

Quality Management and Continual Improvement

Dr. Ralf Zolk, Peter Nijssen

Basell Deutschland GmbH

LyondellBasell Quality Management EAI

GPCA Supply Chain Forum, October 14, 2009



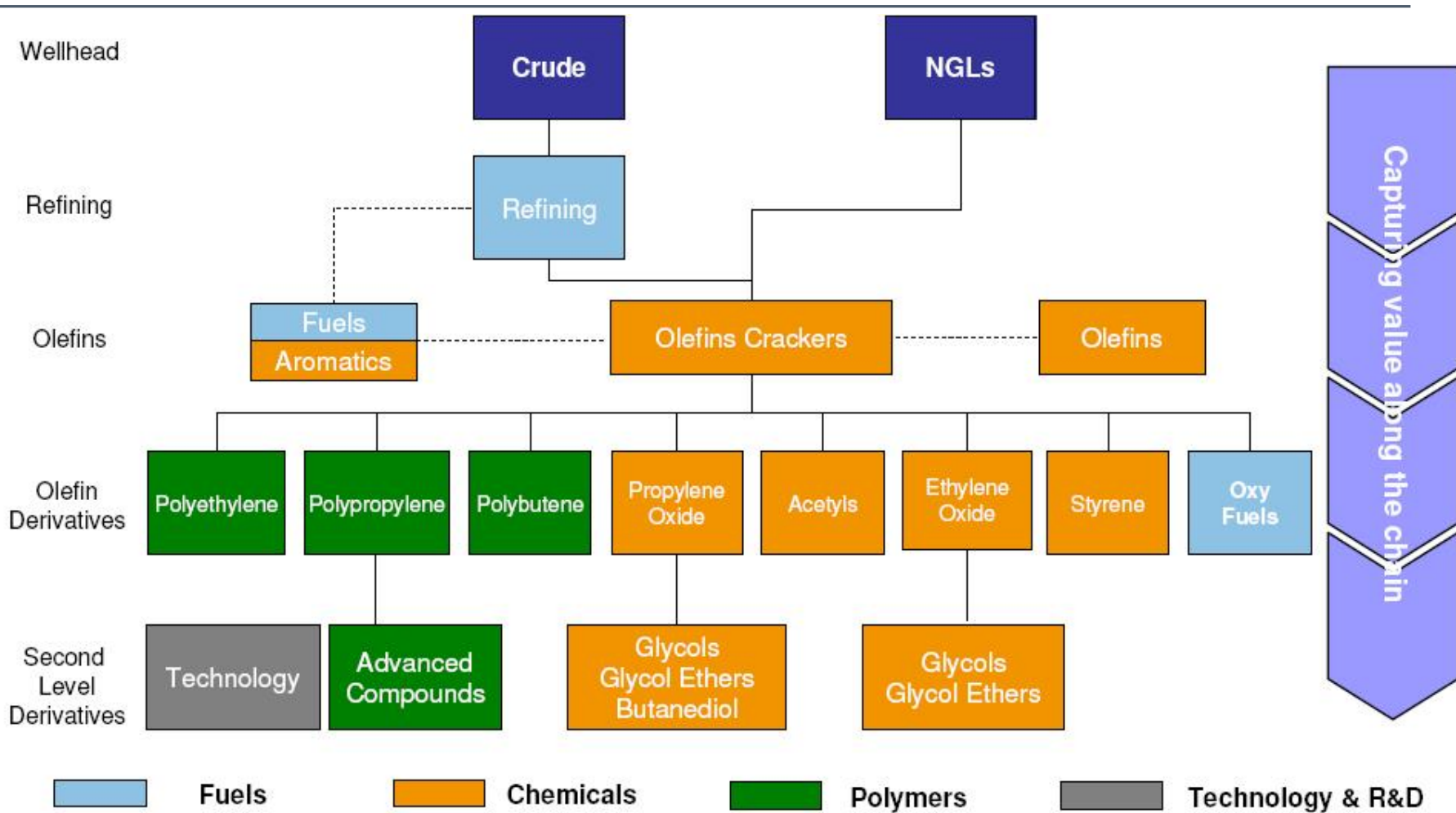
Quality Management and Continual Improvement Contents

- Introduction
- Quality Management Systems
- ISO Certification of Quality Management Systems
- Continual Improvement
- Complaint Handling Process
- Product Risk Management

Quality Management and Continual Improvement Contents

- **Introduction**
- Quality Management Systems
- ISO Certification of Quality Management Systems
- Continual Improvement
- Complaint Handling Process
- Product Risk Management

Product diversity and vertical integration



Product breadth and diverse markets

- LyondellBasell products are basic elements used to make products that people depend on every day

Diverse end markets

- Refining & Fuels
- Building & Construction
- Transportation
- Textiles & Furnishings
- Packaging
- Consumer
- Other



Estimate based on revenue.

