Asset Integrity

The UK’s updated approach to ageing plant
Ageing Plant

RR509 – 2006

RR823 – 2010

AP DG – 2011…
Ageing Plant

- 50% of European major hazard loss of containment (LOC) events due to mechanisms such as erosion, corrosion and fatigue.
- Between 1980 and 2006, 96 “major accident potential” LOC incidents reported in MARS attributed to ageing plant.
- 30% of all reported major accident LOC events.
- Overall loss of 11 lives, 183 injuries and over 170€m.
Ageing Plant

- 173 loss of containment incidents between 1996 and 2008 attributed to ageing plant mechanisms.

- 140 incidents, from RIDDOR events on COMAH sites between 2007 & 2013 associated with Ageing

- Mechanical failure responsible for 32 of (Worldwide) top 100 largest loss events in the hydrocarbon industries.

- Financial impact in excess of $10 billion.
Ageing Plant

- Downstream petrochemical industries suggest 43% of losses due to ‘Mechanical Integrity Failure’

- The remainder, maintenance issues (such as isolation) and failure of Safety Critical Devices were also of significance.

- Same source highlights that ‘…a major loss of integrity has few other layers of protection to prevent the loss’.

- Managing of ageing assets remains of huge importance.
Ageing Plant

![Distribution of scores, by category, overall for each work year](image)

- **2010/11**: Good or Exemplary, Needs to Improve, Poor or Unacceptable
- **2011/12**: Good or Exemplary, Needs to Improve, Poor or Unacceptable
- **2012/13**: Good or Exemplary, Needs to Improve, Poor or Unacceptable
- **2013/14**: Good or Exemplary, Needs to Improve, Poor or Unacceptable
- **2014/15**: Good or Exemplary, Needs to Improve, Poor or Unacceptable
- **2015/16**: Good or Exemplary, Needs to Improve, Poor or Unacceptable
- **2016/17**: Good or Exemplary, Needs to Improve, Poor or Unacceptable
Ageing Plant impact

Distribution of scores, by category, overall for each work year

% of scores


Good or Exemplary
Need to Improve
Poor or Unacceptable
Proactive & Reactive COMAH work:

% Type of Actions Placed on COMAH Operators

- Plant integrity
- Risk profiling
- Plant & Process design
- Maintenance
- Emergency arrangements
- Safety Critical Systems
- Operating procedures
- Leadership & Management
- Competence
- Control of work
- Management of Change
- Verification
- Not yet assigned
- Environment
- Contractors

Figure: 6 - Dangerous Occurrences at COMAH Sites 2016/17

- Electrical incident causing fire and explosion: 1
- Pressure system failure: 2
- Explosion or fire: 4
- Damage to or failure of a pipe: 7
- Escape of a hazardous substance: 8
- Escape of flammable substances: 26
What is missing?

• ESR report 2010: ‘…ageing plant… represents 28% of all reported ‘major accident’ loss of containment events’

• Lloyds LMA report 2016: ‘43% of the 100 losses analysed were due to Mechanical Integrity Failure’.
Proposed changes

• Encompass more of what the discipline does:
  – Expand to include design & change;

• Align with other CEMHD initiatives:
  – PTS & Leadership;

• Rearrange to align more closely with Regulation:
  – PUWER & PSSR.

• Archive old Gap Analysis, replace with slimmer summary document – and no legacy items…
Proposed changes

• The four criteria are as follows:
  – Integrity Management & Leadership
  – Initial Integrity & Design
  – Inspection
  – Maintenance
Timetable

- Publish on website (April 2019)
- Internal database changes go live (Apr 2019)