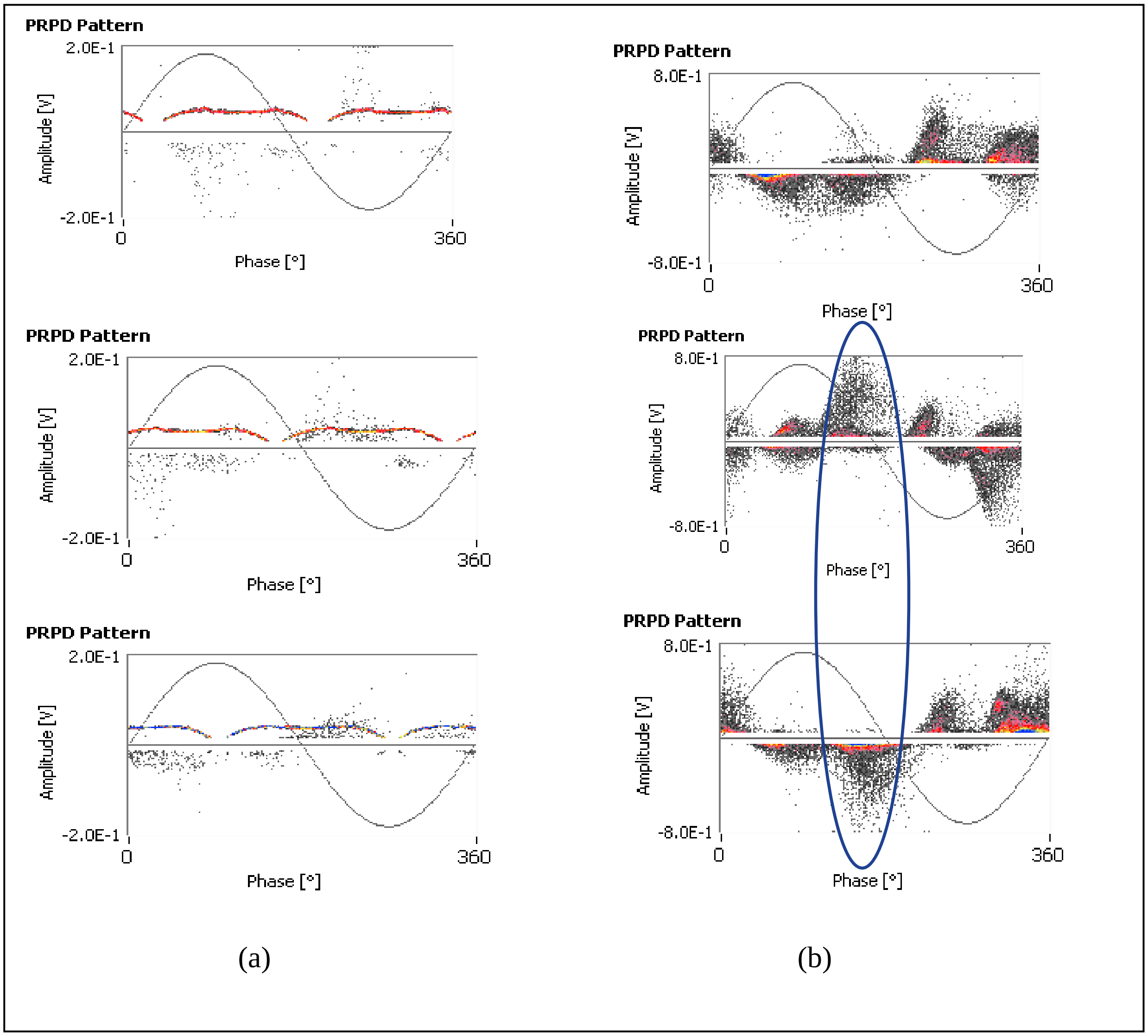

Figure 11. Partial discharge activity (a) before the accelerated insulation aging test (b) just before the motor failed at the end of the accelerated aging test.

Benefits

Following are the benefits of monitoring motor insulation with HSCT/MSIM:

- Provides online version of industry accepted insulation QA test, measurement of capacitance and dissipation factor of motor ground wall insulation
- Monitors motor insulation health online
- Provides early warning of imminent insulation failures
- Decreases overall repair and downtime cost in the event of a motor failure.

A brief comparison of HSCT/MSIM with partial discharge analyzers is provided below in Table II.

Table II. Comparison of HSCT/MSIM with PDA

Feature	PD Analyzers	HSCT/MSIM
Ease of recognition	Very complex pattern analysis	Direct measurements, Simple measurements
Algorithm usage	Very high	Low
Physical measurements	Partial discharge, phase voltages	Phase insulation leakage currents, Phase voltages, Stator temperature
Frequency of signals Measured	100kHz-100MHz	50Hz/60Hz
Applicable voltage range	Above 6.6kV	Any Voltage range. Current solution for up to 7.5kV motors
Cost	$10k-$25k	$15k-$50k
Reliability	Too much dependence on interpretation – Less reliable	Very little interpretation – More reliable
Monitoring system	Standalone	3500
Monitoring system allows other parameters	No	Yes. Multiple
Other parameters monitored for comparison	No	Yes
Fault Location	Phase identification, Slot section vs. end winding	Phase identification, Can be extended to slot Vs. end winding based on data availability

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