



CASE STUDY—STATOR

"Don't Restart This Motor!"

Industry:	Refinery	Fault Zone:	Stator
Motor Type:	Induction	Voltage:	2300
HP:	1000	Speed:	3600 rpm

Summary

A high resistive imbalance at the motor can be fatal

Problem

While operating under normal load, this 1000 hp coke heater feed pump tripped and opened two fuses. The maintenance history showed that this motor had been rewound eleven months earlier at a cost of \$24,000.

Looking for the Root Cause

The Reliability technician conducted a standard MCE test at the motor contractor. The results uncovered a large resistive imbalance. To isolate the problem, the motor was tested at the T-leads which recorded these readings:

Resistive Imbalance 19.66%
Inductive Imbalance 2.17%
Capacitance to Ground 52,000 pF
Resistance to Ground 3.6 Megohms

Since the resistive imbalance remained high at the T-leads, it was determined that the fault was the stator, possibly a turn or phase to phase short. The recommendation was "do not start the motor" and perform a breakdown investigation. The warning was ignored. During restart a fireball erupted from the motor and three substations subsequently tripped off-line and the back up power systems were surged

Results

The motor was sent for repair. Disassembly of the motor revealed turn to turn shorting in the stator. A warranty claim was submitted to the rewind shop. Since part of the job had been subcontracted, a settlement of \$17,000 was reached.