Global rated capacity rank⁽¹⁾

- #1 Global – Polyolefins and Polypropylene Compounding
- #1 Global – Propylene Oxide
- #1 Global – Polyolefin Licensing⁽²⁾
- #1 Global – Polypropylene Catalysts
- #1 Global – Polypropylene
- #3 Global – Polyethylene
- #2 Global – Oxygenated Fuels
- #2 Global – Propylene Glycol & PG Ethers
- #5 Global – Light Olefins (Ethylene & Propylene)
- Refining Capacity – 373,000 barrels per day



(1) Sources: CMAI and LyondellBasell Industries estimates. Based on nameplate capacity as of December 31, 2007 and includes 100% of joint venture capacity.

(2) Capacity of third parties that license our technology.

LyondellBasell Polyolefins Joint Ventures – Saudi Arabia



- **Al-Waha Petrochemical Co.: Propane Dehydrogenation & PP (*Spherizone*)**
- **Saudi Polyolefins Company (SPC): PP (*Novolen*)**
- **Saudi Ethylene and Polyethylene Company (SEPC): C2/C3 Cracker, PE (*Hostalen ACP*) & PE (*Lupotech T*)**

Quality Management and Continual Improvement Contents

- Introduction
- **Quality Management Systems**
- ISO Certification of Quality Management Systems
- Continual Improvement
- Complaint Handling Process
- Product Risk Management

What does 'Quality' mean?



What does 'Quality' mean?

“The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs”

from ISO

(ISO = International Organisation for Standardization)

This also includes all features of Supply Chain Management...

...Really ALL Features...

A pallet collapsed during offloading.
The haulier unloaded the pallet in
an incorrect fashion.
Corrective action: training of drivers.



What is a Quality Management System (QMS)?

A QMS comprises the organizational structure, processes, procedures and resources needed to direct an organization with regard to quality.

Requirements for an adequate and properly working QMS are defined in the international standard ISO 9001:2008

Quality covers all areas

Links to individual Company/Division/Region/Site or Plant Processes and Procedures

