



Keatec Energy Catalogue 2018 Services

Keatec Energy designs, manufactures, installs and services DC and AC uninterruptible power solutions for Telecommunication, Commercial Information Technology (IT), Public Safety and Industrial clients across the Americas.

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Integration of Power Solutions



PROFESSIONAL SERVICES

- **Site Audits, Needs Analysis and System Design**
 - **Integration of DC Power Plant with Distribution**
 - **Integration of AC UPS with Distribution**
 - **Custom Outdoor Power System Enclosures**
 - **Custom Indoor Battery Racks and Outdoor Enclosures**
-
- Free up key resources with delivery of a turnkey system
 - Accelerate your schedule by having systems manufactured in parallel with site works
 - Decrease rework and time spent at remote sites with pre-tested systems
 - Increase quality and finish with factory manufactured enclosures
 - Factory applied paint can extend the service lifetime of outdoor enclosures

Startup and Commissioning



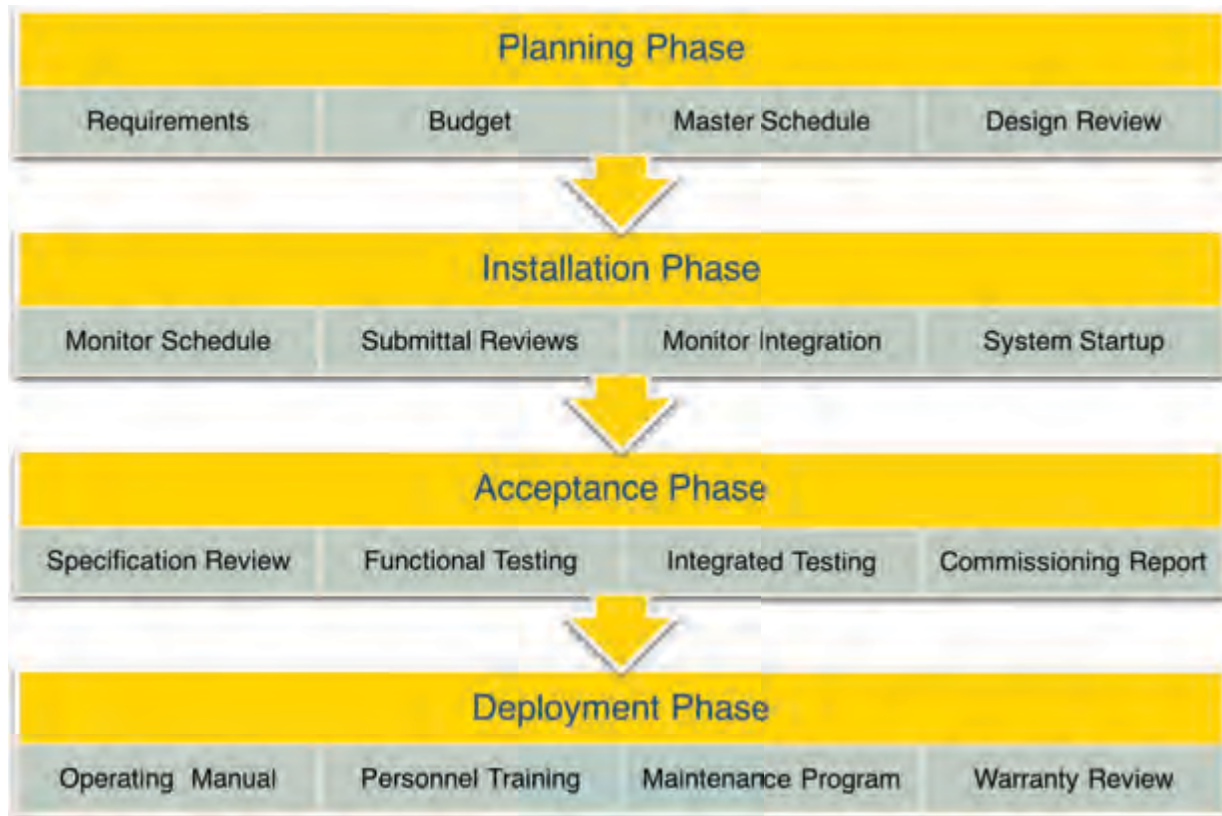
'Professional planning can ensure that new equipment operates efficiently and integrates correctly with other electrical systems.'

PROFESSIONAL SERVICES

- Requirements review and development
- Installation supervision
- Sub-trade submittal reviews
- Schedule management
- System startup
- Acceptance testing
- Monitoring set up
- Operating documentation
- Personnel training
- Maintenance plan

- Single point of contact during the project
- Proper set up and commissioning helps keep utility bills and maintenance costs low
- Documentation and personnel training helps workforce operate new power equipment safely
- Expert advice helps avoid costly early system issues and allows for the quick startup of new equipment due to decreased rework and fewer change orders

Startup and Commissioning



STARTUP AND COMMISSIONING PROCESS

- **Planning Phase**
Priority is to help the owner define and document the project requirements.
- **Installation Phase**
Priority is to ensure the project remains on schedule to a successful startup.
- **Acceptance Phase**
Priority is to confirm that the power system conforms to the requirements.
- **Deployment Phase**
A successful deployment means the system operates to the requirements, the owner's team can safely operate the system and that there is a maintenance program in place.

