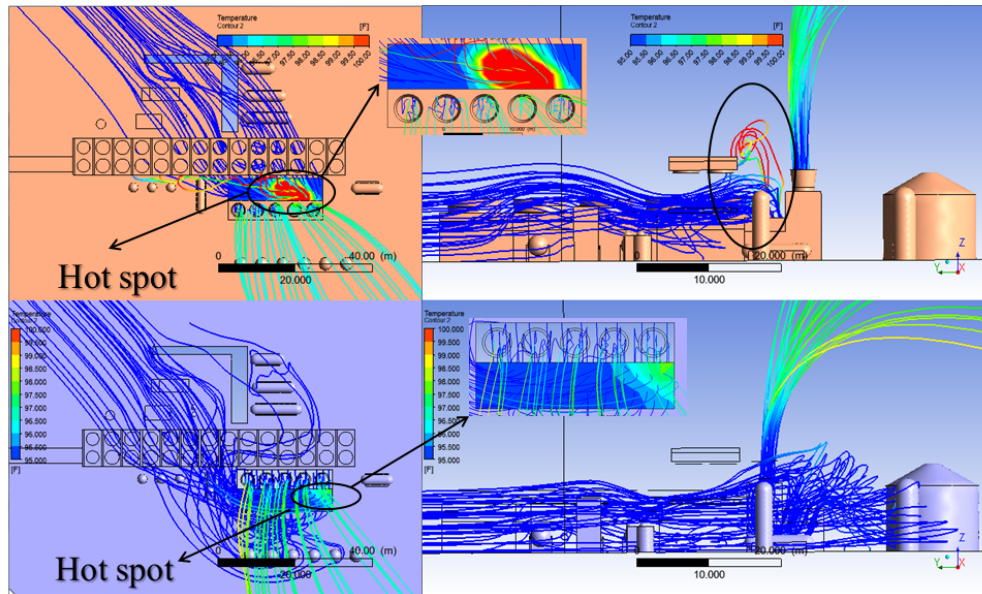
CFD

- CFD is also known as Computational Fluid Dynamics. It is the ability to see inside of a process, which allows problems to be found before the first piece of steel is laid.
- Remember: paper is always cheaper than steel and remodel jobs, cost twice the price and twice the time.



WSAC Arrangement

- ❑ Issue: Existing air coolers obstructing wind direction
- ❑ Recommendation: Modeled both scenarios and showcased issues
- ❑ Outcome: Built as per the recommendation



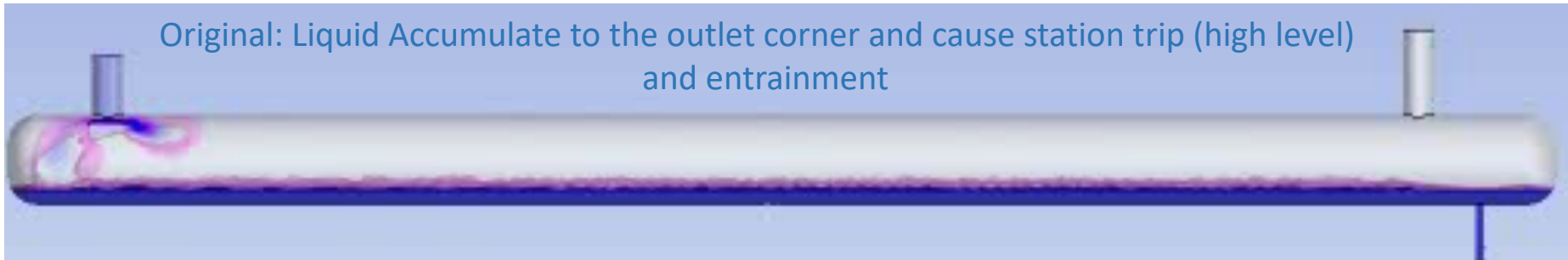


Separation Issues

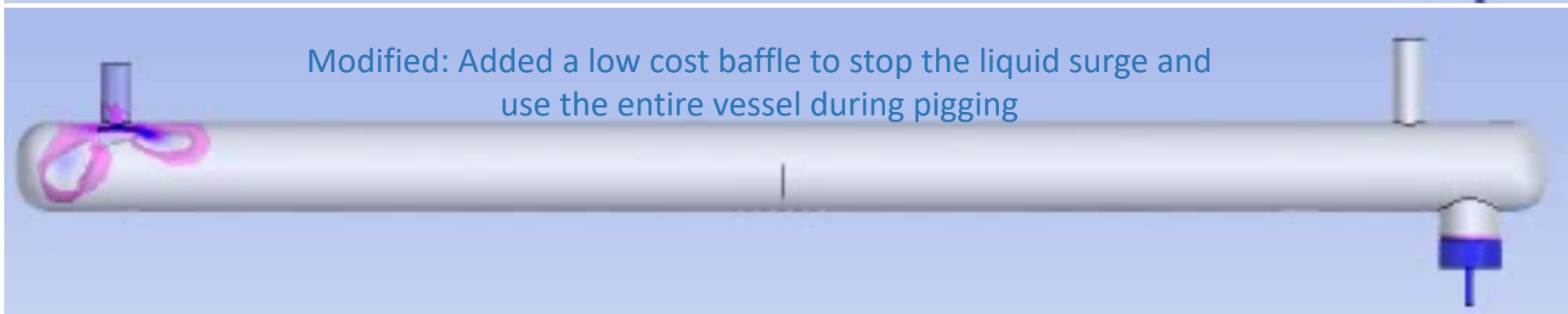
Issue: Liquids shot through slug catcher during pigging causing tripping of station multiple times.

Approach: Modeled complex transient multiphase flows that showed the problem.

Original: Liquid Accumulate to the outlet corner and cause station trip (high level) and entrainment



Modified: Added a low cost baffle to stop the liquid surge and use the entire vessel during pigging





Savings to the Customer

- Based off the CFD work, WSAC arrangement was fixed. Decisions made early and change orders avoided. Project executed with minimal time delay and issues.
- Separator redesign saved the cost of replacing the vessel at a savings of \$3mm dollars. In addition it help to limit operational upsets during large slugging events.



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Questions?
