

## Business Intelligence

# Management Excellence in Oil & Gas, Petrochemicals Refineries

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Over past three decades corporate management has sponsored number of business improvement initiatives such as TQM, Six Sigma, and Lean Manufacturing. These and other operational excellence initiatives were used as catalyst to improve business performance. Many companies today are continuing to implement some form of operational excellence program to again transform and dramatically increase organizational performance.

**C**urrent Scenario  
There are many business drivers that lead today's process manufacturing companies toward Operational Excellence initiatives

- There is a strong need to move from reactive culture to proactive operations, which allow industry leaders to avoid risk and maintain higher overall utilization rates.
- Transparency and uniform visibility into operations at all

- levels is necessary for effective business decision making. Often in today's process manufacture accurate data is difficult to obtain in timely fashion. This leads to manual manipulation of data as it moves up the organizational hierarchy.
- With an increasingly aging workforce, it is imperative that process manufacture identify, capture, and replicate best practices of its experienced staff

within and across plants.

- Plant production must align with business and volatile market needs.

## Implementing Operational Excellence is not Without its Challenges

- Islands of information make establishing a complete "single version of truth" for operations and management overwhelming. Poor decision-making result from disconnected teams and

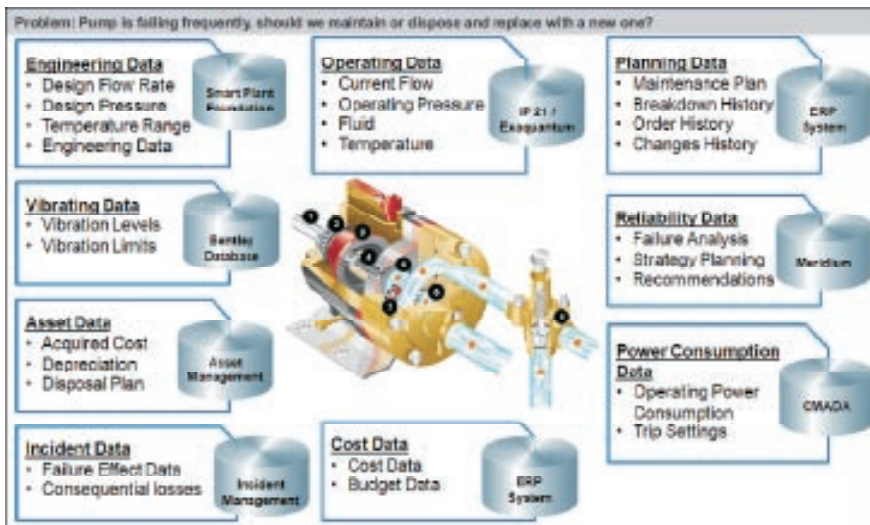


Fig 1- Even for a single equipment, typically data is needed from multiple systems

information silos including: Operations, Maintenance, Project Management, Procurement, Finance, LIMS, Reliability, Manufacturing Execution System, etc. The challenge is that information is collected and managed by different aspects of business and too often there is no one single view of what these systems and their data mean.

- The competitive process industry marketplace demands fewer, less experienced operations personnel with increasing responsibilities.
- Data that is found tends to be raw and difficult for operations and managers to interpret.
- KPIs derived from raw data are not always transparent; making corrective actions difficult and imprecise.

There is a clear need to move away from the all too common operational silo approach. Modern Business Intelligence (BI) platforms enable simplified, collaborative, cross-functional team oriented operational excellence processes by integrating disparate data sources, extracting

valuable actionable information and transforming that information into long term organizational knowledge repository along with lessons learnt.

Sadly, despite the relative availability of BI platforms, we are yet to see process industries take advantage of generic BI platforms as strategic advantage that the organization leverages in highly competitive market environments. Cost, complexity of integration, reduced staff and lack of internal BI development capability are some of the many reasons that BI has not been widely adopted for process industry and operational excellence initiatives.

### Leveraging the “Right” Business Intelligence Platform

What is needed is a more specialized BI platform. Such a platform should ideally be architected from the ground-up by domain specialists from process industry to provide rich suite of built-in industry-standard KPIs, while allowing customization flexibility. Consolidating metrics from multiple source systems into single repository and providing intuitive user interface and set of tools that cater to users across organizational hierarchy. Leveraging process industry

standards (ISA-S95, ISO 15926, Open O&M, MESA, etc) and compatibility with industry formats (XML, PDF, SOAP, WSDL, etc) a BI platform should enable delivery of solutions quickly across enterprise and in- turn lowering risks and producing business benefits sooner.