Preventative Maintenance - Batteries



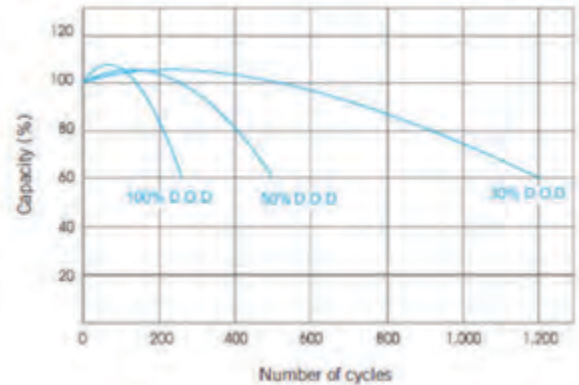
'UPS runtime can be greatly reduced by a single degraded battery that adversely affects the performance of the entire string'

PROFESSIONAL SERVICES

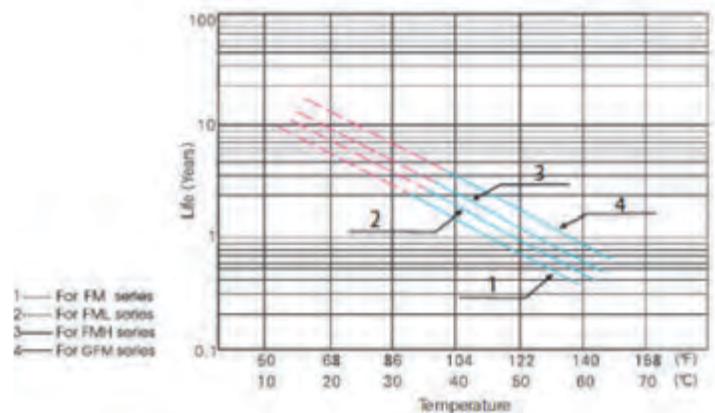
- Battery state-of-health 'testing'
 - Discharge testing
 - Temperature checks
 - Inspection for leaks and corrosion
 - Clean and tighten connections
-
- UPS availability and performance improves when its supported by healthy batteries
 - Costly emergency repairs and lost business revenue are avoided when batteries are proactively replaced before a failure
 - Best practices are followed with the removal and recycling of spent batteries

Preventative Maintenance - Batteries

'Cycle life is very dependent on the depth of discharge which the battery experiences during each cycle.'



'Float use life is very dependent on the temperature at which the battery is float charged. Float use life is longer at low temperatures (10~20°C) but at higher temperatures float use life is shortened.'



FACTORS AFFECTING BATTERY LIFE AND PERFORMANCE

- x - Charging at high or low voltage
- x - Low or excessive charge current
- x - High room temperatures
- x - Overcharging or undercharging
- x - Loose interconnections between batteries in the string
- x - Improper maintenance

- Lead acid batteries lose capacity (runtime) based on age, usage and operating temperature.
- Every time a battery is discharge, it shortens the remaining lifetime.
- Typically lead acid batteries start to lose capacity and fail within 3 - 5 years.
- Lead acid batteries are electrochemical devices that require regular checks and maintenance.
- Discharging and charging of a lead acid battery is an electrochemical process that ultimately results in the destruction of the lead plates (shedding) and the degradation of the electrolyte liquid.
- A high battery cell temperature indicates severe internal issues and that battery replacement is required.

Preventative Maintenance - UPS



'Most equipment breakdowns are simply due to a lack of maintenance'

PROFESSIONAL SERVICES

- Analyze alarm history
- Inspection of fans and filters
- Tighten connection points
- Examine power capacitors for leaks and expansion
- Check sub-assemblies for heat discoloration
- Clean internal and external areas
- Review compliance to factory field change notices

- Mean time between failure (MTBF) is increased when regular maintenance is performed
- Power system availability is dramatically increased when potential problems are removed
- Less unplanned downtime due to regular inspection of a UPS and its critical components
- Lower total cost of ownership results from a maintenance program that optimizes system performance and minimizes emergency repairs

System Capacity and Performance Audit



*Businesses grow,
technology changes,
and eventually systems
require upgrading or
replacement'*

PROFESSIONAL SERVICES

- System Capacity Audit
- Performance Review
- Upgrade Assessment
- Fault Cause Discovery
- Surge and Ground Protection Review
- Cooling System Review

- Eliminate faults and performance issues causing downtime and lost revenue.
- Cost-effectively extend the life of assets with an upgrade or expansion.
- Enhance bottom line performance by enhancing system efficiency and reliability.
- Restore system to full backup runtime with fresh batteries.

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Keatec Energy is headquartered in British Columbia, Canada, with operations in Mexico serving customers across the Americas.

Services

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Preventative Maintenance – UPS
System Capacity and Performance Audit

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