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GLOBAL SOLUTION PARTNERS

Data Center Operational Training

(A 3-day Instructor led Program)

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Training Summary

Global Solution Partners LLC is pleased to present this **3-Day Data Center Operations & Maintenance (O&M) Program**, designed to upskill junior and mid-level data center operators working in Tier III and Tier IV environments. The training draws heavily from real-world O&M practices, emphasizing **power systems, cooling operations, fire protection, environmental monitoring, safety**, and incident response.

The program combines classroom instruction, hands-on walk-throughs, operational drills, safety demonstrations, and scenario-based learning. By the end of the training, participants will be able to confidently perform daily checks, preventive maintenance, respond to alarms, troubleshoot issues, and uphold global best practices (Uptime Institute, ISO/IEC 22237, ASHRAE TC 9.9, NFPA guidelines)..

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Course Objectives and Learning Outcomes

By the end of this 3-day operations training program, participants will be able to:

1. Operate & Maintain Power Systems

- Understand end-to-end power chain (utility → UPS → PDU → IT rack → generator).
- Perform routine UPS and battery inspections, interpret alarms, and identify early failure symptoms.
- Conduct diesel generator checks, weekly/monthly load tests, and maintain logs.

2. Maintain Cooling Systems & Environmental Stability

- Understand CRAC/CRAH operation, airflow management, and ASHRAE environmental ranges.
- Perform filter checks, coil cleaning, condensate inspection, and respond to cooling alarms.
- Monitor and interpret BMS/DCIM temperature, humidity, and equipment trends.

3. Implement and Support Fire Protection Operations

- Identify VESDA, smoke detectors, suppression systems (FM200, NOVEC, pre-action).
- Respond correctly to fire alarms, follow SOPs, and conduct basic panel checks.
- Support periodic inspections and understand fire system maintenance routines.

4. Apply Safety, Documentation & Preventive Maintenance Best Practices

- Follow electrical, mechanical, generator, and battery safety protocols.
- Apply Lockout-Tagout (LOTO) procedures and use PPE appropriately.
- Perform and document daily rounds, checklists, and incident reports.

5. Respond to Incidents & Troubleshoot Failures

- Execute structured troubleshooting (identify → verify → isolate → resolve).
- Participate in emergency drills (power outage, cooling failure, fire alarm).
- Communicate effectively during incidents and follow escalation paths.

Day-Wise Curriculum

Day 1 — Power Systems & Fundamentals

Day	Focus Area	Topics & Activities	Learning Outcomes
Day 1	**Data Center Fundamentals & Power Systems**	**Introduction to Operations & Safety Orientation** • Importance of O&M to uptime • Safety rules, PPE, emergency exits • Human-error prevention (major outage contributor) **Power Infrastructure Fundamentals** • Utility → UPS → PDUs → rack power path • Transformers, switchgear, ATS • Tier III/IV redundancy (N+1, 2N) • Electrical hazards & safe handling **UPS Operations & Battery Maintenance** • Online double-conversion UPS • Battery types: VRLA & Lithium-ion • Daily/weekly/monthly UPS checks • Battery health indicators, swelling, corrosion • Infrared scans for hotspots **Generator Operation & Maintenance**	• Understand complete power chain and redundancy logic • Perform UPS checks and interpret alarms • Inspect & maintain battery systems safely • Conduct generator inspection and load tests • Execute correct actions in power failure incidents

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Day	Focus Area	Topics & Activities	Learning Outcomes
		• Components: engine, alternator, fuel, cooling • Weekly exercise run; monthly NFPA load testing • Fuel management & contamination risks • Emergency stop & ventilation **Emergency Power Drill** • Full outage simulation • UPS alarm handling • Verifying generator start & ATS switch positions • Post-restoration procedures	

Day 2 — Cooling, Environmental Management & Physical Security

Day	Focus Area	Topics & Activities	Learning Outcomes
Day 2	**Cooling, Environmental Monitoring & Physical Safety**	**Cooling Principles & System Overview** • Thermal basics (1 kW → 3412 BTU/h) • CRAC vs CRAH systems • Hot/cold aisle containment • ASHRAE temperature & humidity guidelines **Precision Cooling O&M** • CRAC/CRAH controls & teamwork mode	• Understand cooling operation & airflow physics • Perform CRAC/CRAH maintenance tasks • Use DCIM/BMS effectively for monitoring trends • Respond correctly to cooling alarms & failures • Maintain safe, clean, airflow-friendly environment

Day	Focus Area	Topics & Activities	Learning Outcomes
		• Preventive maintenance: - Filter inspections (top priority) - Fan belts, bearings - Coil cleaning - Condensate drains & pumps - Refrigerant levels **Environmental Monitoring (BMS/DCIM)** • Temperature & humidity sensors • Real-time monitoring dashboards • Alarm acknowledgement process • Trend analysis to detect degradation **Cooling Contingency Drills** • CRAC failure scenario • Temperature rise analysis • Emergency response sequencing • Portable cooling / heat load reduction **Physical Walkthrough & Housekeeping** • Identifying airflow blockages • Importance of cleanliness (dust, cardboard risks)	

Day 3 — Fire Protection, Safety Culture & Incident Response

Day	Focus Area	Topics & Activities	Learning Outcomes
Day 3	**Monitoring, Safety, Fire Protection & Integrated Operations**	**Fire Detection & Suppression Systems** • Smoke detectors, VESDA • Clean agent suppression (FM200/NOVEC) • Pre-action sprinkler logic • Fire panel interpretation • Gas cylinder checks **Workplace Safety & Preventive Maintenance Best Practices** • NFPA 70E electrical safety refresh • LOTO demonstration • Battery hazards (acid, hydrogen gas) • Generator safety (hot parts, ventilation) • SOP/MOP importance **Integrated Operations & Troubleshooting** • Power + cooling + fire interdependencies • Structured troubleshooting process • Multi-alarm prioritization • Real incident case studies **Final Assessment & Course Wrap-Up** • Knowledge test or skill demonstration	

Day	Focus Area	Topics & Activities	Learning Outcomes
		• Participant reflection on learning • Action plan for job implementation	

Training Methodology and Format

Our program maximizes engagement and retention by blending expert instruction with hands-on, interactive learning tailored to Client's operations.

- ✓ Instructor-led presentations with real equipment examples
- ✓ Hands-on demonstrations in UPS, generator, and cooling rooms
- ✓ Interactive drills (power outage, cooling failure, fire alarm)
- ✓ Group discussions, scenario workshops, and checklists
- ✓ Daily quizzes and recap sessions
- ✓ DCIM/BMS live walkthroughs
- ✓ Final written or practical assessment

This blended, practical approach ensures attendees gain not only knowledge but also the confidence and skills to apply best practices in team's daily operations.

Deliverables

- ✓ **Three Days of Expert Instruction:** On-site, 3-day training led by a certified instructor, adaptable to Client's schedule (about 7 hours/day, including breaks) for minimal operational impact.
- ✓ Complete training manual (slides + operational checklists)
- ✓ Hands-on equipment walkthroughs
- ✓ Contingency drill scripts (power, cooling, fire)
- ✓ Final assessment & Certificate of Completion
- ✓ 30-day post-training Q&A support