

The Specialist – “sharing through experience”

Machines Vessels Piping Materials Fired Equipment Civil Structural Inspection Electrical Instrument Control Process Safety Projects

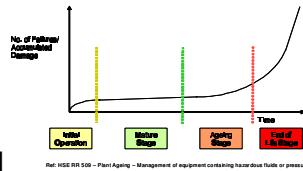
Ageing Plant Issues

“We are not getting any younger - neither are our assets”

As the world’s various industrial assets continue to age and deteriorate it is clear that unexpected failure mechanisms will continue to surface and potentially cause unplanned outages of plant equipment.

Guidance on the management of ageing equipment can be found in the HSE’s “Plant ageing. Management of equipment containing hazardous fluids or pressure”, ref. RR509 where Neil Henry was co-author.

“This document will help those responsible for equipment to understand and assess the risks of accumulated damage and deterioration. The information is at a general rather than an equipment-specific level, and can be applied to a wide range of static equipment and associated machinery.”
<http://www.hse.gov.uk/research/rrhtm/rr509.htm>



Contact **Neil** for further information.
 Tel. +44 (0)1925 741020
 Mob. +44 (0)7715 161236
 neil.henry@gb.abb.com

Catastrophic fin fan failure and major implications on safety

“Do we really appreciate where ageing can occur?”

Background

- Standard fin fan cooler assembly with solid aluminium blades mounted in split design hub
- All 4 blades catastrophically failed
- Guards and fan ring failed to contain components - they are not designed to do this.
- Initial failure caused by corroded lifting bracket bolts
- Initial failure unearthed an underlying deterioration mechanism in the hub causing hub integrity to be severely compromised.



Investigation

- Lifting bracket dropped into path of rotating blades – first blade failure caused rest to be removed
- Blade failure showed hub assembly cracking due to stresses from corrosion product build up
- Both mechanisms were corrosion related time dependent.

Key Elements

1. Design: Crevices allow corrosion products to create stresses weakening key components
2. Safety: Fan ring/guard breached: potential for damage to surrounding plant/people
3. Installation: Plenum installation lifting brackets left in place. Should they have been removed?
4. Inspection: none on the hub, deterioration mechanism was unexpected
5. A simple message,
 “Expect the unexpected”.

Contact **Keith** for further information.
 Tel. +44 (0)1642 735699
 Mob. +44 (0)7710 610960
 keith.howard@gb.abb.com