Most companies starting BI journey, uncover pitfalls in building in-house solution from scratch, despite substantial IT and Domain expertise. Defining right KPIs in itself is six-month exercise for most, while many realize after couple of years that performance is poor due to suboptimal data models. The need is for pre-built, tested BI platform for refineries, which can be quickly tweaked to individual requirements.

### Rolta OneView

Rolta OneView is pre-built, comprehensive, specialized web-based BI platform for process industries with inbuilt ready-adapters to popular systems, optimized Industry-standards data models, statistical engines and out-of-box KPIs empowering personnel to make on-time decisions, at all levels of the organization. Rolta OneView provides innovative platform to improve overall performance and operational effectiveness by aligning work-process efforts of personnel with specific goals of the business. By creating a holistic center from which collaborative decision making can take place, Rolta OneView lowers organizational risk and establishes a cross- functional paradigm shift that unites diverse users around one view of their business.

### Summary of benefits

- Allows co-existence of Legacy systems with their own strengths
- Management remains abreast of information on timely basis

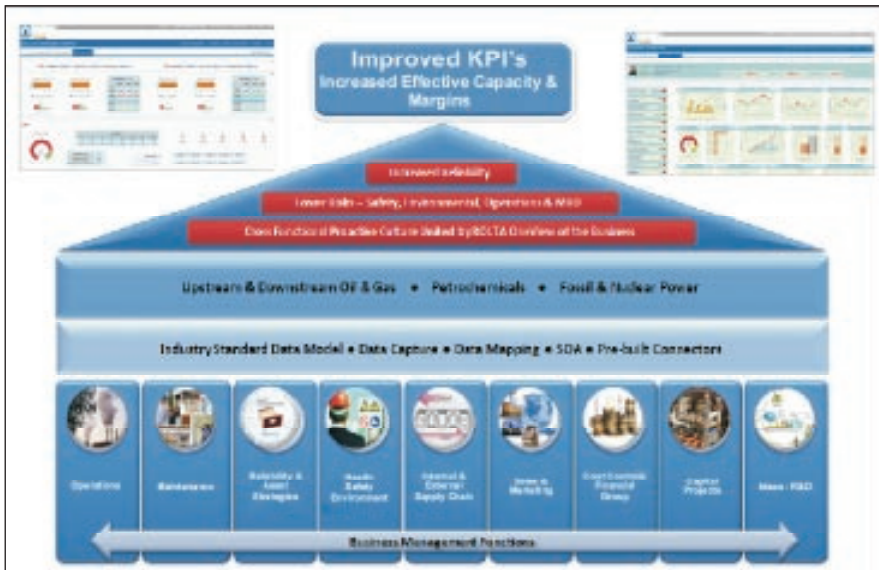


Fig 2- Rolta OneView™ brings data from disparate systems together to enable quick decision-making

- without any efforts
- Standardization of KPI definition avoids inconsistent reporting
- Single platform enables co-relation analysis & cross functional variance analysis
- Effective performance control without human intervention / manual processing
- Enables leadership in faster decision making
- Comparative analysis across facilities, departments, and plants to bridge performance gaps
- Mapping performance for key positions in the organization and automating balanced score cards
- Single-window integration of Engineering Applications (Plant Design, Detail Engineering, Piping, HVAC, Instrumentation, etc along with 3D Visualization) enables continued reference to design basis and controlled process excursions
- Single-window integration of Geo-spatial capabilities offer common picture of various plant assets across geographical attributes (terrain, distance, adjacencies, overlaps, etc) to converge efforts

and identify weak links

**Case Study Customer Challenges**

In late 2006, a Global Energy company's downstream operations made the decision to increase the overall reliability of its refineries and plants. Borrowing from cross-industry best practices, they embarked on developing a standardized and integrated operational excellence practice across all refineries.

Leaders at eight wholly-owned refineries quickly found that timely integration of key data elements was critical to effectively achieve their goals. Although critical data existed within the company, it was isolated in disparate sources. Each refinery had its own software solution for tracking asset maintenance, another for tracking reliability and still another for project

planning.

