

## INDEPENDENT TEST RESULTS FOR TROJAN BATTERY'S INDUSTRIAL IND29-4V VS. ROLLS BATTERY'S INDUSTRIAL 4KS25P

When purchasing an industrial deep-cycle battery for a renewable energy application, it is important that the specifications provided by the battery manufacturer accurately match the battery's real life performance. Any significant discrepancy can affect the system design, causing the batteries to have a shorter life than anticipated, cost more than necessary, store less energy than the application calls for, and not adequately supply enough power to the loads.

Trojan Battery recently hired a third-party test lab to perform cycling tests on two of the leading Industrial batteries on the market to compare the battery's published capacity ratings to actual data when put into use.

### Purpose of the test:

The test procedure took nearly five months to complete and was designed to verify the 20-hour and 100-hour published ratings of the Trojan IND29-4V battery and the Rolls 4KS25P battery which has an equivalent 100-hour rating. The testing was conducted by a well-respected independent test facility in the United States that specializes in testing batteries.

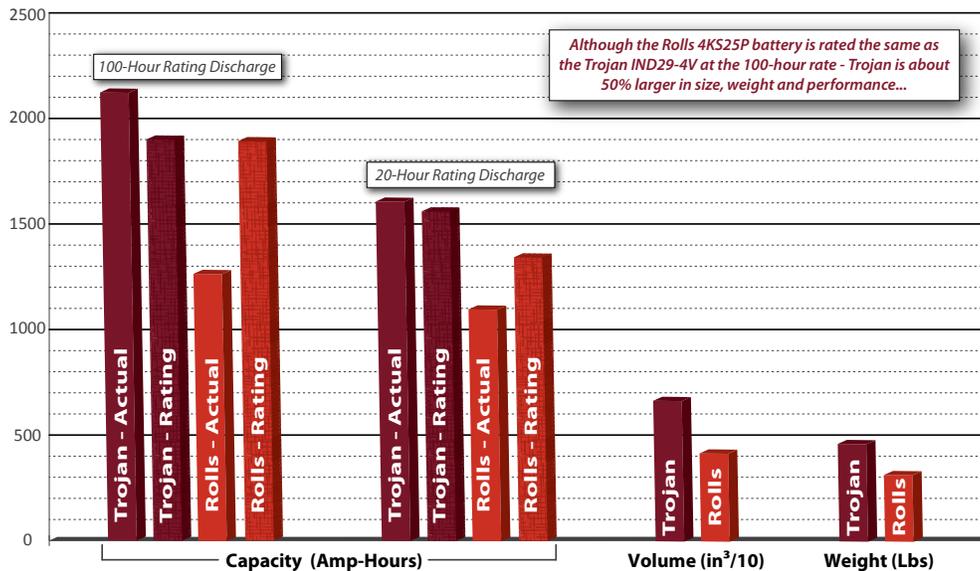
### How the test was performed:

The independent test facility tested one Trojan IND29-4V and one Rolls 4KS25P battery. The 20-hour and 100-hour discharges were done every 20 cycles with 150 amp discharges (approximately 6 - 7 hours) done in between to provide daily 100% depth of discharge cycling. The recharge for both batteries was 2.35 volts-per-cell with a 175 amps-limit for 16 hours. The batteries were given an extra "equalize" charge at 2.58 volt-per-cell for 4 hours every 20 cycles (approximately once per month).

### Independent test result findings:

The independent test results concluded that the Trojan IND29-4V battery performed as well as its published ratings at the 20-hour rate and performed better than its published ratings at the 100-hour rate. The results concluded that the Rolls 4KS25P battery did not perform as well as its published ratings for both the 20-hour and 100-hour rates. The data from the Rolls 4KS25P battery was 18% lower than its published ratings for the 20-hours rate and 32% lower for the 100-hour rate.

### TROJAN IND29-4V vs. ROLLS 4KS25P



Capacity Testing Conducted at Independent 3rd Party Testing Lab

Although the Rolls 4KS25P battery is rated the same as the Trojan IND29-4V at the 100-hour rate - Trojan is about 50% larger in size, weight and performance...

In summary, independent test results revealed that Trojan's IND29-4V battery has 46% more capacity than the Rolls 4KS25P at the 20-hour rate and 66% more capacity at the 100-hour rate. A copy of the independent third-party test report is available upon request by contacting Dean Middleton, Director of Sales - Renewable Energy at [dmiddleton@trojanbattery.com](mailto:dmiddleton@trojanbattery.com) or 562-236-3112.