



Turnaround improvement programs require a qualified partner who not only has a complete range of expertise but experienced consultants who can be where they're required, whenever they're required.

Turn to us.

Our Approach to Conducting Effective Turnarounds (T/As)

Assess T/A Planning and Execution Effectiveness

- ▮ Define parameters to measure T/A performance
- ▮ Identify organizational barriers that exist
- ▮ Establish the incentives for change
- ▮ Pinpoint the procedures that need to be upgraded

Benchmark the Competition

- ▮ Cost and schedule indices
- ▮ Run length predictability
- ▮ T/A planning milestones
- ▮ Accuracy in predicting work to be done
- ▮ Critical path optimization

Establish Improvement Objectives

- ▮ Develop a T/A milestone plan consistent with Pacesetter practices
- ▮ Define the organizational and procedural improvements required
- ▮ Set up an action plan to implement T/A planning improvements
- ▮ Conduct follow-up reviews to assess implementation of changes



Carmagen Engineering, Inc. Assistance

Conduct an initial assessment of the client's current T/A effectiveness. This would consist of a one to two-week visit by two or three of our consultants.

- ▮ Estimate the competitive position
- ▮ Review critical organizational procedures. This includes:
 - ⇒ Management role
 - ⇒ Plant monitoring: inspection and process performance
 - ⇒ T/A planning procedures
 - ⇒ Budgeting and work progress assessment
- ▮ Define preliminary opportunities for improvement
- ▮ Identify highest pay-out organizational and procedural changes

Work with the client's personnel to develop improvement plans.

- ▮ Action steps to improve procedures
- ▮ Timing and resources needed
- ▮ Training needs

Subsequently, we assist with implementation of selected improvements, such as:

- ▮ Communication and team building
- ▮ Redefining roles/responsibilities
- ▮ Developing improved procedures
 - ⇒ Budgeting
 - ⇒ T/A milestone plan
 - ⇒ Planning tools
 - ⇒ Critical path development



Alternatively, Carmagen Engineering, Inc. works with the client's organization in applying the principles of T/A Excellence to a specific T/A. At critical stages during T/A preparation, we work with client personnel to implement improvements. We recommend the following series of consulting visits:

- 🏗️ 15 months prior to the T/A – establish the T/A planning objectives
 - ⇒ Two day visit by one of our consultants to interview key management and T/A planning personnel
 - ⇒ Define the major work item that requires the shutdown
 - ⇒ Set the expectations on duration and cost for the T/A
 - ⇒ Define the margin cost for each day of lost production
 - ⇒ Establish the run length and reliability objectives for the ensuing run
- 🏗️ Work list review – justify the major work activities of the T/A plan
 - ⇒ One week visit by two or three of our consultants, depending on the nature of the unit and work anticipated – 12 months prior to the T/A
 - ⇒ Review reason for each work activity
 - ⇒ Establish the cost and benefit for work requests
 - ⇒ Conduct justification reviews
 - ⇒ Define work which can be eliminated from the T/A
 - ⇒ Preparation work required by the client
 - ~ Preliminary T/A cost estimate
 - ~ Identify the personnel responsible for finalizing the work list
 - ~ Organization charts for the refinery and the T/A Planning Team
 - ~ Consolidated preliminary work lists for the units involved
 - ~ Summary of the prior inspection findings for the equipment
 - ~ P&IDs showing blocks and by-passes
 - ⇒ Preliminary review schedule with operations, inspection, and process technical service personnel



- 🏗️ Work planning review – Analyze the quality of the planning preparation
 - ⇒ One week visit by two or three of our consultants – six months prior to the T/A
 - ⇒ Assess the critical path work execution plan
 - ⇒ Review the T/A execution organization
 - ⇒ Evaluate the contracting approach
 - ⇒ Review the plans for executing the work in a safe manner
 - ⇒ Review materials procurement
 - ⇒ Preparation work required by the client
 - ~ T/A Budget
 - ~ Expected Oil-out to Oil-in schedule
 - ~ Define work and shift schedules to be used during the T/A
 - ~ Prepare preliminary Gantt charts for critical/sub-critical activities
 - ~ Summary of the contract development and bid status
 - ~ Define critical crane lists
 - ~ Plans for evaluating work risks
 - ~ Summary of delivery on critical materials
 - ~ T/A communication plan

All the right people in all the right places.™

CARMAGEN
Engineering, Inc.

4 West Main Street, Rockaway, NJ 07866
Telephone: (973) 627-4455 • Fax: (973) 627-3133
E-Mail: carmagen@carmagen.com

www.carmagen.com