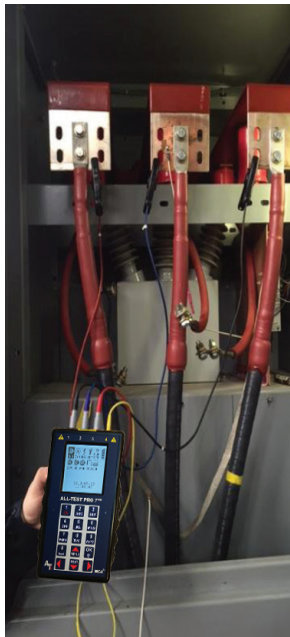


## Condemning a Motor Using MCA™

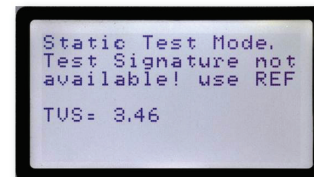
Experience has shown that 20 to 40 percent of motor systems tested may have some sort of alarm condition. Just because a motor has exceeded the alarm limits in MCA Basic™ or MCA PRO™ it does not necessarily mean the motor will fail or should be stopped immediately. For over 30 years the dedicated staff at ALL-TEST Pro have gathered data and resources to determine when a motor will most likely fail on the most common 3-phase squirrel cage motors. Some motors may have a special design that may cause the measured values to be outside the standard limits but still operate correctly. In some cases, even a brand-new motor can receive an inductance and impedance alarm due to the Rotor Bar/Winding ratio. The following analysis tips will help you determine when a motor should be condemned and should be taken out of service.



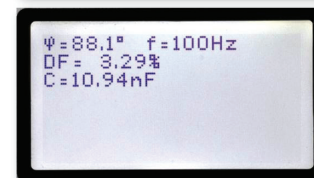
Never condemn a motor from the Motor Control Center (MCC). Faulty cables and bad connections between the test point and motor can cause unbalanced readings and produce an alarm. If an alarm is received at the MCC another test should perform directly at the motor with the motor leads disconnected from the motor cables from the MCC. If the alarm remains, a problem with the cables and connections from the MCC can be ruled out and the motor can be investigated further. If the alarm clears, then the motor cables and connections should be inspected for possible failures.

Another thing to think about is what types of faults are identified during a test. Winding shorts are generally more severe than contamination or rotor faults. Developing motor faults are first indicated by changes between the baseline TVS value and a newly obtained TVS value, Stator Signature, or unbalances in Phase Angle ( $\Phi$ ) and Current Frequency Response (I/F). Motors that receive these faults should be taken into consideration before motors with inductance/impedance or resistance faults.

A motor should never be condemned from one test. If there is any residual voltage on the motor, you may get a result that could show a warn or bad alarm. It is recommended to take a second and even a third test of the motor to verify alarms. It is also important to isolate the motor from any other induced voltages from other electrical equipment while conducting a test. An induced voltage on the motor can cause inconsistent and unreliable readings that do not repeat. It is important not to condemn a motor that is giving unrepeatable readings because of this.



Test Value Static (TVS) Number



Dissipation Factor (DF) %