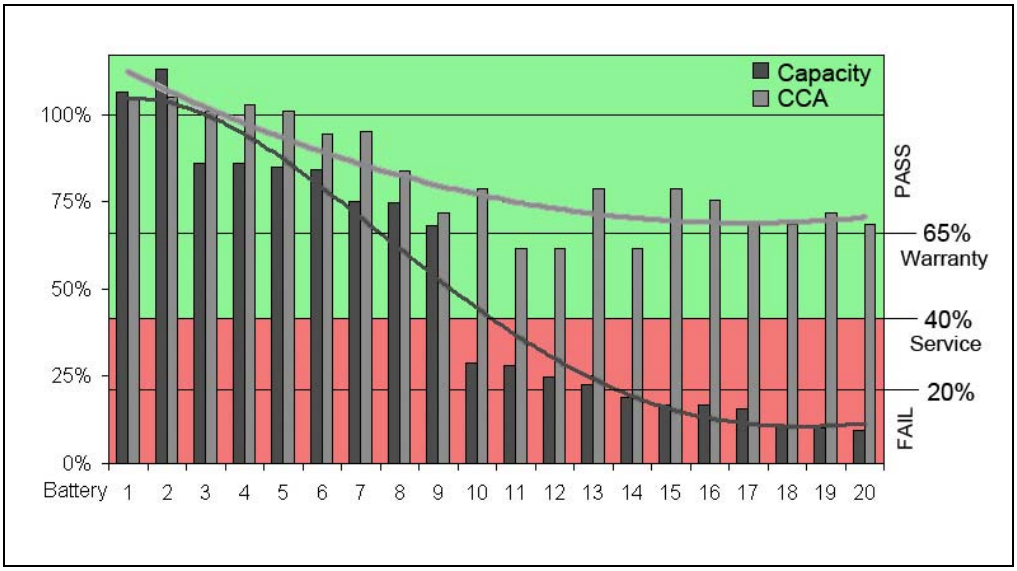
Check Starter Batteries by Capacity

Most testers check a starter battery by reading the CCA (Cold Cranking Amp). CCA refers to the *resistive value* and is responsible for engine cranking. CCA tends to stay high while the capacity drops with use and time. Capacity is the leading health indicator and CCA alone cannot predict the end-of- battery life accurately, as Figure 1 shows.



Test Method

CCA was estimated with the Spectro CA-12 and the capacity was measured with an Agilent load bank by applying full discharges according to BCI standards.

Figure 1: Capacity and CCA readings of aging batteries. Batteries 1 to 9 have good CCA and high capacities; batteries 10 to 20 are at the end-of-life with serious capacity loss. All batteries crank well.

Spectro CA-12 measures capacity

The **Spectro CA-12** reads CCA and capacity in a 15-second test. Simply select *flooded* or *AGM* and enter the CCA and capacity ratings. The battery should have a charge of 40% or higher.

The generic matrix of the *Spectro CA-12 GA* passes or fails a battery on a capacity threshold of 40%. Numeric capacity readings are possible with a custom matrix. Other matrices measure battery state-of-charge by impedance and check battery formation in manufacturing.

Figure 2: Spectro CA-12 battery tester
Measures capacity and CCA in 15 sec.

Capacity readings provide confidence

Service personnel are often unaware of the low test accuracies. Many instruments pass faulty batteries as good, only to fail on the road. Meanwhile, too many good batteries are replaced as faulty. *Figure 3* compares the accuracy of the Spectro CA-12 GA with a leading competitor.

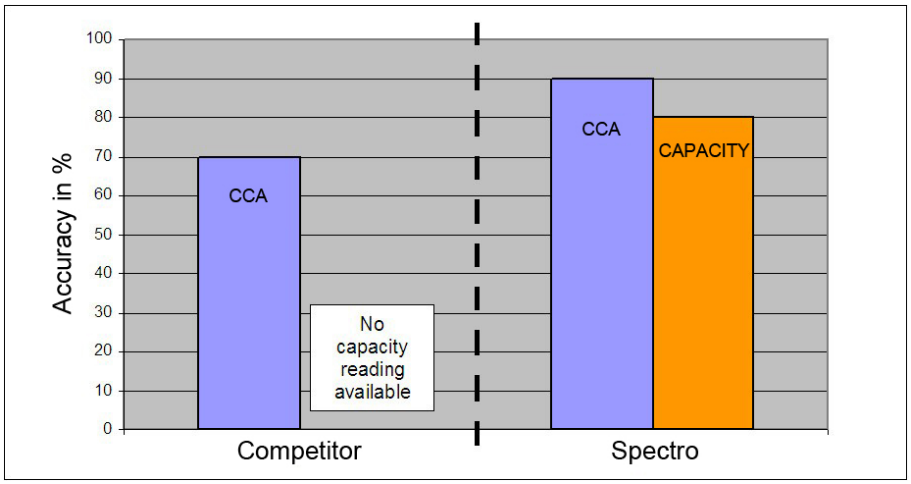


Figure 3: Test results on starter batteries

Competitive battery testers only read CCA with a typical accuracy of 70%. Spectro provides a CCA accuracy of 90% and capacity 80%

Why was this not done earlier?

The **Spectro CA-12** uses *multi-model electrochemical impedance spectroscopy;* a technology that has been reserved for research laboratories due to high cost and long test times. DSP technology and a patented algorithm reduced size, test time and price. Here is how it works:

A frequency of 20–2,000 Hertz scans the battery as if to plot a landscape. During the short test, the DSP compiles 40 million transactions, but the heart lies in the unique algorithm.

Specifications

- Non-invasive hand-held rapid-tester for flooded, AGM, gel lead acid batteries, DC decoupled
- Injects 20–2,000Hz sinusoidal signal at 10mV
- Measures capacity, internal resistance and CCA at a SoC range of 40–100%
- 15 seconds test time; tolerates 30A parasitic load
- Multi-use, stores 25 configurable matrices
- Generic matrix sorts starter battery on a 40% capacity threshold; specific matrix display capacity in numbers
- Reverse polarity and over-voltage protection
- Internal Li-ion battery provides ~150 tests per charge

Range Resistance: 2–20mΩ
Voltage: 2V, 6V, 8V, 12V

Physical: 172 x 248 x 60.5mm (6.75” x 9.76" x 2.38"), 1.10 kg (2.45 lbs)

Ports: RS232, infrared port for printer, Bluetooth

Safety UL3101, CSA 1010, EN61010 EMI/ EMC: FCC part 15 Class A, EN55011 Level A, EN61000-6-3:2001 for EMC

Warranty One (1) year against defects

Software PC-Companion offers PC-interface

ISO 9001

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