

Optimal renewal timing for “obsolete” assets

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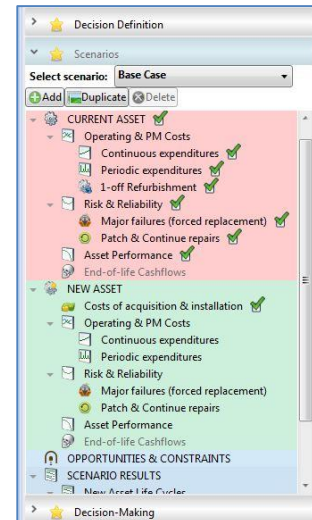
Introduction: Honeywell TDC 2000 Distributed Control Systems are installed across the massive SASOL Secunda facility. The TDC 2000 systems were installed prior to 1980 and taken off the market in the mid 1980’s. Knowledge both in-plant and within Honeywell has since been dissipated due to staff turnover and technology overtake. However spares, maintenance and support from Honeywell have continued to be formally available until recently. The current TDC2000 systems represent approximately 75% of the original TDC2000 installed portfolio.

An optimized life cycle and renewal strategy was developed with the SALVO (Strategic Assets Lifecycle Value Optimisation) methodology (see www.SALVOproject.org). This involved a 6-step approach:

1. grouping and prioritizing the cases by criticality and intervention urgency,
2. clearly defining the business issues and their root causes,
3. identifying alternative options and scenarios,
4. evaluating each option in quantified total life cycle cost/value impact
5. evaluating optimal blending and bundling opportunities
6. assembling a clear and systematic, business-case-justified interventions programme

The study

Step 1 of SALVO revealed that TDC2000 installations share the same basic configuration, design and age, and have similar failure patterns (but with a variety of failure consequences). A common risk for all the units is the growing unavailability of spares and there was uncertainty about when Honeywell might withdraw service support. The team therefore created a ‘base case’ strategy for a specimen TDC2000 installation and were able then to adjust it for different plant units and their different criticalities.

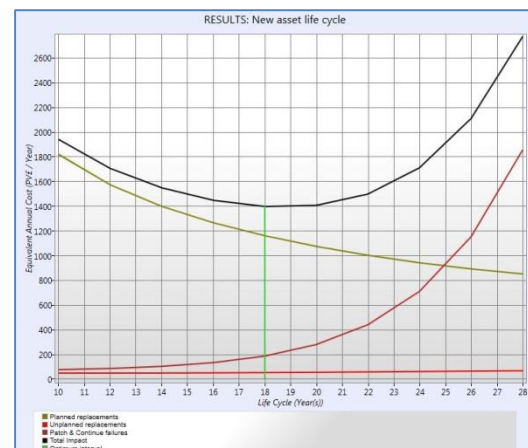


SALVO steps 2 & 3 identify root causes and viable options to evaluate, using a checklist of 42 possible asset-related and non-asset solutions. Such an approach ensured lateral thinking (e.g. life extension options, not just replacement justification, or insurance/contingency planning alternatives). Potential options identified in this way included planned replacement & upgrade, stockpiling of spare parts, negotiating a special extension of the Honeywell service contract, and enhanced operator training to reduce process trips and control problems.

SALVO step 4 evaluating the options: a base case, quantified model was created, using a multi-disciplinary team of subject experts and the DST-LIFESPAN¹ software tool. This evaluated both the residual life costs and risks for the current systems, and the whole life cost and optimal life cycle of potential replacements. The base case and optimistic/pessimistic variants (to reflect uncertain assumptions), with fully documented audit trail, took about 4 hours to develop. From this base case, a series of alternative scenarios enabled evaluation of different unit criticalities, different replacement system designs etc. The APT software calculated the combinations of renewal timing and optimised life cycle costs, risk patterns and financial impacts. SALVO steps 5 & 6 then consolidated the studies into a fully optimized programme for all systems. The whole analysis, with scenario “what if?” studies, sensitivity testing, peer review/validation and stakeholder engagement, was performed within a 4 week period.

Results: the prevailing opinion that all TDC 2000 equipment should be replaced as soon as possible was found to be clearly inappropriate. Quantified life cycle cost- and risk-optimised results showed that, *even in the worst case scenario*, 8 years of further life is achievable and worthwhile.

The plan for progressive, deferred replacements is now agreed, along with implications for spares and for ongoing technical support from Honeywell. The extended lifespans, by a median of 10 years, will make up to R200 million (c.£18m) savings in a combination of capital spending avoidance/deferment and reduced whole life cycle costs/risks. These conclusions also have the full ‘ownership’ and acceptance from different stakeholders, all of which were participants in the study.



¹ One of the modelling tools developed by SALVO Project. See www.decisionsupporttools.com