Central Functions

- HSE
- R&D
- HR
- IT
- Procurement
- Finance
- Communication

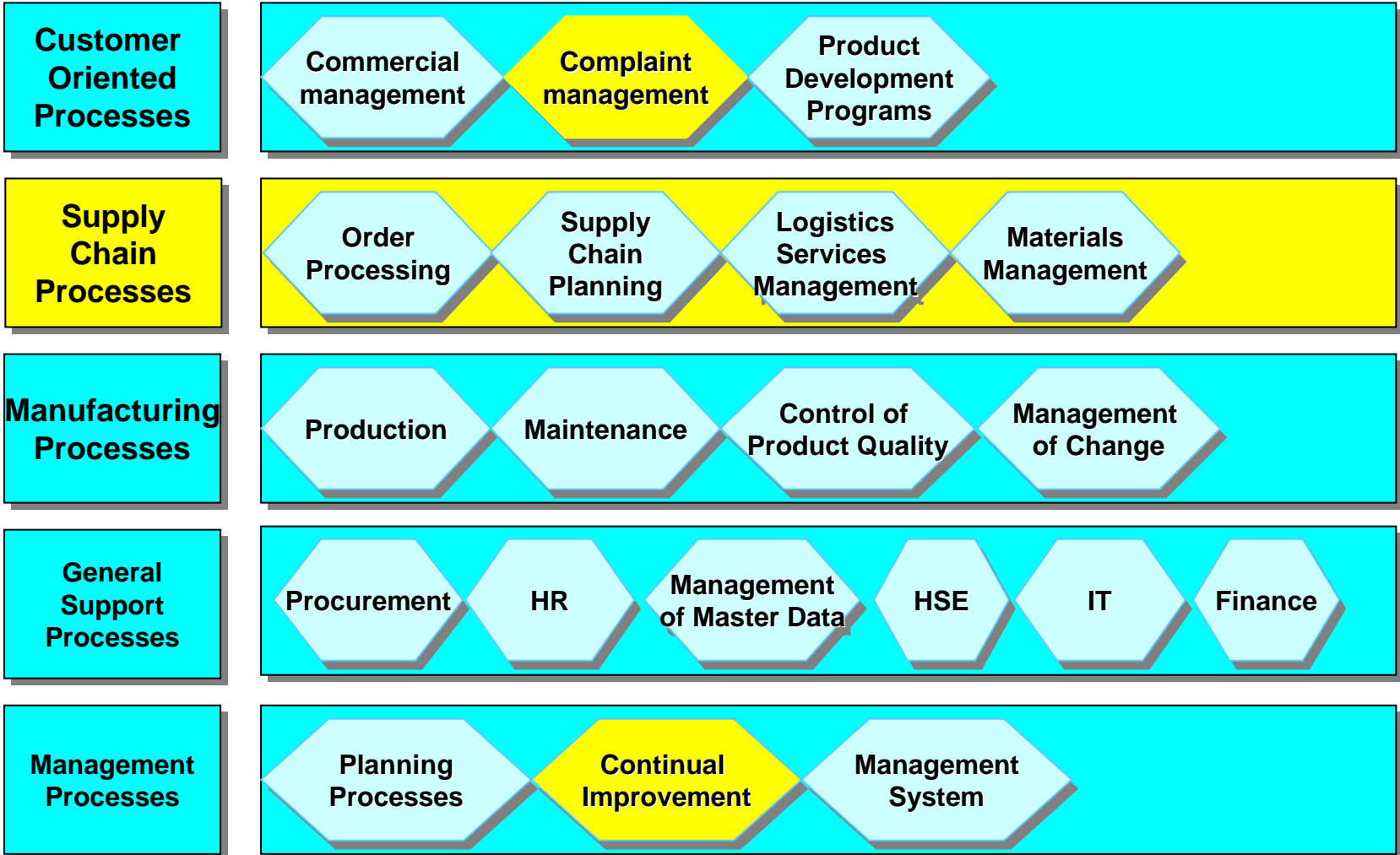
Divisions / Businesses

- Polymers Division
- Chemicals Division
- Fuels Division
- Licensing, Process Design and Technology Services/Catalyst

LyondellBasell Process Map

Process Classes

Process Groups



Target of a Quality Management System

The target of the QMS is to identify and fulfill customer requirements on products and services as well as to implement a system to **continually improve** the Companies' activities.

Quality Management and Continual Improvement Contents

- Introduction
- Quality Management Systems
- **ISO Certification of Quality Management Systems**
- Continual Improvement
- Complaint Handling Process
- Product Risk Management

ISO Certification of Quality Management Systems

- Once having in place an effective and living Quality Management System a Company can achieve ISO certification
- The Quality Management System needs to enable the Company to satisfy the requirements of the Customer and other stakeholders
- The QMS is audited and its conformity with standards like ISO 9001 (re-)confirmed by independent companies

Current Certifications in LyondellBasell in Europe

ISO 9001:2008

- All EU Manufacturing sites & Sales offices and central Service Functions
 - LyondellBasell Polymers Division EU
 - LyondellBasell Catalyst Business Global
 - LyondellBasell Chemical Division NL
 - LyondellBasell Chemical/Fuel Division F

ISO 14001:2004

- All EU Manufacturing sites (except Fos Caban)

