Infineum Italia
Equipment Integrity Management System

Alessandro Delfino, Giordano Malossi
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Summary

• Introduction – Infineum

• Operations Integrity Management System

• Equipment Maintenance Strategy

• 2018 Ageing management assessment results
Infineum as a Company

- **Independent lubes and fuels additives company**
  - Established in January 1999 as a 50:50 joint venture between ExxonMobil and Shell, bringing together their respective Additive Divisions

- **A world leader in the formulation, manufacture and marketing of additives for the fuel and lubricant industry**
  - More than 80 years of experience within the additives industry
  - More than 1,900 global patents and patent applications

- **Approximately 1,900 colleagues globally, in multicultural, multifunctional teams**
  - Global Corporate HQ in UK
  - Regional business centres in UK, USA, China and Singapore
  - Sales and Marketing representation in more than 70 countries
  - R&D facilities in the UK, USA, China, Japan and Singapore
  - Global manufacturing facilities strategically located
Global company footprint

- Production Site
- R&D Facility
- Business Centre
Infineum in Italy: Vado Ligure Manufacturing Site

- Built grass-roots in 1967 by Exxon Chemicals and steadily expanded
- Plant area: 90000 m² paved and fenced, owned by Infineum
- Stand-alone plant with all the needed utilities and services
- Automated batch processes at low temperature (max 300°C), and pressure (max 3 barg)
- Main process hazards: toxics (Cl₂, H₂S, SDC, HCl), flammables (alcohols), substances dangerous for the environment (H₄00/410/411)
- 24/7 Operations both in the plant and in the lab.
Operations Integrity Management System - OIMS

1. Management Leadership, Commitment and Accountability
2. Risk Assessment and Management
3. Facilities Design and Construction
4. Information/Documentation
5. Personnel and Training
6. Operations and Maintenance
7. Management of Change
8. Third-Party Services
9. Incident Investigation and Analysis
10. Community Awareness and Emergency Preparedness
11. Operations Integrity Assessment and Improvement

Performance you can rely on.
Plant Integrity – Reliability

OPERATIONS INTEGRITY (OIMS)
- Facilities Design and Construction
- Critical Equipment
- Mechanical Integrity

GLOBAL MANUFACTURING EXCELLENCE (GME)
- Operational Excellence
- Reliability Excellence
- Maintenance Excellence

SAFE AND RELIABLE PRODUCTION UNITS
Integrated systems updating maintenance strategy

RISK MGMT
ex. hazop review
(OIMS2.1)

INCIDENTS
INVESTIGATIONS
(OIMS9.1)

EQUIPMENT

INTEGRITY
LAW + RBI
(OIMS 6.4)

CRITICAL
EQ.
(OIMS 6.3)

RELIABILITY
SYSTEM
(IQP3.5)

FMECA

EQUIPMENT
STRATEGY:
PM / PdM / insp.

Bad Actors

RELIABILITY
investigations

Performance you can rely on.
Critical equipment

- Control frequency of critical device is continuously verified and updated (including SIF / SIL instrumentation):

  \[ T = \frac{(1-At)}{\left(\frac{1}{2} \lambda\right)} \]

  - Ex. CL2 analyser tested every 3 months

  - Cl2 piping is controlled through X-ray every year
Our first Bad Actor: Corrosion Under Insulation

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OK ?

Not really
Ageing management assessment

– Management system verified with INAIL (*Method for the synthetic evaluation of the adequacy of the asset integrity management in Seveso plants*) during the July 2018 inspection

- Positive Final compensation index (OK)

- Infineum Vado’s plant critical accelerating factors:
  - Frequent start/up - shutdown cycles (batch processes)
  - Failures (50% related to corrosion)

- Infineum Vado’s plant strongest mitigative factors:
  - Safety automatic process control
  - Field verification (test + inspection)

- 90022 critical equipments (as per D.lgs. 105/2015 definition) replaced in the last 10 years as well as many others (ex. Chlorine units reactors replaced in 2014 - monel cladded vs glass lined)
Questions / Comments ?

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