

CHAPTER I

INTRODUCTION

1.1 The Concept

For most of production-based company whom runs continuous process, the most common of business objective always be “Minimizing Cost” and the most effective way to minimize cost is to increase asset utilization and to reduce losses. Hence, there are several strategies and tools have been developed over years. Not only general quality management system like Total Quality Management [TQM], Malcolm Baldrige National Quality Award [MBNQA], and Six Sigma always be recognized and deployed corporate-wide, some production management tools also are implemented in specific production units. Some of them are; Total Productivity Management [TPM] or Lean Manufacturing which focus on improving production effectiveness continuously, International Safety Rating System [ISRS] which mainly focus on safety and loss control, and Operational Reliability Management System [ORMS] which focus on achieving production reliability.

1.2 The Application

The company under study is currently implementing concept of ORMS for improving production utilization and reliability. However, most of implementation processes involve with issues of change management and have been guided by the consultant company already; Moreover, the whole process takes a lot of time (more than 3 years) to see any results or improvements. Thus, this study would not engage with these ORMS implementation aspects.

Anyhow, the consultant company only provides general guidance with few examples for develop Key Performance Indicators [KPI] to use in ORMS process. Most suggested KPI are considered as “lagging KPI”, which are too generic and typically used just for benchmarking propose. Then, this study is going to apply relevant performance management theories into the real-life case for reference, by developing industry-specific KPI with strategic consideration for controlling Core team in ORMS process.

Since the whole ORMS process is very vast and would take rather long time to implement and measure the results. Therefore, only the most critical unit in Ethylene production which needs to be closely monitored and controlled, the Cracking unit, has been chosen and considered as pilot project for the study.

1.3 Objectives

To develop strategic KPI for effectively monitoring and controlling Core team in ORMS process of the Cracking unit.

1.4 Scopes & Assumptions

- 1) Review production requirements & identify gaps in ORMS process of selected production unit.
- 2) Revise & develop new KPI for controlling Core team in ORMS process of selected production unit.
- 3) Test new KPI to ensure requirements are fully met.
- 4) Assess ORMS performance of selected production unit.
- 5) Develop relevant documentation (report, guideline, procedure) for ensure sustainability of Core team in ORMS process of selected production unit, and for further reference.

1.5 Methodology & Schedule

- 1) Study relevant topics, articles, and theories as illustrated in previous section.
- 2) Assess existing ORMS processes in selected production unit.
- 3) Review roles and responsibility of Core team in ORMS process of selected production unit. Using SDWT concept as guideline.
- 4) Review & develop KPI for monitoring and controlling the Core team. KPI would be deployed deliberately by strategic management tools (ie.TQM, BSC, Strategy maps)
- 5) Test for effectiveness of new KPI .
- 6) Measure ORMS performance of selected process unit using new KPI
- 7) Conclusion & recommendation
- 8) Reporting & Documentation

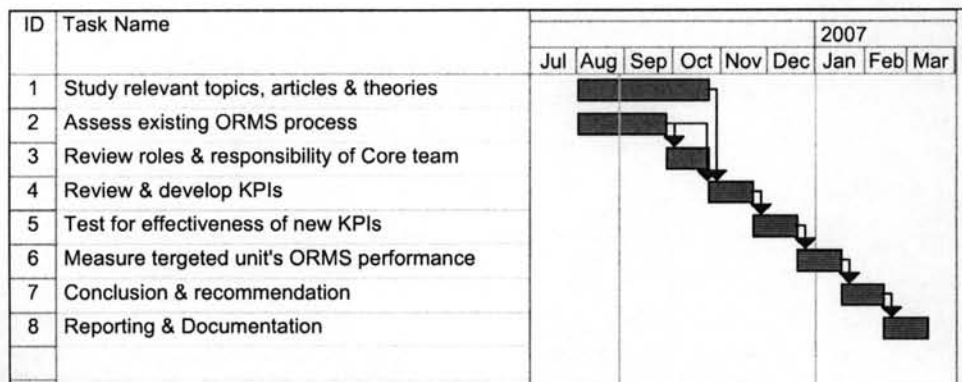


Figure 1: Project Schedule

1.6 Expected Benefits

- 1) Result of the study would be used in the actual production unit as KPI for controlling Core team in ORMS process of selected production unit.
- 2) The study would be used as guidance for develop KPI in other production units.
- 3) The study could be used as reference for further research in related subjects.

