



EAGLE EYE

TECHNICAL NOTE

Title	Battery Life and General Sizing
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1/15/20	0	Initial issue	JAB

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Realistic Battery Life

Stationary batteries of all chemistries are usually rated in watts or Ampere-hours (Ah) which indicates the amount of power (current) that can be delivered over a period of time. These ratings are dependent upon operating temperature and depth of discharge.

They are also rated in terms of expected years of useful service under ideal conditions which is never usually achieved under actual service conditions in the field. This is because of various things such as electrical noise, number of cycles, type of load, temperature and humidity. In North America, in order to have a way of comparing battery life between various products and manufacturers, a somewhat rough estimated life expectancy in terms of years was introduced. The main categories are 5, 10 and 20 year life batteries. In reality these times are never usually achieved except with top of the line Vented Lead-Acid (VLA) and large format Nickel-Cadmium (NiCd).

In the author's experience, the following is a more realistic life expectancy:

Small Valve-Regulated Lead- Acid (VRLA). Usually 6 or 12 volt multi-cell units under 35 Ah at the 10 hour rate or 140 Watts at the 15 minute rate. Some examples below.

Designated life 5 years – expected life 3 years



Medium size VRLA multi-cell units. Usually 6 and 12 Volt units, ranging from 30 to 200 Ah at the 8 hour rate and up to 700 Watts at the 15 minute rate. Some examples are shown below.

Designated Life 10 years. Actual life with UPS applications, 3 years. With Telecom and Utility applications, 5 to 7 years.



Large VRLA multi-cell units. Usually 2 Volt units, ranging up to around 2000 Ah at the 8 hour rate and up to 4000 Watts-per-cell at the 15 minute rate. Some examples are shown below.

Designated Life 20 years. Actual life with UPS applications, 7 years. With Telecom and Utility applications, 10 years.



Small to medium size VLA single and multi-cell units. Usually 2 to 8 Volt units, ranging from 100 to 500 Ah at the 8 hour rate and up to 700 Watts-per-cell at the 15 minute rate. Some examples are shown below.

Designated life 20 years. Actual life with UPS applications, 10 years. With Telecom and Utility applications, 15 to 18 years.



Large VLA single and multi-cell units. Usually 2 to 8 Volt units, ranging up to 4000 Ah at the 8 hour rate and up to 4000 Watts-per-cell at the 15 minute rate. Some examples are shown below. Designated life 20 years. Actual life with UPS applications, 12 years. With Telecom and Utility applications, 15 to 20 years.



Medium to large stationary Nickel Cadmium (NiCd) Batteries. Usually 2 to 12 Volt units. See some images below. NiCd batteries are usually more tolerant of charging abuse and operating conditions. Almost all NiCd batteries used in stationary applications will have a life expectancy of 15 to 20 years.



Please note that the above details are only approximate and very much depend upon operating conditions, particularly, temperature, the type of load, charging methodology and quality of the charger output.