

# Infineum Italia Equipment Integrity Management System

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Performance you can rely on.



# Summary

- Introduction – Infineum
- Operations Integrity Management System
- Equipment Maintenance Strategy
- 2018 Ageing management assessment results

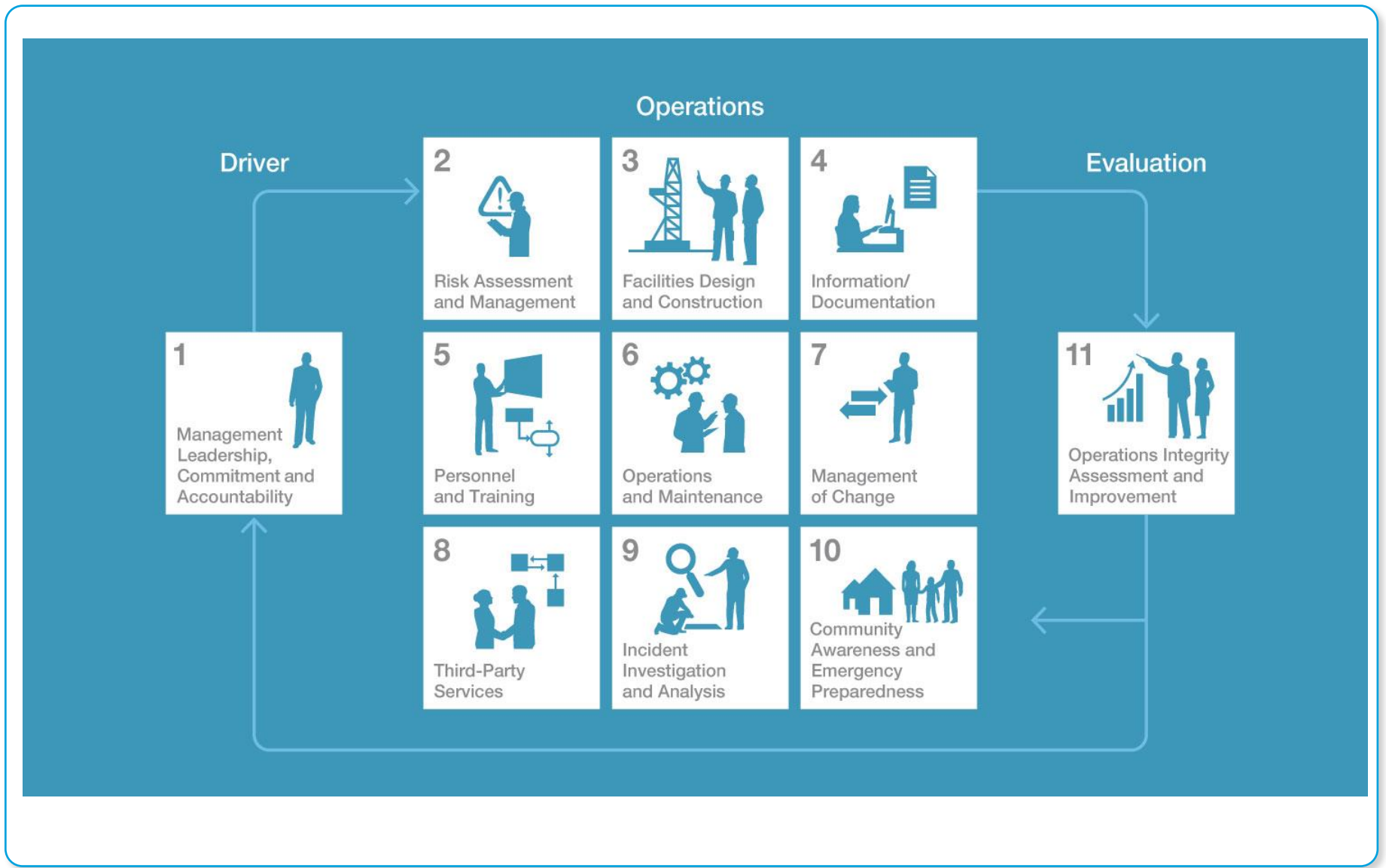
- **Independent lubes and fuels additives company**
  - Established in January 1999 as a 50:50 joint venture between ExxonMobil and Shell, bringing together their respective Additive Divisions
- **A world leader in the formulation, manufacture and marketing of additives for the fuel and lubricant industry**
  - 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



- Built grass-roots in **1967** by Exxon Chemicals and steadily expanded
- Plant area: 90000 m<sup>2</sup> 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** (Cl<sub>2</sub>, H<sub>2</sub>S, 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



