Standby Power Solutions LLC

paul@standbypowersolutions.com

Automatic Transfer Switch
Recommended Annual PM

The following procedure is compiled from NFPA 110, 2005 edition recommendations, automatic transfer switch manufacturers' recommendations, and general good practices. Items in italics are direct quotations from NFPA 110, 2005 edition.

Major Maintenance

1. *Check connections*
    a. *Conduct a thermographic or temperature scan while the automatic transfer switch is under its normal load.*
    b. *With power connected to the normal source, measure and record millivolt drop levels across each pole.*
    c. *With power connected to the emergency source, measure and record millivolt drop levels across each pole.*
    d. *If the ATS is equipped with a bypass isolation feature, operate the bypass to the connected source and repeat the steps in a, b, and c.*
    e. *With the power off and both the emergency and normal sources properly locked out and tagged out, measure the micro-ohm resistance levels across the following points:*
        i. *Emergency source cabling lug to bus*
        ii. *Normal source cabling lug to bus*
        iii. *Load cabling lug to bus*
        iv. *Neutral cabling lug to bus*
        v. *Load connected to normal across each pole*
        vi. *Load connected to emergency across each pole*
2. *Inspect or test for evidence of overheating or excessive contact corrosion.*
    a. *With power from both sources off and properly locked out and tagged out, remove all protective pole covers and arc chutes.*
    b. *Carefully inspect main contacts and other current carrying parts for signs of corrosion or overheating.*

i. At this time the normal and emergency stationary and movable contacts should be cleaned.
    1. Limit switches (snap switches) should be checked.
    2. All control connections should be checked.
    3. Actuator control switches should be checked.
    4. Control bridge rectifiers, capacitors, and circuit breakers associated with the actuator should be checked.
    5. All parts requiring lubricant, such as linear actuator armature, mechanical interlock linkage, snap switch actuating devices, hinges, pivots, etc., should be cleaned if necessary and serviced with an appropriate lubricant.
    6. All electrical connections, either load carrying or control, using bolts, machine screws, or set screws to provide secure electrical connection should be inspected and tightened to their appropriate torque setting.
    7. Replace batteries in the control circuits if required.

c. *Carefully inspect insulating materials or standoff insulators for signs of contamination.* ***The combination of contaminates and possible introduction of high humidity or moisture could lead to insulation breakdown and subsequent destructive faults.***
d. *Inspect control connection, plugs, and harnesses for signs of corrosion, heat, contamination, and so forth.*
e. *Using a vacuum, remove all dust and debris from the ATS cabinet, transfer switch mechanism, bus, and so forth.*
f. *Inspect cabinets for proper sealing. Open conduit knockouts or other penetrations should be properly sealed to prevent the introduction of dust, moisture, or other alien matter. Enclosures installed outside should be inspected for proper seal and appropriate gasketing. Ensure that enclosure door securing devices are intact and properly secured.*
g. *Replace and secure all protective pole covers and chutes. Remove lockout devices and resupply normal power.*

3. *Verify control and feature set points and operation.*
    a. *Measure and record the following data and set points:*
        i. *Normal source voltage phase to phase, phase to ground, and phase to neutral*

ii. *Engine start time (from crank start to source available light or relay pickup)*
iii. *Emergency source voltage phase to phase, phase to ground, and phase to neutral*
iv. *Load current each phase*
v. *Momentary override normal deviation where provided*
vi. *Transfer time delay where provided*
vii. *Return to normal source time delay where provided*
viii. *Engine cooldown where provided*

b. *If connected to multiple EPS, verify the load priority of the ATS being tested and confirm this is correct given the criticality of the connected load.*
c. *Verify proper operation of all indicator lights and meters and controls.*
d. *Return ATS to normal service.*

Quarterly Inspections

1. *Visually inspect the transfer switch control mechanism, control panel, harness, and cable connections for signs of moisture, corrosion, or heating.*
2. *Measure and record the following data and set points:*
    a. *Normal source voltage phase to phase, phase to ground, and phase to neutral*
    b. *Engine start time (from crank start to source available light or relay pickup)*
    c. *Emergency source voltage phase to phase, phase to ground, and phase to neutral*
    d. *Load current each phase*
    e. *Momentary override normal deviation where provided*
    f. *Transfer time delay where provided*
    g. *Return to normal source time delay where provided*
    h. *Engine cooldown where provided*
3. *If connected to multiple EPS, verify the load priority of the ATS being tested and confirm this is correct given the criticality of the connected load.*
4. *Verify proper operation of all indicator lights and meters and controls.*
5. *Inspect cabinets for proper sealing. Open conduit knockouts or other penetrations should be properly sealed to prevent the introduction of*

dust, moisture, or other alien matter. Enclosures installed outside should be inspected for proper seal and appropriate gasketing. Ensure that enclosure door securing devices are intact and properly secured.

6. *Perform load test using the test switch if permitted.*