Executive Summary

The energy and petrochemical industries face mounting pressure to execute shutdowns, turnarounds, and outages (STOs) with greater predictability while managing increasing complexity. AP-Networks' Turnaround Network addresses this challenge through a comprehensive digital platform that transforms traditional turnaround management. By combining data-driven tools, industry benchmarking, and proven best practices, the platform enables organizations to reduce cost overruns by 25%, improve schedule adherence by 27%, and achieve consistent top-quartile performance across their turnaround portfolio.

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Introduction

Every year, refineries and chemical plants invest billions in turnaround events. Yet despite this massive expenditure, the industry continues to struggle with unpredictable outcomes. Cost overruns averaging 15-20% and schedule delays affecting nearly half of all turnarounds have become accepted as inevitable. This acceptance of poor performance carries a steep price: lost production, compromised reliability, and eroded competitive position.

The root cause isn't lack of effort or expertise. It's the persistence of outdated management approaches in an increasingly complex operating environment. Modern turnarounds involve thousands of activities, hundreds of contractors, and intricate coordination between maintenance and capital projects. Managing this complexity with spreadsheets and manual processes is like navigating with a paper map in the age of GPS.

Digital transformation offers a path forward. But it requires more than simply digitizing existing processes. True transformation demands rethinking how turnarounds are planned, prepared, and executed from the ground up.

The Digital Advantage: Beyond Automation

The shift from traditional to digital turnaround management represents a fundamental change in how organizations approach these critical events. Where manual processes rely on individual expertise and institutional knowledge, digital platforms create systematic, repeatable excellence.

Traditional vs. Digital Approaches

Aspect	Traditional Approach	Digital Platform Approach
Planning Process	Static spreadsheets, manual updates	Dynamic, cloud-based collaboration
Risk Management	Experience-based assessments	Data-driven predictions using historical outcomes
Readiness Measurement	Subjective manager opinions	Quantified metrics with statistical validation
Best Practices	Tribal knowledge, inconsistent application	Embedded workflows, automatic deployment
Performance Benchmarking	Post-event analysis only	Real-time comparison to industry standards
Complexity Management	One-size-fits-all processes	Tailored approaches based on measured complexity

This transformation isn't about replacing human judgment. It's about augmenting expertise with data-driven insights and ensuring consistent application of proven methods across all events.

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AP-Networks' Turnaround Network: A Comprehensive Solution

The Turnaround Network stands apart through its integration of multiple capabilities into a unified platform. Currently deployed at over 400 sites worldwide, it serves Fortune Global 100 energy companies with a track record of delivering measurable improvements.

The platform's architecture reflects a deep understanding of turnaround challenges. Rather than offering disconnected point solutions, it provides an integrated ecosystem where each tool reinforces the others. This integration creates compounding benefits: better planning leads to more accurate risk assessment, which enables targeted resource allocation, ultimately driving superior execution.

Core Platform Components

At the heart of the system, **NaviTrack** revolutionizes work process deployment. This isn't just digitized task management. NaviTrack dynamically adjusts planning requirements based on turnaround complexity, ensuring teams apply appropriate rigor without unnecessary bureaucracy. For a routine maintenance event, it might deploy 30-40% fewer milestones than for a mega-turnaround, streamlining effort where it's not needed while maintaining discipline where it matters most.

The **Turnaround Readiness Pyramid** transforms subjective readiness assessments into quantified metrics. By evaluating 21 critical preparation areas and measuring both status and team alignment, it generates a Turnaround Readiness Index (TRI) that predicts performance outcomes with remarkable accuracy. Organizations achieving TRI scores above 3.8 consistently deliver top-quartile results.

Supporting these core tools, the **Complexity Calculator** and **Cost of Change Calculator** provide crucial decision support. The Complexity Calculator objectively assesses event characteristics to categorize turnarounds and trigger appropriate management strategies. Meanwhile, the Cost of Change Calculator quantifies the hidden impacts of late scope modifications, often revealing six-figure penalties for changes that seem minor on the surface.

