Improved Overall Economic benefit with DMC3 Implementation – DHT Unit

Authors:
BPCL : Ms. Asawari Kelkar, Mr. S Sadhukhan, Mr. J Verma
Helium Consulting: Ms. Jijnasa Panigrahi, Mr. Arunkumar S

Agenda

About BPCL & Process

The Challenges Faced - Objectives

Solution / Methodology Implemented

Benefits Achieved

HELIUM CONSULTING
PRIVATE LIMITED

Bharat Petroleum

BPCL Mumbai Refinery – An Overview

▸ The Bharat Petroleum Mumbai Refinery (BPCL - MR) is one of the most versatile refineries in India and excels in all aspects like quality, technology, energy, human relations, safety, environmental friendliness and operating cost

▸ With successful de-bottlenecking and implementation of various major projects, Mumbai Refinery has a capacity to process 12 MMT of crude oil per annum.

▸ Mumbai Refinery has processed 76 different types of crude, making it one of the most flexible refineries in the country.

▸ Mumbai Refinery has implemented a state of the art on-line monitoring tool, covering entire functions of the refinery, for disseminating information and decision making

About Helium Consulting

Consulting

- Improve Business Metrics in Supply Chain and Manufacturing
- Solution Feasibility and Road Mapping
- Plant/ Manufacturing Architecture
- Business Intelligence & Reporting

Design and Implementation

- Functional Design and Architecture
- Functional specification of solution areas
- Implementation & Development of Commercial Products/ Custom Applications
- Integration of Business Process and data

Maintain and Sustain

- Continuous improvement programs
- Enhanced Solution based on New Business needs
- Maintain Solution and Integration
- Training on solutions and products
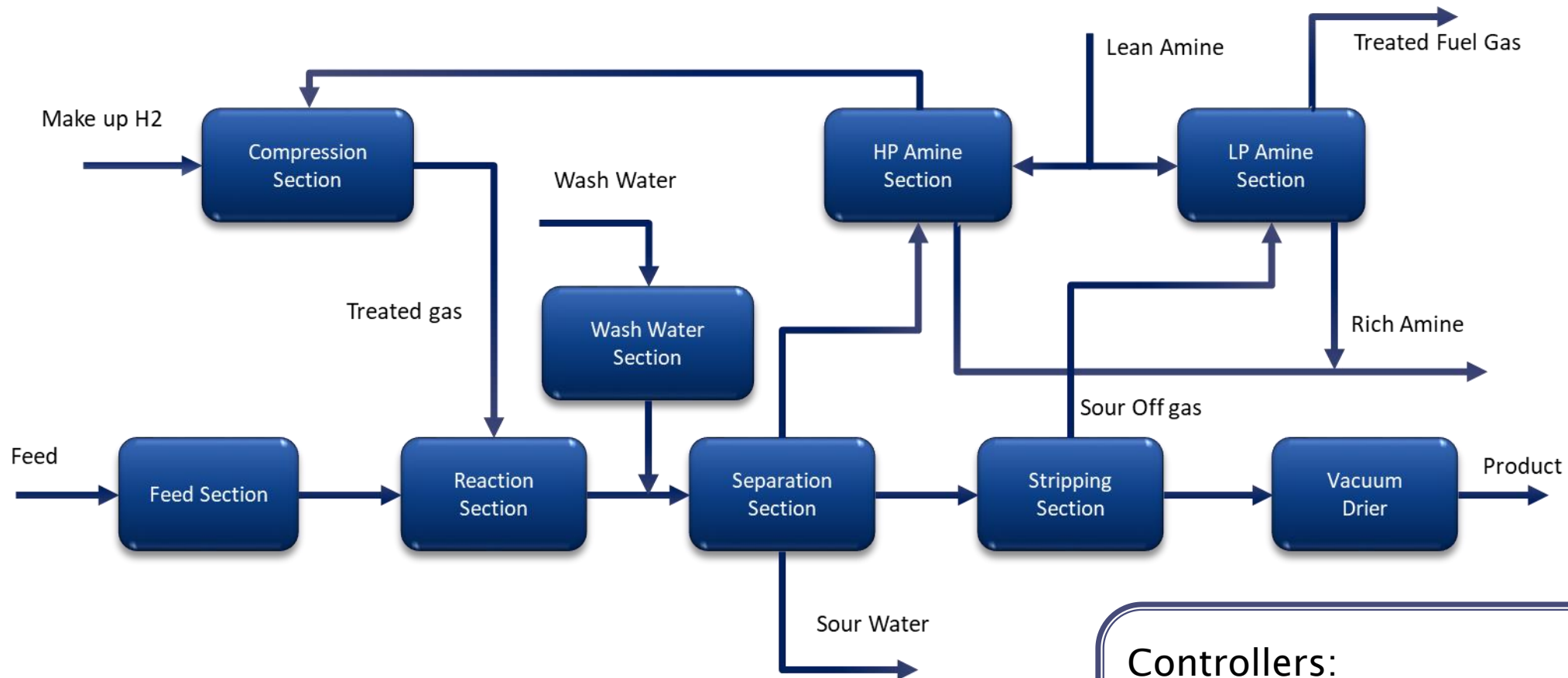
Optimization