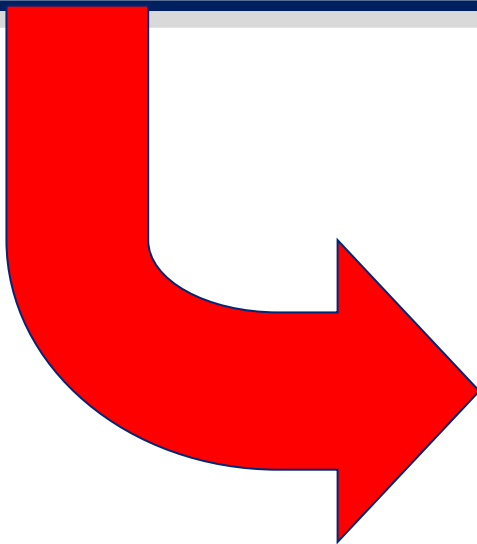
## OPERATIONS INTEGRITY (OIMS)

- Facilities Design and Construction
- Critical Equipment
- Mechanical Integrity

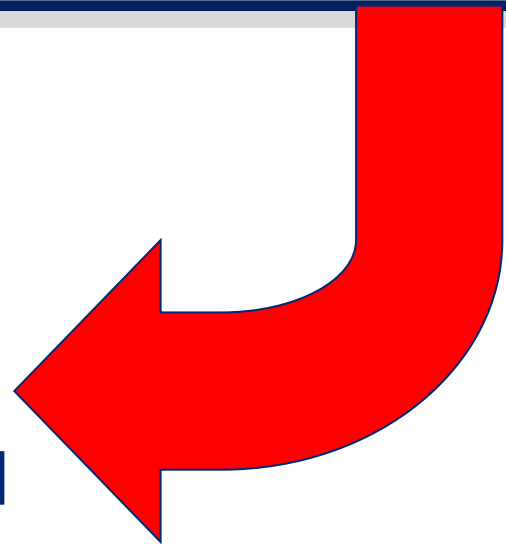


## GLOBAL MANUFACTURING EXCELLENCE (GME)

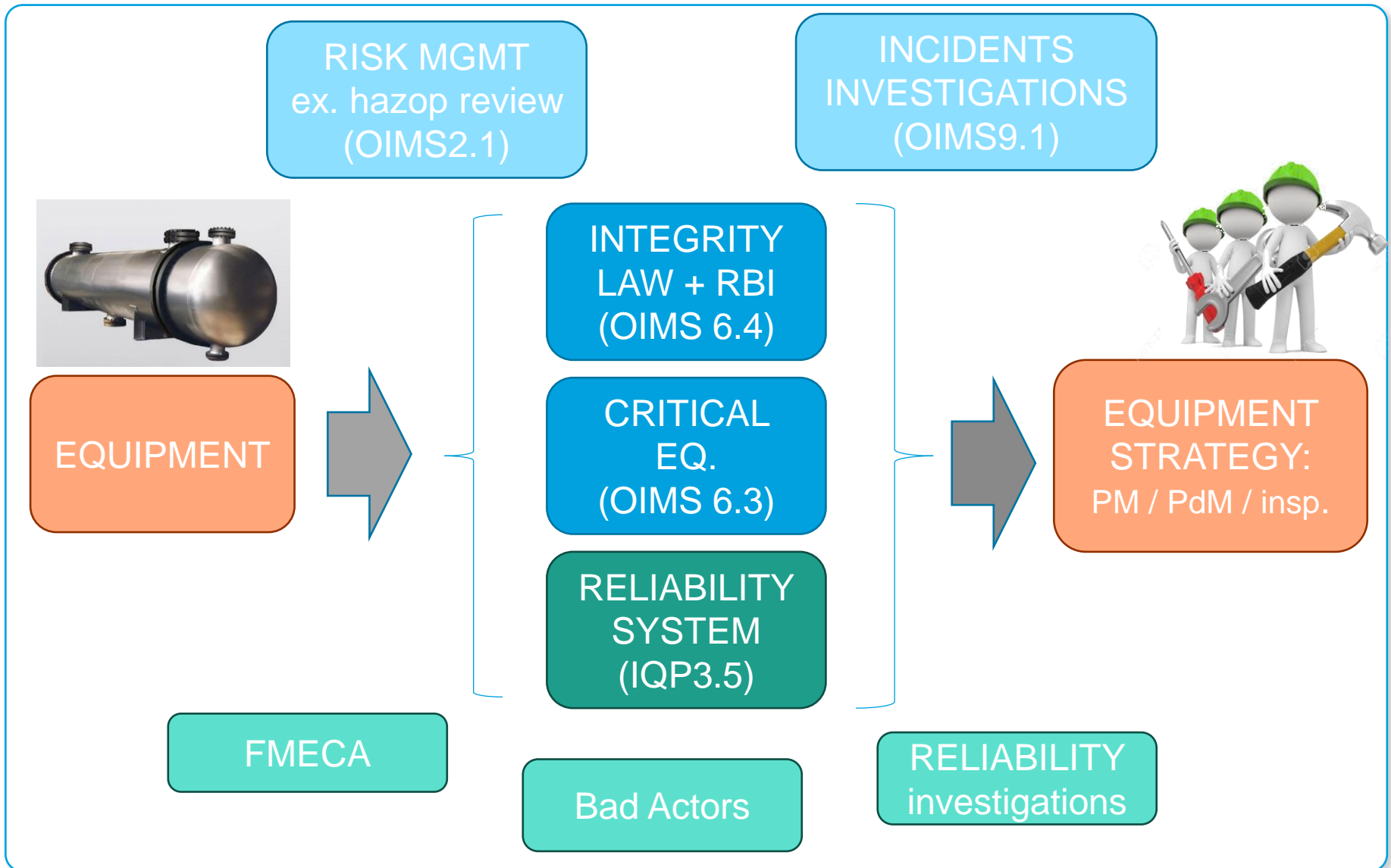
- Operational Excellence
- Reliability Excellence
- Maintenance Excellence