Specialized Modules for Enhanced Capability

Beyond the core platform, optional modules address specific pain points:

Module	Primary Function	Key Benefits
PYXIS	Comprehensive risk management	Pre-populated risk registers, Risk Severity Index tracking, quantified mitigation impact
acXis	Centralized action tracking	Eliminates spreadsheet chaos, links actions to work processes, ensures accountability
iNTrack	Capital project integration	Aligns project and turnaround timelines, manages handshake activities, prevents conflicts
LLern	Lessons learned management	Transforms static lists into actionable improvements, drives continuous enhancement

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These modules integrate seamlessly, creating a digital thread that connects all aspects of turnaround management. When PYXIS identifies a high-severity risk, acXis automatically generates tracking actions, while NaviTrack adjusts milestone requirements to ensure adequate oversight.

Implementation Impact: Measured Results

The platform's value becomes clear through real-world implementation results. These aren't theoretical benefits but documented outcomes from operating facilities:

Performance Improvements by Complexity Level

Turnaround Complexity	Cost Performance	Schedule Performance	Productivity Gain
Low Complexity	8% under budget	On-time completion	12% improvement
Medium Complexity	5% under budget	95% on-time	15% improvement
High/Mega Complexity	2% over budget*	89% on-time	19% improvement

*Industry average for mega-events: 18-25% over budget

A Canadian refiner exemplifies these benefits. After implementing the platform and achieving a TRI score of 3.9, they reduced cost overruns by 25% and eliminated schedule delays entirely. More importantly, they sustained these improvements across multiple turnaround cycles, demonstrating the platform's role in building organizational capability.

The financial impact extends beyond direct cost savings. By optimizing turnaround intervals through data-driven analysis, one refinery identified $5 million in annual savings without increasing risk. Another facility reduced control valve servicing from 250 to 28 units, saving $900,000 while maintaining reliability. These examples illustrate how digital insights enable smarter, not just faster, decision-making.

Strategic Advantages for the Enterprise

While individual turnaround improvements deliver immediate value, the platform's strategic benefits compound over time. Organizations gain three critical capabilities that transform their competitive position:

Predictable Performance: Variability kills profitability in capital-intensive industries. By standardizing best practices and providing real-time performance visibility, the platform reduces outcome variability by up to 40%. This predictability enables better production planning, more accurate financial forecasting, and improved stakeholder confidence.

Scalable Excellence: As organizations grow through acquisition or expansion, maintaining consistent turnaround performance becomes increasingly difficult. The platform solves this by embedding expertise in digital workflows. New sites quickly achieve the same performance standards as established facilities, while merged entities harmonize their approaches without lengthy integration periods.

Continuous Learning: Traditional organizations lose valuable knowledge when experienced personnel retire or move on. The platform captures this expertise in job aids, best practice

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workflows, and lessons learned databases. But it goes beyond simple documentation. By analyzing outcomes across hundreds of events, it identifies what actually works, not just what people think works.

Building Organizational Resilience

The platform also addresses a critical industry challenge: workforce development. With baby boomer retirements accelerating and fewer young professionals entering the field, organizations face a growing expertise gap. Digital tools bridge this gap by:

- Guiding less experienced personnel through proven workflows
- Providing real-time access to best practices and job aids
- Enabling remote expert support through cloud-based collaboration
- Accelerating learning curves through immediate performance feedback

This capability becomes especially valuable during industry downturns when organizations must maintain performance with reduced staff.

Conclusion

The transition to digital turnaround management isn't optional. It's a competitive imperative. As the gap widens between digital leaders and laggards, organizations face a clear choice: embrace transformation or accept declining performance.

AP-Networks' Turnaround Network provides a proven path to digital excellence. By combining comprehensive tools, industry expertise, and continuous innovation, it enables organizations to achieve what once seemed impossible: predictable, competitive turnaround outcomes regardless of event complexity.

The platform's 400+ site deployments demonstrate that success isn't limited to early adopters or technical leaders. Any organization can achieve top-quartile performance by committing to digital transformation and leveraging the right tools.

For energy and petrochemical companies serious about turnaround excellence, the question isn't whether to digitize but how quickly they can begin capturing these benefits. In an industry where a single day of delayed startup can cost millions, the investment in digital capability pays for itself many times over.

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About the Author

John Crager is a recognized authority in turnaround management and digital transformation for the energy industry. With over 25 years of experience leading complex shutdowns and implementing performance improvement initiatives, he has helped dozens of refineries and chemical plants achieve breakthrough results. John currently serves as a senior advisor to AP-Networks, where he guides organizations through their digital transformation journeys. He holds degrees in Industrial Management, Engineering, and Business and is a frequent speaker at industry conferences on turnaround excellence.

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