

C3 AI Turnaround Optimization

Reduce Turnaround Cost and Duration with AI

C3 AI® Turnaround Optimization is a data-driven and AI-enabled application that provides manufacturers the ability to identify discovery risks, optimize dynamic execution schedules, and predict potential delays with early warning. Plant turnarounds in industries such as energy and petrochemicals are time consuming, costly, and frequently run longer than anticipated due to unforeseen delays and inefficient planning. There are opportunities to streamline turnaround efforts by optimally scheduling maintenance activities, reducing scope of work (not maintaining or replacing equipment that does not require repair), ensuring the availability of required parts and personnel, and near-real time updating of resource allocation to minimize delays.

To achieve this, C3 AI Turnaround Optimization integrates information across all relevant maintenance and turnaround activities, historical equipment performance, and execution milestone progress in near-real time. This live data integration enables AI models to be configured to identify when project milestones fall behind historical benchmarks and alert users of early signals indicating delay risk. Integrating with C3 AI Reliability, AI models can be configured to identify equipment discovery risks, predicting the likelihood of major cleaning, repair, or replacement required. Optimization models can be configured to allocate resources and sequence of activities during scheduling phase and in near-real time during execution.

Feature Summary

- **Predict delay risks** – Generate prioritized alerts identifying activities at risk and estimate impact on the overall turnaround duration, with actionable recommendations to mitigate
- **Monitor execution in near-real time** – Automatically ingest data from existing project management tools as execution progress is reported from the field. Visualize S-curves, Gantt charts, and rundown curves
- **Benchmark performance versus historical** – Receive targeted alerts if progress falls behind comparable historical turnarounds for specific equipment categories or milestones
- **Optimize schedule and update in near-real** – Apply cutting-edge AI techniques to analyze the full turnaround schedules including tens of thousands of parameters and variable to identify and eliminate delays
- **Conduct scenario analyses** – Review and assess alternatives to mitigate delays that balance the magnitude of delay reduction with the degree of complexity of changes to existing work plans
- **Expose scheduling risks prior to a turnaround event** - Identify and position required resources, parts, and people for optimized, efficient maintenance and work execution
- **Bi-directionally integrate to project management systems** – Automatically import and export updates from selected alternative into existing project management and/or work management systems

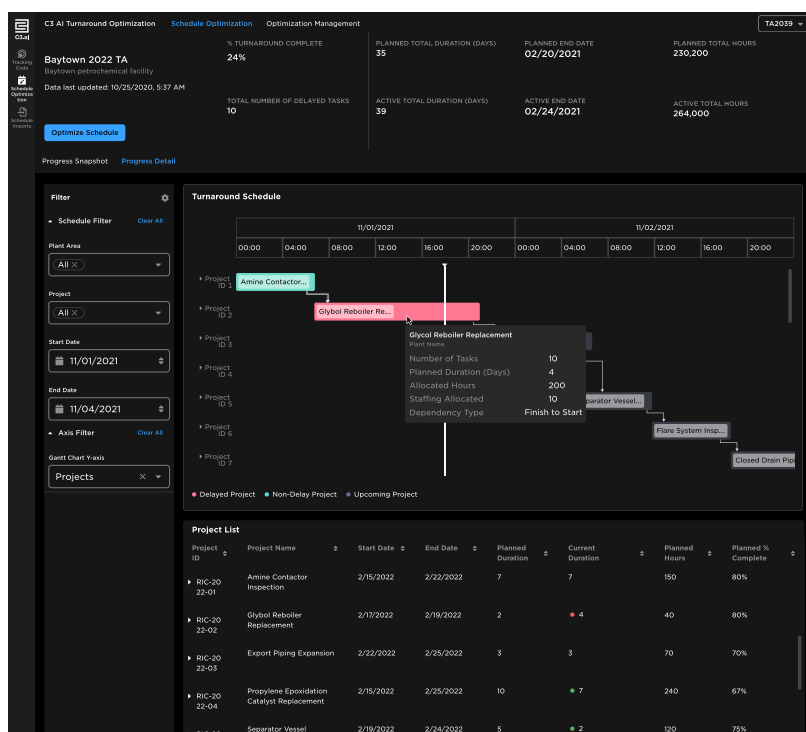


Figure 1. C3 AI Turnaround Optimization provides schedulers with a comprehensive view to identify delay risks and mitigate with AI recommended actions

Scenario modelling enables turnaround schedulers and managers to learn from historical data to build robust schedules that minimize cost, duration, and variability. Users can apply stochastic optimization models on thousands of parameters of constraints to assess scenarios before and during execution. Leveraging these insights, users can apply AI recommendations to dynamically adjust resources and scheduled tasks to dynamically account for scope changes and unforeseen challenges. Bi-directional integration to existing project management tools enables schedulers to seamlessly update plans for field and contractor teams.

With C3 AI Turnaround Optimization, event managers can overcome common delays and elevated costs by avoiding cascading impact of scope changes, eliminating unplanned discovery risks, and improving efficient milestone progress tracking versus historical performance.

Increase Efficiency and Effectiveness of Turnaround Planning, Scheduling and Execution

With C3 AI Turnaround Optimization, companies can:

- Improve operational cadence during turnaround due to streamlined workflows and collaboration among all parties on an up to date data image of all tasks, part and equipment shipment updates, labor availability, etc.
- Minimize delays by learning from historical performance and dynamically optimizing resources and project schedule during execution
- Reduce Scope by predicting discovery risks to avoid uncertainty and integrating with C3 AI Reliability for asset reliability risk prioritization
- Analyze the full turnaround schedule with AI in throughout execution and receive recommendations to eliminate delays
- Automatically monitor progress in near-real time by ingesting execution data and staying up to date with information from the field
- Compare execution to historical benchmarks in near real-time
- Receive prioritized alerts of high-risk delays and lagging milestones in near real-time based on progress updates from the field
- Apply AI-enabled optimization to generate recommended actions to eliminate delay risks
- Perform scenario analysis to compare schedule and resource allocation options
- Bi-directionally integrate with existing project management and work management systems to seamlessly update execution plans with optimized results

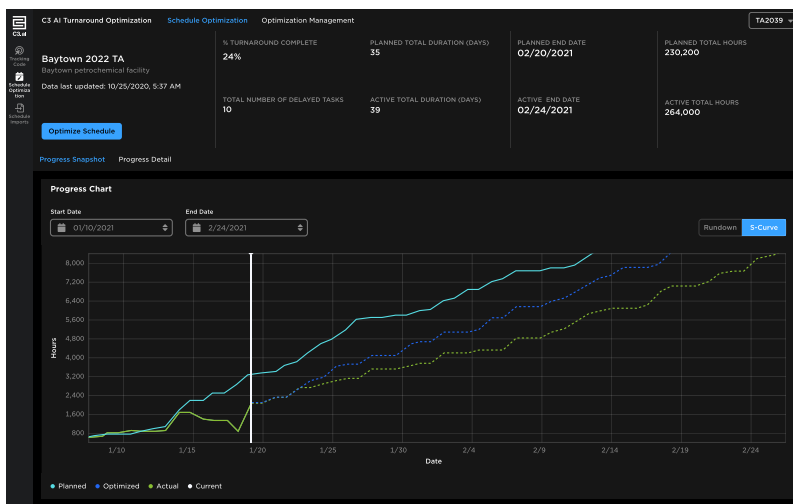


Figure 2. C3 AI Turnaround Optimization visualizes turnaround S-curves and rundown charts to forecast expected duration versus plan and alternate optimized scenarios

Proven Results in 8-12 Weeks

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