ISO/TS 16949:2002 -> ISO/TS 16949:2009

- All EU Manufacturing units delivering to Automotive Industry

Quality Management and Continual Improvement Contents

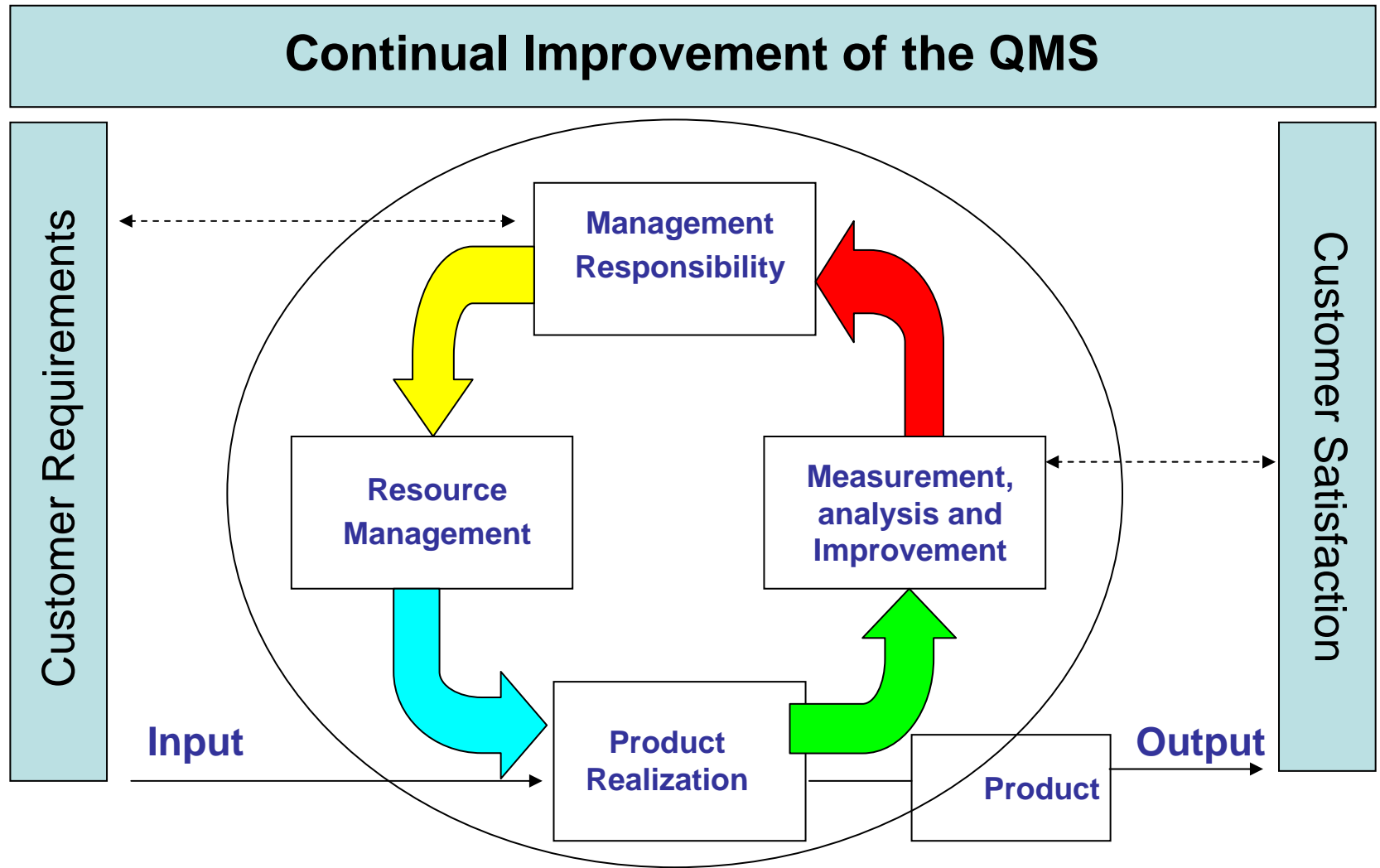
- Introduction
- Quality Management Systems
- ISO Certification of Quality Management Systems
- **Continual Improvement**
- Complaint Handling Process
- Product Risk Management

Continual Improvement

The **Continual Improvement Process (CIP)** is a management process whereby delivery (customer valued) processes are constantly evaluated and improved in light of their efficiency, effectiveness and flexibility.

- The core principle of CIP is the reflection of processes (Feedback)
- The purpose of CIP is the identification, reduction, and elimination of sub-optimal processes (Efficiency)
- The emphasis of CIP is on incremental, continuous steps (Evolution)

Continual Improvement



Customer Satisfaction – No. 1 in the list of basic principles of Quality Management

ISO 9001:2008, Quality management systems — Requirements

8.2 Monitoring and measurement

8.2.1 Customer satisfaction

As one of the measurements of the performance of the quality management system, the organization shall monitor information relating to customer perception as to whether the organization has met customer requirements. The methods for obtaining and using this information shall be determined.

Customer satisfaction can be measured in a number of ways:

- External and internal surveys (benchmarking) – Specific!
- Customer Scorecard
- Complaint Management

Quality Management and Continual Improvement Contents

- Introduction
- Quality Management Systems
- ISO Certification of Quality Management Systems
- Continual Improvement
- **Complaint Handling Process**
- Product Risk Management