1.7 Terminology

AM	Abbreviation for Asset Management
Bad Actor	Equipment that fail frequently and/or cost high losses
BEC	Abbreviation for Basic Equipment Care. BEC is a reliability tool for operators to take care of equipments
Benchmarking	A methodology define metrics for comparing performance of specific industry
BSC	Abbreviation for Balance Score Card (Kaplan, 1992)
CMMS	Abbreviation for Computerized Maintenance Management System.
Core Team	Part of ORMS (see ORMS)
Cracking Unit	Early production unit of Ethylene process.
DEM	Abbreviation for Defect Elimination Method. DEM is a "problem solving and decision making" methodology, used for investigating problems and developing solutions in production plant
EAM	Abbreviation for Enterprise Asset Management. It is modern term of Computerized Maintenance Management System (see CMMS), but usually refers to Plant Maintenance module of SAP
EQ	Abbreviation for Equipment
ERP	Abbreviation for Enterprise Resource Planning
FT	Abbreviation for Facilitator Team (see SDWT)
HRD	Abbreviation for Human Resource Development
ISRS	Abbreviation for International Safety Rating System. ISRS is a well-known Loss Control program developed by ICI
IT	Abbreviation for Information Technology
KM	Abbreviation for Knowledge Management
KPI	Abbreviation for Key Performance Indicator.
Lagging Indicator	Metric that measure how good "Result". Slower response
LCC	Abbreviation for Life Cycle Costing

Leading Indicator	Metric that measure how well "Process" perform. Faster response
MBNQA	Abbreviation for Malcom Balridge National Quality Award
MTBF	Abbreviation for Mean Time Between Failure. Metric for measure Reliability
MTCE	Abbreviation for Maintenance
MTTR	Abbreviation for Mean Time To Repair. Metric for measure repair performance
OEE	Abbreviation for Overall Equipment Effectiveness. Metric for measure overall performance, consists of Availability, Throughput, and Quality rate
Olefins	General term for Ethylene and Propylene product.
ORMS	Abbreviation for Operational Reliability Management System. ORMS is a reliability management model used in many refineries and petrochemical plants, which focus on team-based working culture and performance measurement for continuous improvement.
PM	Abbreviation for Preventive Maintenance. Typically PM means maintenance tasks performed on equipment periodically to make sure that equipment is ready to be used.
PSO	Abbreviation for Planning & Scheduling Optimization. PSO is part of maintenance work management improvement
QCC	Abbreviation for Quality Control Circle
RBI	Abbreviation for Risk Based Inspection. RBI is widely used in oil and gas industry for identifying equipment inspection tasks. Check API RP 581 (2000) for further detail.
RCA	Abbreviation for Root Cause Analysis. RCA is a structural "Problem Solving" process for identify root cause of problems in production plant
RCM	Abbreviation for Reliability Centred Maintenance. RCM is widely used in oil and gas industry for identifying equipment PM program. Check SAE-JA1012 (2002) for further detail.
RM	Abbreviation for Reliability & Maintenance
SAP	The most well-known ERP in market

SCM	Abbreviation for Supply Chain Management
SDWT	Abbreviation for Self Directed Work Team
SIF	Abbreviation for Safety Instrumented Function. SIF is widely used in oil and gas industry for identifying effectiveness of instrumentation protection system. Check IEC 61511(2003) for further detail.
SMRP	Abbreviation for Society of Maintenance and Reliability Professional. SMRP is an professional organization whom develops standards for maintenance and reliability management
Steering Team	Part of ORMS (see ORMS)
Strategy Map	A strategy deployment model, developed by Kaplan in 2004
TPM	Abbreviation for Total Production Management
TQM	Abbreviation for Total Production Management
Yield	Efficiency to create product. In this case, Yield defines as Ethylene produced divided by Ethane feed as percentage. Yield also represent "Quality rate" in Ethylene production