**Business Results: Cross-functional Insight Brings High Value**

In just four months, Rolta delivered an entire business intelligence platform, uniting 28 different data sources of reliability, maintenance and project data that existed throughout the refinery. This effort required Rolta to work with key business owners to build a state-of-the-art decision-support solution with dashboards, analytics, management of change, workflow, data input screens and correction actions, with follow-up actions as specified in their processes. This dynamic business intelligence application is updated daily, in some

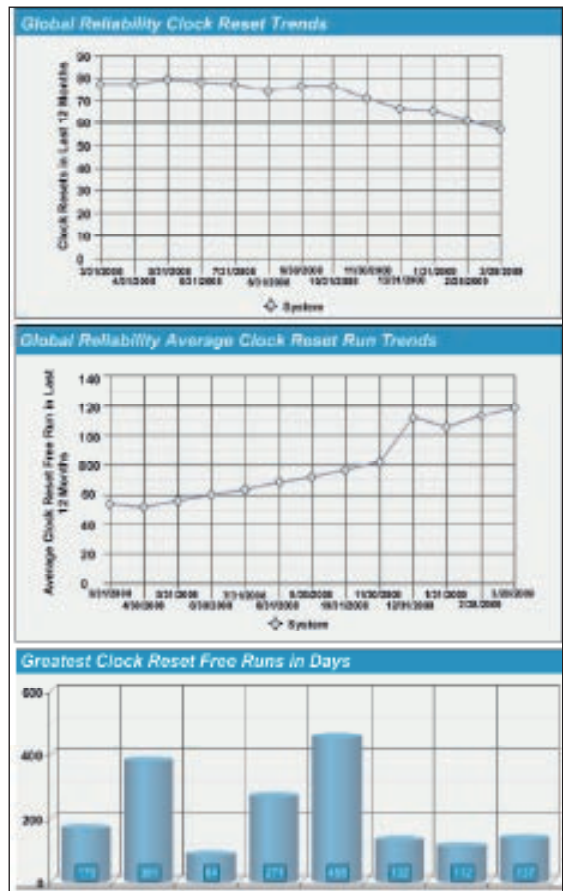


Fig 3- Benefits of Rolta Solution presented by the Global Energy company at national Petrochemical & Refiners Association (NPRO) - USA, 2009 Reliability & Maintenance Conference

cases in real time, giving managers and executives access to information that, in the past, took weeks to assemble and usually resulted in missing reliability improvement opportunities.

The Rolta solution allows senior leadership to ensure effective threat identification, mitigation and elimination. Business managers can make commitments regarding implementation of action plans to address key threats and vulnerabilities, along with managing accountability for reliability processes. Additionally, Operations can now identify, prioritize and mitigate threats and vulnerabilities, and assign action item ownership as appropriate. Metric and functional owners can raise exceptions and generate corrective actions in a timely fashion because of visibility and data transparency

### Customer Feedback

Below are direct excerpts from a presentation delivered at the National Petrochemical and Refiners Association meeting in April 2009 highlighting results and benefits of the business intelligence platform implemented by Rolta.

### Performance Actual Results

- Large number of reliability threats identified and resolved
- Declining condition monitoring & surveillance exceptions
  - Operator routine duties exceptions
  - Critical reliability variables exceptions
  - PMs and surveillance exceptions
- Environmental reportable events at historical lows
- Reduced cost of incidents
- Run lengths of operating units steadily increasing
- Reliability is becoming part of culture

### Reliability Clock

- This metric measures success/progress towards the goal of 'No Unplanned Shutdowns Between Planned Turnarounds'
- Similar to personal safety and environmental event-free days, unplanned plant shutdowns will be measured, recording total numbers of days since the last plant shutdown
- Raising the level of visibility of performance in this area promotes a more open culture for discussing and addressing causes of equipment and human performance related plant shutdown events
- A collective view of individual refinery performance maintains focus on causes and corrective actions associated with plant shutdown events. Common cause and repetitive events are more readily apparent including those causes applicable to other refineries

### Impact Summary

Through implementation of uniform reliability practice, performance at the refineries is steadily improving

- Teams are focused to identify, prioritize, mitigate and eliminate reliability threats and vulnerabilities
- A belief is now established that responsibility for reliability has to be shared across business units
- Reinforcing a more proactive culture
- Rolta's solution enables this cultural change because it measures and reinforces the new business process

Most notably, from inception in December 2007, one refinery experienced no unplanned shutdowns

due to reliability-related incidents for more than fifteen months. This incident-free time span far exceeds the refinery's previous historical average. In addition the company estimates that it has saved millions in costs at this refinery in the first year alone.

The above Rolta solution was also honoured with Oracle Titan Award for Business Intelligence, in 2008 ■



### About the Author:

*Dr. Sohrab R. Bhot, completed his B.Sc. (Hons), M.Sc. and Ph.D. from, Victoria University of, Manchester (UK). He has*

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