Energy Initiatives

Yield Maximization

Quality Debottlenecking

Controller Tracking

IQ Performance Reports

DHT Unit – Process Flow

Controllers:
- ➤ Reactor & Feed
- ➤ Charge heater
- ➤ Stripper & Drier

Agenda

About BPCL & Process

The Challenges Faced - Objectives

Solution / Methodology Implemented

Benefits Achieved

HELIUM CONSULTING
PRIVATE LIMITED

Objectives

- Plan to improve benefit realization from APC implementation
- Reduce the time to benefit from
  - Months to Weeks
- Embrace new technology – DMC3 and to make most out of it
- To achieve a bench mark in timelines
- Reduce APC team resource utilization & Partners service days
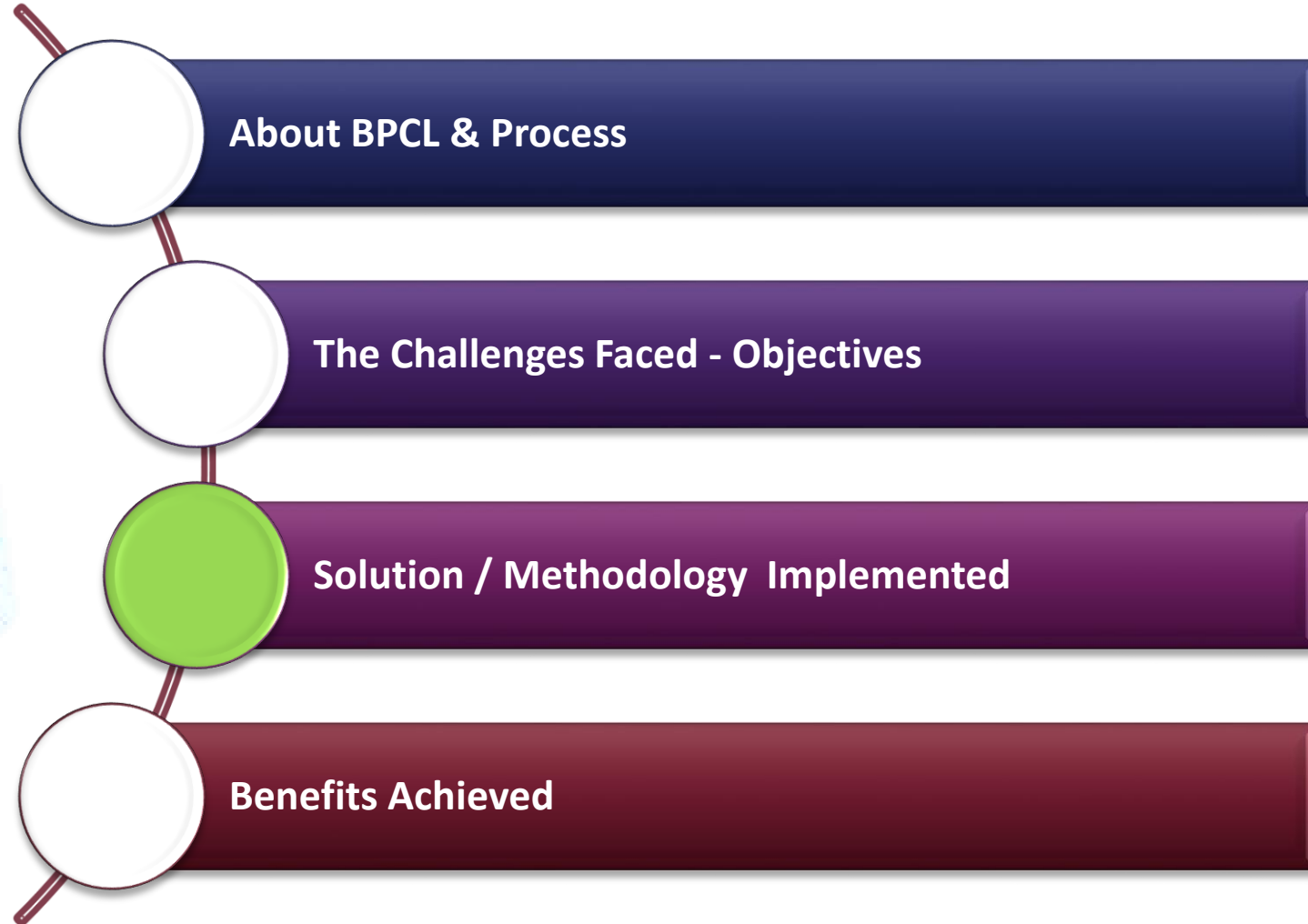- Reduce overall cost for Implementation

