

The **TOP 10 Programmatic**
Failure Modes of your...

Predictive Maintenance Program

Elements	Failure Symptom	Problem	Countermeasure
Criticality Coverage Model	Plenty of equipment fails and constantly shuts down production	Program is designed to only check the "big stuff", many smaller but critical items fail and cause downtime	Base coverage levels on the criticality of the equipment instead of only looking at its size or cost
Technology Coverage Model	Experiencing failures not caught by the current PdM program design	Technology coverage is insufficient for the most reasonable and likely failure modes	Ensure high percentage of coverage from failure modes analysis with PdM technologies
Overall Levels vs. Spectral Analysis	Even with constant coverage from installed sensors, we still experience failures	Overreliance on overall signal levels instead of spectral analysis	Analyze the vibration spectra and waveforms instead of waiting on overall levels to rise before taking action
Alarm Limits	By the time we report something, we still have to jump through hoops to avoid the emergency action	Alarm limits are set to only find big problems that are already down the P-F Curve	Set alarm limits low enough to trigger and drive proactive work
Feedback Loops	No cooperation between PdM Technicians and maintenance crafts personnel	PdM technicians as well as maintenance crafts personnel operate in organizational silos	Create workflow processes that require follow-up and collaboration between PdM and crafts personnel
Alarm Limits	Confusion created by similar components having different alarm limits for the same faults	Each unique machine or component is treated like it is special and unique	Institute standardized alarm limits based on bearing type, shaft speed, and component type
PdM Corrective Work	Small amount of work driven by PdM, especially given the effort and money spent	Low coverage models and broken work processes result in small amounts of work driven by PdM	Formalize the PdM element of the workflow processes, specifically work identification
PM vs PdM Proportions	Frustration and conflicting stories about the status and health of components	PM mechanics and electricians checking the same things being checked by PdM technicians	Remove PM tasks from PM program where PdM is already inspecting for that failure mode
Missed Opportunities	Confusion around which processes/equipment are critical, and which are not	Unclear priorities as some failures are investigated and some are not	Investigate all unexpected equipment failures as Missed Opportunities
Inspection Frequency	"Critical items" are checked more frequently than less critical items with the same PdM technology	Mistaken belief that inspection frequency is somehow a function of equipment criticality	Create layers of protection with redundant technology inspections based on equipment criticality

