

THE ULTIMATE GUIDE TO MEDIUM VOLTAGE SWITCHGEAR MAINTENANCE

By PETROZONE INTERNATIONAL



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INTRODUCTION

Why This Guide Is Your Game-Changer

Imagine this: Your plant runs seamlessly with no interruptions or unplanned outages—all thanks to a proactive MV switchgear maintenance plan. Ignoring it means taking a risky gamble with potential operational disruptions and financial setbacks.



Reliable Operations with Simple Maintenance Insight

Dive into this guide for actionable advice, self-assessment tools, and proven strategies to keep your **switchgear performing at its best**.

Can You Relate? Here's What's at Stake:

Ensuring uninterrupted operations isn't just a goal—it's a necessity.

- **Unexpected Failures:** Lack of maintenance leads to costly breakdowns and downtime.
- **Safety Risks:** Increases the chance of electrical faults, arc flashes, and injuries.
- **Reduced Lifespan:** Neglect accelerates wear, leading to early replacements.
- **Frequent Outages:** Unmaintained switchgear disrupts power, impacting operations.
- **Non-Compliance:** Ignoring standards risks fines and penalties.
- **Downtime Costs:** Unexpected stops lead to major financial losses.
- **High Repair Costs:** Emergency fixes mean higher service and part costs.

Petrozone Tip: “Proactive maintenance is an investment, not an expense. Let us be your partner in achieving operational excellence.”

Essential Maintenance Practices

1. **Visual Inspections:** Conduct weekly, monthly, or quarterly checks to identify early signs of wear, corrosion, or damage.
2. **Comprehensive Servicing:** Perform detailed preventive maintenance testing every 1–2 years.
3. **Predictive Maintenance:** Use advanced diagnostics as needed to detect potential issues early.
4. **Thorough Overhauls:** Schedule in-depth disassembles and refurbishments every 15–20 years, depending on operating conditions.



Real-World Example: The Cost of Skipping Relay Maintenance

In one industrial facility, a **protection relay** in a switchgear panel hadn't been tested for years. Unknown to the maintenance team, an internal circuit board failure made the relay non-functional.

When an electrical fault occurred, the relay failed to operate, resulting in an **arc flash** that severely damaged the switchgear and caused significant downtime. This incident underscored the importance of regular relay testing to ensure functionality and safety.



Petrozone Tip: "Regular relay maintenance isn't just best practice. it's your safety net against operational disruption."

Quick Self-Check: Are You Practicing Effective PM?

- Do you schedule regular visual inspections?
[Y/N]
- Do you use thermal imaging during inspections?
[Y/N]
- How detailed is your maintenance log?
[Y/N]
- How frequently do you test breakers?
[Y/N]
- Are your protection relays routinely tested?
[Y/N]
- How often do you test CTs and VTs?
[Y/N]
- Do you clean your switchgear regularly?
[Y/N]

Evaluate Your Score:

- Mostly '**Always/Yes**': You're on the right track!
Keep up the excellent work.
- A mix of '**Sometimes/Occasionally**': You're doing okay, but there's room for improvement.
- Mostly '**Rarely/Never**': Urgent action needed!
Reevaluate your maintenance practices ASAP.

Top Tips for Improvement:

- 1.Schedule monthly visual inspections and cleanings.
- 2.Train your team on tools like thermal imaging.
- 3.Maintain detailed logs of inspections and repairs.
- 4.Use predictive maintenance (thermal scans, partial discharge analysis).
- 5.Follow OEM maintenance guidelines.
- 6.Address issues promptly before escalation.
- 7.Keep the team trained on the latest tools and practices.



Petrozone Tip: “Detailed maintenance logs are your roadmap to reliability. Let us guide you in setting up best practices that last.”

Detailed Maintenance Checklist:

- Breaker Testing
 - ☐ Mechanical Operation: Test for smooth operation.
 - ☐ Electrical Verification: Check all electrical functions.
 - ☐ Contact Alignment: Inspect wear and alignment of contacts.
- Protection Relay Testing
 - ☐ Settings & Calibration: Confirm relay settings and calibration.
 - ☐ Trip Function: Test the trip functionality.
- Busbar Testing
 - ☐ Insulation Resistance: Conduct insulation tests.
 - ☐ Continuity: Verify continuity between connections.
- Visual Inspection
 - ☐ Condition Check: Look for damage, wear, and signs of overheating.
- Cleaning & Lubrication
 - ☐ Component Cleaning: Clean breakers, busbars, and other components.
 - ☐ Lubrication: Apply lubrication to all moving parts.
- Busbar Maintenance
 - ☐ Dust & Contaminants: Remove dust and contaminants.
 - ☐ Connections: Tighten connections to correct torque.
- Transformer Testing (CT/VT)
 - ☐ CT Tests: Check ratio, polarity, and insulation.
 - ☐ VT Tests: Confirm accuracy and insulation integrity.
- Relay & Metering Checks
 - ☐ Relays & Meters: Test for proper functioning.
- Advanced Diagnostics
 - ☐ Thermal Imaging: Identify and document any hot spots.
 - ☐ Partial Discharge: Perform analysis to detect insulation failure signs.

Petrozone's Preventive Maintenance Success: Early CT Fault Detection

During our annual preventive maintenance at a client facility, Petrozone's team identified early signs of insulation breakdown in a critical Current Transformer (CT). Through precise testing, we detected a fault that, if left unchecked, could have led to serious operational issues. Acting swiftly, we replaced the faulty CT, preventing potential outages and ensuring the facility's reliability.

– Maintenance Manager,
Leading Oil & Gas Plant.



Why Choose Petrozone?

At Petrozone, we don't just maintain—we set the bar. Our specialized services cover thorough testing, commissioning, and predictive maintenance tailored for industrial and oil & gas plants.

Your Reliability Partner: From preventive checklists to predictive diagnostics, Petrozone ensures that your MV switchgear stays reliable, safe, and efficient.

Take the Next Step

Turn these insights into action. Contact Petrozone today and ensure your switchgear stays reliable, safe, and efficient. No surprises—just smooth operations.

Don't settle for just any maintenance provider. Choose Petrozone for quality, reliability, and expertise.



Call Petrozone For A **FREE** Consultation, Site Visit & Quote!

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