APT
ASSET PERFORMANCE TOOLS

How often should you inspect or test your equipment?

Can you quantify the impact of NOT inspecting/testing?

Inspection intervals for pipes and vessels, and testing frequencies for protection equipment, are often

0.2 - 4x the true cost/ risk optimum

APT-INSPECTION determines the right revel of expenditure on condition monitoring, Risk Based Inspection (RBI) or safety testing programmes. A unique decision-support tool, it guides you through the questions and conflicting factors to quantify the cost/risk trade-offs involved and identify the optimal inspection timing, frequency of monitoring, 'alarm' points or functional testing intervals for any industrial equipment or instrumentation - using any mix of hard data and expert knowledge.

Developed as part of a multi-million Euro R&D programme by a consortium of leading industrial organisations, APT-INSPECTION is a robust way of demonstrating what is worth spending and when on inspections and condition monitoring, and demonstrating to regulators or financial directors why this is so. It also calculates the impact of sub-optimal inspection - so it can be used to quantify the 'premium paid for compliance', the residual risks associated with different inspection intervals, or the consequences of delaying an inspection.

APT-INSPECTION

- Calculates the optimal inspection, monitoring, test intervals or 'next inspection' timing.
- Quantifies the economics of Risk-Based Inspection (RBI) and condition monitoring.
- Proves whether or not the existing inspection schedules are adequate, too intensive or not frequent enough.
- Calculates the residual risk exposure under different inspection or test programmes.
- Identifies the optimal condition reaction point.
- Calculates the 'premium paid for compliance' if legal obligations are greater than optimal monitoring or testing strategies.
- Demonstrates the economic payback for optimal condition monitoring.
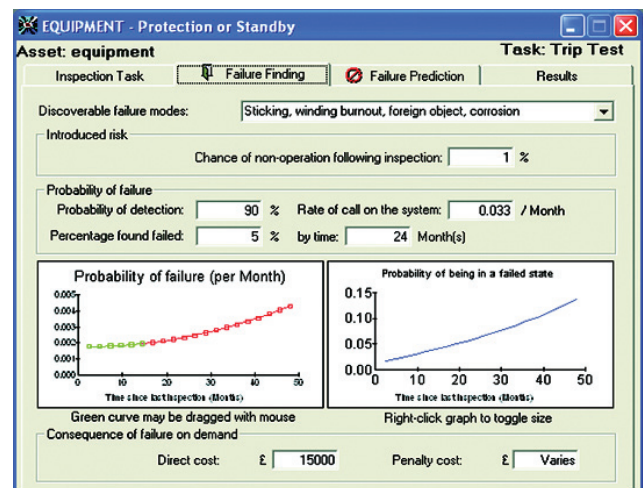
Quantifying risks and benefits

APT-INSPECTION provides a disciplined and fully quantified method to determine the optimal inspection strategy. It also considers risks *introduced* by inspection or testing, along with any random risks and those due to deterioration. Even with uncertain information, APT-INSPECTION is able to calculate the best way forward - and show the economic effect of the uncertainty (i.e. the budget for collecting better data in the future).

So, whether you wish to monitor the vibration of rotating equipment, the corrosion of pipes, the temperature or pressure of processes, or test the function of safety or stand-by equipment, APT-INSPECTION is ideal to determine how much is worth spending and when.
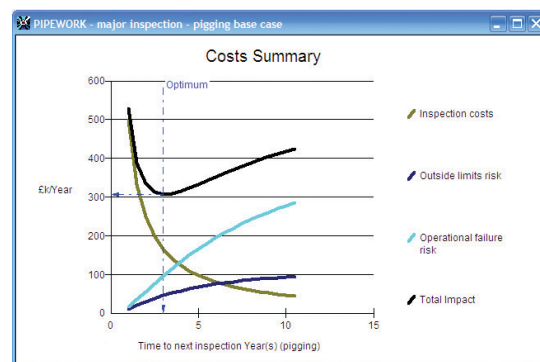
The decision-support tool for integrity management

APT-INSPECTION models

- Planned inspection, testing or monitoring tasks: costs, downtime penalties, access, induced risks; as fixed or variable/uncertain estimates.
- Predictive maintenance and condition monitoring method, measurement accuracy or confidence, deterioration rates (averages, extremes, RBI data if available), random/uncertain or immediate onset, permissible condition limits, potential failure points (averages, extremes, variability/uncertainty).
- Hidden failure modes: inspection or test-induced failures, failure discovery rates, demand and usage frequencies for protective devices or standby equipment.
- Failure repair costs, downtime and penalty impact, operational failure consequences (lumpsum estimates or ranges/variable).

APT-INSPECTION delivers

- Optimal condition monitoring and predictive inspection timing and intervals.
- Optimal function testing intervals for safety, stand-by and protective devices.
- Cost and risk consequences of deferring inspection (e.g. to the next available shutdown).
- Optimal condition reaction point (condition based maintenance).
- 'Premium paid' for legal compliance.
- Quantified residual risks under any inspection or testing strategy.

APT-INSPECTION is part of an integrated ASSET PERFORMANCE TOOLKIT

APT-MAINTENANCE
Cost/risk evaluation of planned maintenance, optimal intervals, preventive, predictive or reactive strategies.

APT-SCHEDULE
Shutdown strategies and intervals, optimum task grouping and timing, shutdown opportunity evaluations and resource or work planning constraints.

APT-PROJECT
Cost/risk evaluation of projects, change proposals, modifications, new ideas and other 'one-off' investments.

APT-LIFESPAN
Asset replacement decisions, repair-versus-replace options, life extension refurbishments, asset acquisitions and alternative designs based on life cycle costs.

APT-STOCK
Consumables and materials purchasing strategies, min/max stock, re-order quantities, supply options, storage requirements.

APT-SPARES
Strategic and slow-moving spares strategies, optimum spares levels, 'pooling' options, alternative suppliers.