



## INDUSTRY

# REFINERY AND PETROCHEMICAL

## Taro - Providing advanced RAM analysis for the downstream industry

DNV GL supports your decision-making process for capital investment and on-going asset performance improvement

The refining and petrochemical industries have been low-margin and under continuous pressure from high crude oil price. The current status of the oil and gas market presents an opportunity for downstream business to optimize their system performance.

An advanced RAM study enables optimization of production efficiency for high value refinery products (e.g. gasoline, diesel, lube oils) from understanding the interaction of individual process unit reliability, plant production slates, storage, and operational flexibility.

In the downstream industry, Taro has been applied from plant wide performance analysis to distribution network studies, supply chain models, life cycle cost analysis through to detailed reliability

engineering and failure investigation.

**Some of the typical benefits that can be achieved from a RAM analysis using Taro include:**

- Maximized production of key products
- Improvement of plant utilization
- Minimization of investment required to achieve given targets
- Optimization of storage requirements
- Quantification of the impact of project implementation

Taro allows you to analyse the reliability, maintainability and availability of your asset using your understanding of the asset and the way it operates.



### How do you benefit from Taro advanced RAM study?

To forecast the performance of a complex asset, the interactions of a large number of factors which impact the ability of the system to perform its required function must be assessed in an integrated manner. The key challenge is to capture all the interactions between inter-related parameters.

**Taro** was specifically developed for the modelling of refining and petrochemical plants in which the production efficiency is a complex interaction between reliability, blending and yield rules, flow routing (including recycle), intermediate storage options and logistics operations.

**Taro** has a track record of being used for analysing designs of numerous refineries, petrochemical plants and associated supply chain logistics. An important strength of Taro is the ability to handle multiple feedstock and product streams along with complex buffer and operational strategies.

### This methodology is applied to a wide range of assets, such as:

- Refineries
- Petrochemical plants
- Gas production and distribution networks

- Utility production and distribution networks
- Systems involving product transport and logistics (shipping, rail, trucks, pipelines)

### Some of the questions Taro can help you answer:

- Asset design optimization (e.g. storage tank sizing, unit capacity, equipment sparing, etc)
- Asset operations optimisation (e.g. maintenance philosophy, inventory management, product export, load shedding rules, etc)
- Identification of bottlenecks and key performance drivers (i.e. the relation between asset reliability and production)
- Setting of performance targets (e.g. where to focus reliability improvement efforts)
- Evaluation and prioritization of investment opportunities (based on NPV calculation of costs and revenues)

The DNV GL's RAM software products ensure that all the factors that can potentially influence the production are considered in the analysis so that you receive a more realistic picture of your future asset performance.