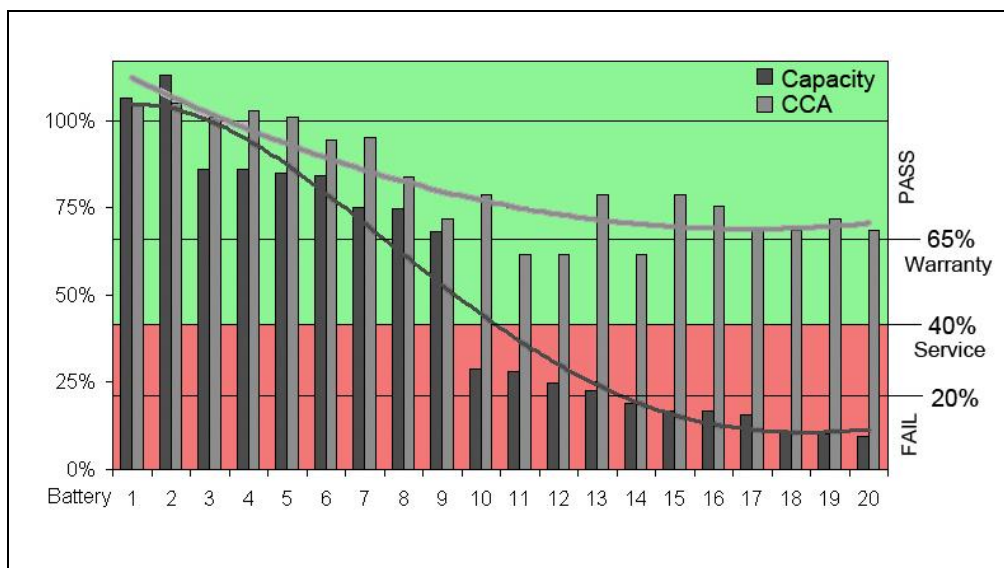




## Check Starter Batteries by Capacity

Most testers check a starter battery by reading the CCA (Cold Cranking Amp). CCA relates to battery resistance that impacts engine cranking. CCA tends to stay high while the capacity gradually drops with age. CCA alone cannot predict the end-of-battery-life — capacity does. Capacity is the leading health indicator.



### Test Method

CCA was taken with the Spectro CA-12; 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 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 minimal charge of 40%.

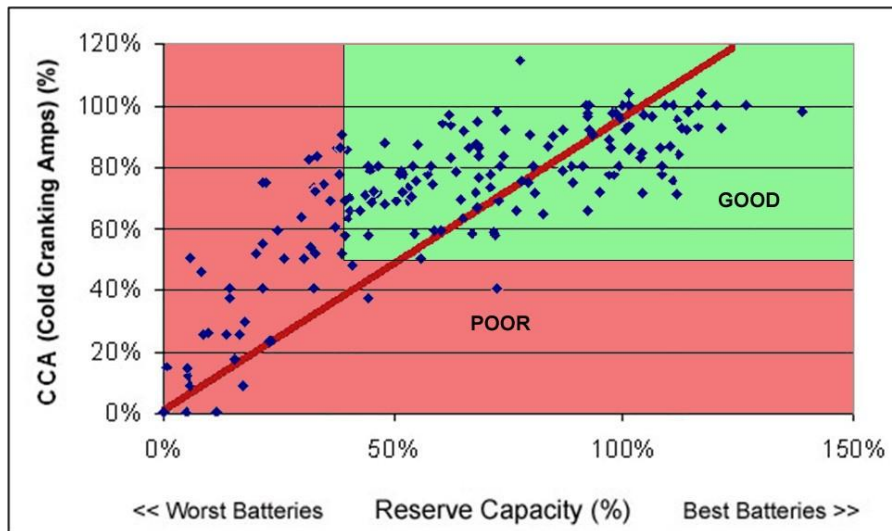
The generic matrix of the *Spectro CA-12 GA* passes or fails a battery on a capacity threshold of 40%. Numeric capacity readings are possible with a custom matrix. Other matrices measure battery state-of-charge by impedance and check battery formation in manufacturing.



**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 of most battery testers. Faulty batteries often pass as good, only to fail on the road; while too many good batteries are being replaced, causing undue expenses. Figure 3 illustrates the CCA and capacity readings of 175 starter batteries. Identifying good batteries with capacity helps in the performance evaluation.



**Figure 3: Relationship of CCA and capacity on 175 starter batteries**

Starter batteries retain high CCA and gradually lose capacity. Capacity check allows dependable performance evaluation.

**Note:** Capacity and CCA tested according to SAE J537. CCA/capacity correlation is 0.55.

## Why was this not done earlier?

The **Spectro CA-12** uses *multi-model electrochemical impedance spectroscopy*; a technology that was reserved for research laboratories due to high cost and long test times. A 20–2,000 Hertz signal scans the battery as if to plot a landscape. The heart of Spectro™ is the patented algorithm that compiles 40 million transactions to provide readable results in only 15-seconds.

## 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



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