



NextGen Performance[®]



Turnaround Optimisation Programme (TOP™) & Support Services

Are you ready for the preparation and execution of your turnaround? Visit our website to take a short online self-assessment to help you determine your level of preparedness at <http://www.kbc.com/?id=92>.

How did you score? Do you need to improve and optimise your turnaround processes? KBC offers a wide array of services to support all of your site's turnaround needs from developing or revising turnaround strategies to turnaround optimisation.

Our TOP™ programme and support services are designed to assist clients in optimising the various stages of turnaround preparation and execution activities utilising KBC risk management techniques and hands-on management experience.

KBC TOP PROGRAMME

Strategic Review

A Strategic Review (TR-0) phase is an important aspect of a site's turnaround program that provides long range strategic planning, timing, and integration of capital and revamp efforts. Have your current market business drivers changed? Should intervals be lengthened or shortened? Are there any mechanical integrity, process, or operational concerns (such as catalyst life, fouling)? Are capital, legislative, corporate requirements, and/or the interaction with other site units or "sister" sites properly addressed? Using this technique, KBC helps clients develop the most efficient master turnaround schedule for the next two run lengths.

NextGen Performance Tip:

The full cost of deferred maintenance can not be measured in a single year

Work Scope Optimisation

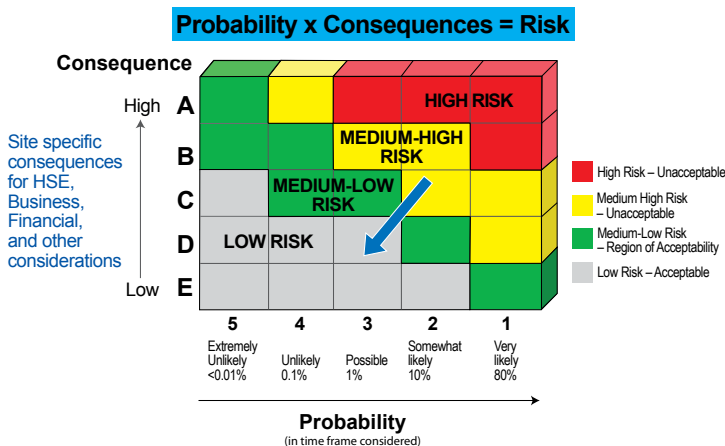
The Work Scope Optimisation (TR-1) phase reviews the turnaround scope to optimise it. Obtaining an optimal work scope is often not easy, especially in the current market environment. To start, KBC facilitates development of a site-specific risk matrix then utilises the matrix to rationalise and categorise the site's turnaround work scope. This process may achieve optimal scope by eliminating or deferring work or changing techniques to deliver the same or better results with lower risk exposure (see the KBC Risk Matrix). Under current market conditions, it may add work to be aligned with any new site turnaround strategy. Given the broad expertise of KBC personnel, this optimal work scope is driven equally from operations, inspection, and maintenance, and this is the key for any successful turnaround.

Execution Review

When the work scope is optimised, the Execution Review (TR-2) phase is designed to review the execution plans of the turnaround with a focus on the critical path and sub-critical path items. The evaluation assesses scheduling constraints, manpower loading, equipment constraints, inspection plans, material/laydown areas, working patterns, process handover by operations to the turnaround group and back. Using this approach, the joint Client/KBC team typically produces an optimal schedule that may reduce mechanical execution time by 2 to 10 days or lengthen timing appropriately to meet current market business drivers.

Preparedness Review

The Preparedness Review (TR-3) phase is a comprehensive assessment of the process critical path to reduce product-out to product-in time and minimise the risks of plan deviations. KBC specialists assist the team in applying proven techniques to shutdown, decommissioning, commissioning, and start-up schedules and procedures. We also evaluate the supporting



turnaround items that help ensure the turnaround success and can encompass items such as communication, materials availability, labor forces, safety, security, and more. These techniques yield an average of an additional 1 to 2 days savings in the overall oil-to-oil schedule.

Close-Out Review

The Close-Out Review (TR-4) phase ensures that all of the positive and negative issues that arose during the turnaround are captured for future use. These "lessons learned" could be focused on items such as equipment condition, plan performance, work scope changes, contractor/sub-contractor performance, infrastructure/logistics, and other items. In fact, this phase helps to develop a large portion of the work scope for the next planned turnaround.

TURNAROUND SUPPORT SERVICES

In addition to our TOP Programme, KBC offers other Turnaround Support Services:

- **Readiness Review**
This review is designed to assist when the site has identified potential areas of concerns in their turnaround planning and execution plans or when they have not conducted a staged review. In this evaluation, most items and activities from the TOP Programme are reviewed at a high level with areas of noticeable concern specifically addressed and focused upon.
- **Turnaround Management Support**
KBC provides experienced turnaround specialists to work with the client's turnaround management team during their turnaround preparation and execution periods.

- **On-Stream Inspection Support**
KBC assists in the early identification of work scope items by providing supervision of on-stream inspection activities and development of equipment specific inspection plans. The on-stream inspection activity is paramount in identifying the mechanical integrity issues with the process unit.
- **Turnaround Inspection Support**
Early identification of key mechanical integrity issues is important once the equipment has been opened for inspection; KBC provides guidance in these field inspection activities.
- **Turnaround Manual Development**
KBC assists in the development of a comprehensive turnaround planning and execution manual.
- **Training for "Managing Efficient Turnarounds"**
KBC also offers a training course on Best Practices for managing efficient turnarounds for all levels of your organisation.

CONCLUSION

Since turnarounds are normally the largest cause of downtime and lost revenue, there is a need to optimise the turnaround's duration. KBC has various programs, as described above, which can assist clients during any phase of their turnaround cycle to be better prepared and to optimise any facet of their turnaround activities.

™ Turnaround Optimisation Programme (TOP) is a trademark of KBC Advanced Technologies plc, and it is registered in various territories.

Your Company + KBC Produces NextGen Performance[®]

We collaborate with our clients to create unique solutions to their specific challenges. Some of these challenges may include:



Strategic Challenges

- Effective Business Strategy/Decisions
- Increased Return on Investments
- Enhanced Returns on Acquisitions/Divestitures
- Reduced Risk (Strategic, Capital, Other)

Market Challenges

- Enhanced Yields
- Effective Responses to Crude/Feedstock and Product Markets
- Improved Financial Performance
- Market Risk Management

Environmental Challenges

- Reduced Emissions
- Enhanced Compliance

Operating Challenges

- Improved Organisational Effectiveness
- Reduced Maintenance Costs
- Improved Energy Efficiency
- Behaviour-based Reliability/Performance
- Improved Safety Performance
- Operational Risk Management

NextGen Performance[®]

For more information on how KBC can help you achieve Next Generation Performance, please visit www.kbcat.com, contact us at answers@kbcat.com, or call

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