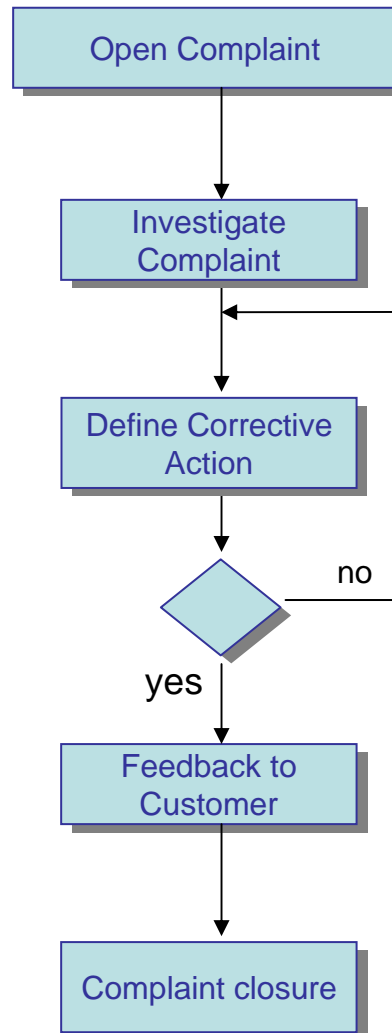
Complaint Handling Process

- Roles and Responsibilities
 - Have to be defined and cleared throughout the Organization
- IT Tools
 - Ensure a methodology is used within the process for better management and resolution of complaints
- Reporting features
 - Access to trend analysis - important when looking for continual improvement
- Objectives
 - Need to be defined and consistent to achieve target
- Feedback to customers (time, quality)
- Ensure Customer satisfaction

Complaint Handling

- Determination of Defect in close collaboration with Customer, Customer Service, Technical Service and Account Manager, Production and **Supply Chain**.

- Corrective Action: Identification and elimination of the causes of a problem, thus preventing their recurrence.



- Investigation at plant level, **Supply Chain** or business in close collaboration with TS where applicable. Determination of Root Cause.

Corrective action effective?

Complaint Handling within LyondellBasell

Customer complaint

Any incident about which a customer complains (verbally or written), whether or not a financial compensation is raised. Application-, Product Quality- or Service related.

Complaints are handled with the SAP Quality Notification tool

- Workflow defined with roles and responsibilities
- Tasks are automatically allocated to individuals

For plant / logistics (technical service where applicable)

- Complaint investigation, root cause analysis
- Definition of corrective action
- Effectiveness check of implemented corrective action

For customer service / account management

- Correspondence and final feedback to customer

Quality Management and Continual Improvement Contents

- Introduction
- Quality Management Systems
- ISO Certification of Quality Management Systems
- Continual Improvement
- Complaint Handling Process
- **Product Risk Management**

Product Risk Management

Product Risk Management (PRM) is analyzing situations to identify and manage risks. Thus PRM is avoiding customer disappointment and subsequent risks from product, service and supply chain.



Product Risk Management: Reporting

The aim of PRM reporting is to raise the awareness of PRM incidents with our products and services and to put in place corrective actions to prevent recurrence.

Criteria for reporting an incident as PRM would be:

- personal injury/illness (HSE issue)
- environmental damage
- damage to company reputation
- legal action
- damage to company viability

PRM: Potential Risk Evaluation in Supply Chain

- Customer forgot to place order
- Sales forgot to place order
- Wrong product name entered
- No communication possible
- System failure
- Delivery not created
- Order change missed

- No product available
- Batch off-spec
- QA problem
- Wrong packaging
- Overfill / spillage / incident
- Wrong loading temperature
- Wrong product loaded
- Wrong product label

- Spillage
- Still under pressure
- Rest product



- Tank container not available
- Tank container rejected (techn.)
- Tank container wet / contaminated
- Traffic jam / incident
- Full loading program
- Driver forgot the hose
- Temperature too cold / hot

- Temp. drop down / warm up
- Incorrect temp. reading
- Bad weather conditions
- Delay ship
- Strike / capacity / missed the ship
- Wrong documents / container
- Involvement in incident
- Wrong planning shipping agent

- Late / early delivery
- Unloaded in wrong silo/too fast
- Wrong or missing documents
- Hose contaminated, damaged
- Blocked lines, filters
- Equipment failed (compressor)
- Driver not trained
- No safe container access







“...we sent it by ground..”

Thank you for your attention



Disclaimer

All information (“Information”) contained herein is provided without compensation and is intended to be general in nature. You should not rely on it in making any decision. LyondellBasell accepts no responsibility for results obtained by the application of this Information, and disclaims liability for all damages, including without limitation, direct, indirect, incidental, consequential, special, exemplary or punitive damages, alleged to have been caused by or in connection with the use of this Information. LyondellBasell disclaims all warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, that might arise in connection with this information.

