

- Decisions based on valid information

All decisions taken on the course of action needed to be based on reliable information at hand. In most cases, this is difficult to obtain until the equipment is dismantled on breakdown and often decisions taken on repair are those that allow the quickest way to return the equipment to service with little emphasis on root cause analysis.

- Limited resources drive innovation

The cases presented were of a breakdown nature where capital was not easily available. This forced the engineers to critically review the situation and evaluate if a drop in (i.e. like for like) replacement was the most sensible option. It could be argued that quick fixes are just that and eventual complete replacement is inevitable. While replacement will be necessary at some time, the methods to extend equipment life as much as possible have to be explored to ensure maximum utilisation of assets. A further benefit to our organisation is the valuable information the temporary repairs offer in the optimisation of equipment designs.

- Fitness For Service (FFS)

The cases presented here highlight the FFS techniques commonly utilised in the petrochemical industry. This technique recognises that although most equipment is designed to an original design code or standard, the degradation mechanisms observed in every unique application varies hence service life may not necessarily be limited by original design parameters.

Conclusion

Although the design function is thought to only be relevant for new builds with all codes and standards geared for this purpose, there is relevance in revisiting equipment. By challenging initial design parameters and assumptions and by using actual operating data, optimum equipment usage can be realised. Future equipment designs can further build in opportunities for life extension programmes by proper utilisation of field information e.g. monitoring programmes, and root cause failure investigations.

Qualifications:

- The maintenance approach on ageing assets needs careful consideration as standard maintenance practices and schedules would not necessarily deal with the possible failure mechanisms of such assets;
- Continuous monitoring is an essential element of any proactive maintenance approach, however, the designers and operators become more reliant on information on the performance, reliability and safety of aged equipment from monitoring data; and
- It is not possible to extend the life of all equipment cost-effectively. The approach described in this paper is a risk-based approach that also looks at the economic feasibility of any proposed repair/refurbishment/life extension programme.

REFERENCES

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