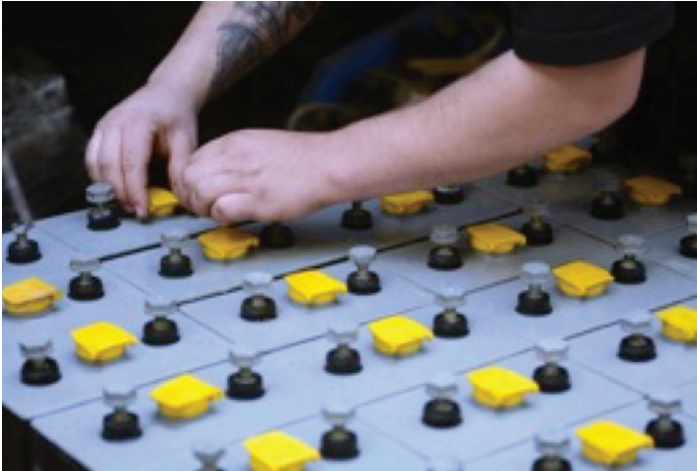


Preventative Maintenance - Batteries



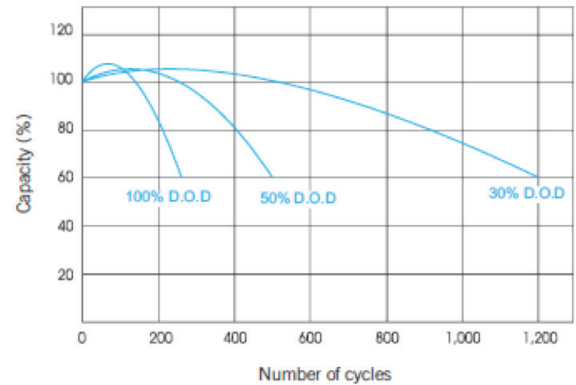
'UPS runtime can be greatly reduced by a single degraded battery that adversely affects the performance of the entire string'

PROFESSIONAL SERVICES

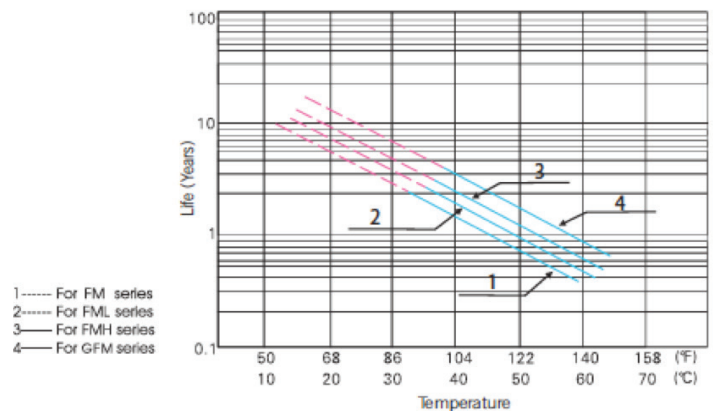
- Battery state-of-health 'testing'
 - Discharge testing
 - Temperature checks
 - Inspection for leaks and corrosion
 - Clean and tighten connections
-
- UPS availability and performance improves when its supported by healthy batteries
 - Costly emergency repairs and lost business revenue are avoided 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.