ence with a large number of similar motors. If a residual current PSD range value exceeds the fleet High value, then, after persistence checking, AnomAlert will warn that something is wrong.

Limitations

AnomAlert is a powerful motor monitoring system. However, there are some limitations on its use and interpretation.

Mechanical diagnostics are based on energy in 12 spectral frequency ranges. This is, by nature, an approximate analysis, and diagnostic indications usually only represent broad classes of problems. The customer will have to follow up using other methods to determine the actual fault. The PSD spectrum produced by AnomAlert can be helpful, but may not be sufficient for problem identification.

AnomAlert cannot be used on motors that have rapidly varying voltage or power. Voltage frequency and current amplitude must not change by more than 15% in six seconds. This is not a serious restriction for most applications, but some applications, like crushers, will not fit this requirement. Note that if a sudden change of load occurs, AnomAlert will reject that sample; however, the same machine could run steadily at some load, and this would allow AnomAlert to monitor the machine.

AnomAlert will work very well on applications where the motor is located some distance from the current or potential transformers. However, the line at the current measurement point must be dedicated to a single motor; multiple motors downstream from CTs are not allowed. On the other hand, one set of PTs can be used for all motors that are supplied from the same voltage source. The current measurement restriction is a consideration for subsea applications where power may be delivered to the sea floor only to branch off to multiple motors. In this case, AnomAlert could not be used on the main delivery power line. It could be used if CTs could be installed on each branch (CT burden limits apply[5]).

AnomAlert cannot be used for DC or single-phase motors.

For variable frequency drives, the inverter chopping frequency should be higher than 2 kHz.

Summary

AnomAlert is a powerful motor monitoring system. AnomAlert's power comes from both sophisticated signal processing and analysis algorithms and from built-in redundancy. Its ability to learn makes it sensitive and flexible, and a fleet reference database protects against missed alarms caused by learning an already defective motor. Alarming is clever and uses statistical analysis combined with an adaptive persistence test. These features produce a product that is a significant improvement over conventional Motor Current Signature Analysis, and AnomAlert has a proven track record documented by many case histories.

[5] The burden of a current transformer is the maximum resistance that the secondary of the CT (the part hooked up to AnomAlert) can drive and meet specification. Long wires from the CT will have more resistance that will limit the allowable distance from the CT to AnomAlert. See Bently Nevada Guide 286752, *Selection of CTs, CSs, and PTs for AnomAlert*.

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