Challenges/Opportunities Identified (DMC3)

- Cutting Down on Data Analysis Time
- Identifying Usage of Workflow
- Faster and Accurate Model Tuning
- Comprehensive User Involvement
- Deployment Ease

Agenda

About BPCL & Process

The Challenges Faced - Objectives

Solution / Methodology Implemented

Benefits Achieved

HELIUM CONSULTING
PRIVATE LIMITED

Overcome the Typical Timeline Challenges

- **Project Execution Cycle**
  - Major Challenges in project execution cycle such as Sequential dependencies of various activities, and Controller Design were addressed by maximizing the use of DMC3 features & tools
    - PID Tuning & Pre Test
    - V10 Builder
    - Calibrate – Multi Test
    - Commissioning & Model Review

- **Solutions / Application Used**
  - Aspen DMC3
    - Calibrate
    - Adaptive Modelling
  - Aspen Watch
  - PID Watch

‣ **PID Watch**

  ◦ A complete toolset for PID tuning
  ◦ All control loops configured in PID Watch
  ◦ Automatic reports generated every 8 hrs to monitor the tuning set – Decision will be taken based on the same
  ◦ Valve stiction issues, Oscillation index – Out of the box reports

Methodology / Solution Approach   (2)

- **V10 Builder**
  - Smart Slice
    - Excel data to Model time reduced
  - Strategy – Using Smart Tune
    - Enabled the operations to visually the controller more than ever

- DMC3
  - Calibrate – Multi Test
  - Adaptive Modelling

Methodology / Solution Approach (3)