**SAFE AND  
RELIABLE  
PRODUCTION  
UNITS**



# Integrated systems updating maintenance strategy





# Critical equipment

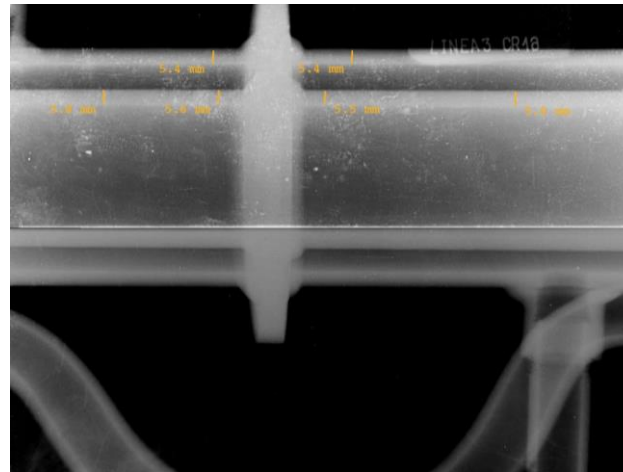
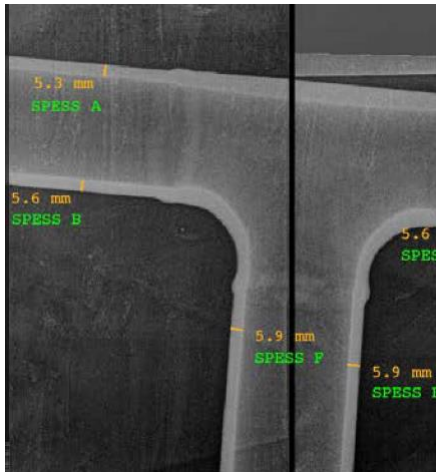
- Control frequency of critical device is continuously verified and updated (including SIF / SIL instrumentation):

$$\underline{T = (1 - A_t) / (1/2 \lambda)}$$

- Ex. CL2 analyser tested every 3 months

T = Test interval  
A<sub>t</sub> = Availability target  
 $\lambda = 1/\text{MTBF}$

- Cl2 piping is controlled through X-ray every year



# Our first Bad Actor: Corrosion Under Insulation

SCHEMA PUNTI TETTO

| Pos.Sk | Sp.Nom. | Spessore | Riduzione |
|--------|---------|----------|-----------|
| A1     | 5.00    | 4.80     | 0.20      |
| A2     | 5.00    | 4.70     | 0.30      |
| A3     | 5.00    | 4.80     | 0.20      |
| A4     | 5.00    | 4.90     | 0.10      |
| A5     | 5.00    | 4.60     | 0.40      |
| A6     | 5.00    | 4.70     | 0.30      |
| B1     | 5.00    | 4.70     | 0.30      |
| B2     | 5.00    | 4.80     | 0.20      |
| B3     | 5.00    | 4.90     | 0.10      |
| B4     | 5.00    | 4.80     | 0.20      |
| B5     | 5.00    | 4.80     | 0.20      |
| B6     | 5.00    | 4.60     | 0.40      |
| C1     | 5.00    | 4.90     | 0.10      |
| C2     | 5.00    | 4.70     | 0.30      |
| C3     | 5.00    | 4.80     | 0.20      |
| C4     | 5.00    | 4.90     | 0.10      |
| C5     | 5.00    | 4.70     | 0.30      |
| C6     | 5.00    | 4.70     | 0.30      |
| D1     | 5.00    | 4.80     | 0.20      |
| D2     | 5.00    | 4.90     | 0.10      |
| D3     | 5.00    | 4.80     | 0.20      |
| D4     | 5.00    | 4.90     | 0.10      |
| D5     | 5.00    | 4.80     | 0.20      |
| D6     | 5.00    | 4.70     | 0.30      |

OK ?

Not really

- 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)
  - 9 oo 22 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 cladde vs glass lined)

**Thanks for your attention !**

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