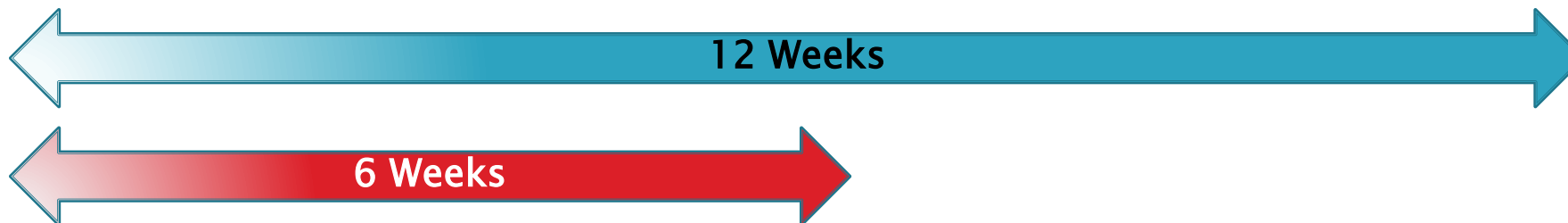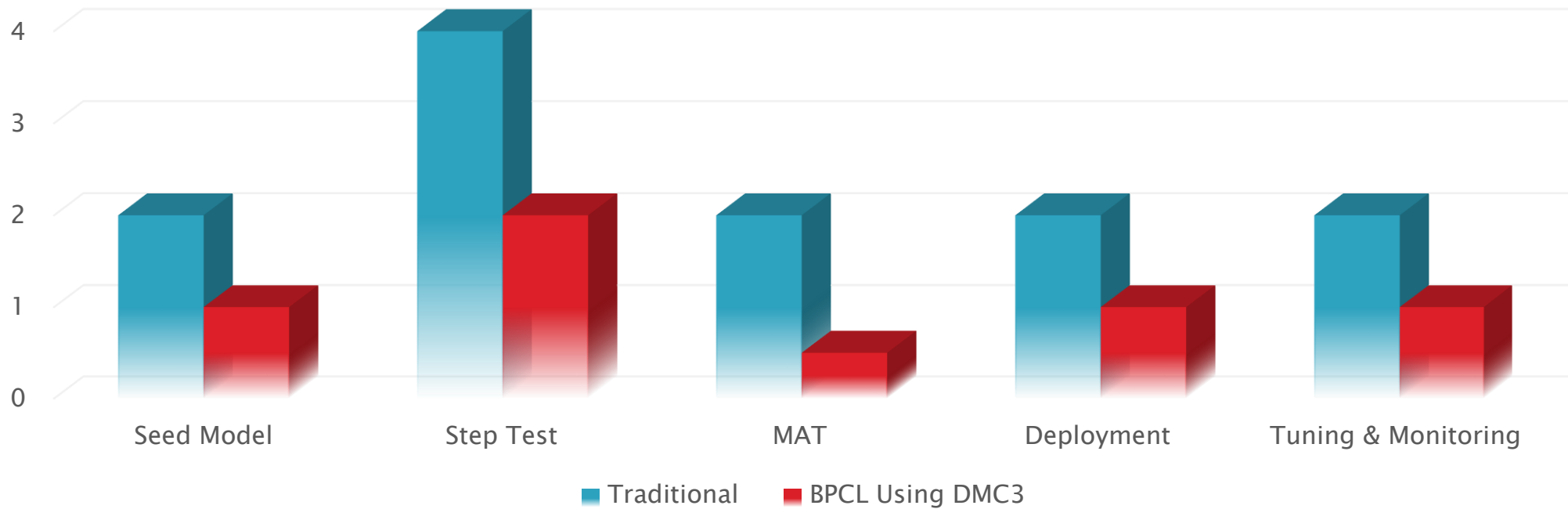- **Aspen Watch**
  - Custom KPI's and Reports
  - Automatic generation of reports to monitor controller even during calibrate
  - Prediction deviation analysis
  - Automatic data extraction templates and analytics based on the same

Agenda

About BPCL & Process

The Challenges Faced - Objectives

Solution / Methodology Implemented

Benefits Achieved

HELIUM CONSULTING
P R I V A T E   L I M I T E D

Bharat Petroleum

Typical Timeline Vs Adaptive Approach

TIMELINE

Traditional ■ BPCL Using DMC3

12 Weeks

6 Weeks

Benefits Area – Identified

- **Tangible Benefits:**
  - Reduction of Flash point StDev to improve Yield and Energy reduction
  - Reduction in Stack Temperature for fuel Gas Consumption reduction.
  - Stable Operations of Reactor lead to reduction In StDev of Product Sulphur
- **DMC3 Benefits:**
  - DMC3 enabled these benefits much earlier than the traditional mode of APC implementation
  - Modelling / maintenance time for controller implementation reduce by 30% due to the integrated V10 builder

Benefits Realized

- ▸ FG Reduction
- ▸ Stripping Steam Reduction
- ▸ Yield Maximization
- ▸ Overall Standard Deviation reduction in Control variables by 30-50%

Q & A