



POWERX1 | **ENDURACHARGE™**
POWER SYSTEM

69% More Power with the POWER X1

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When powered cots were introduced into the EMS market over a decade ago, portable battery technology was still being developed. EMS professionals rely on a consistent, long-lasting charge to perform routine duties. As new technologies emerge, the duration between required charging cycles should increase, resulting in greater call efficiency. **The goal of this study was to evaluate the number of cycles that two commercially available batteries would achieve off of a full charge at various patient weights.**

Methods

A FERNO POWER X1 Ambulance Cot and ENDURACHARGE™ Battery and a Stryker Power-PRO™ XT and SMRT Battery were tested. Each battery was charged using the manufacturer’s supplied charger on a 120 VAC wall receptacle until a full state of charge (SOC) was achieved. Each battery was placed into the respective cot, both of which were in the fully lowered position. A custom button engagement mechanism designed to simulate the human finger was affixed to each cot and depressed the plus (+) button until the cot reached its maximum height. The minus (-) button would then be depressed until the cot returned to the fully lowered position. This comprised one (1) cycle. Sensors were placed at the fully lowered and maximum height positions, and the button would cease depression if the sensors had not been tripped; this indicated that a battery had discharged to an extent that would not lift the cot. Triplicate trials were undertaken at four different patient weights: unloaded, 250 lbf (1112 N), 500 lbf (2224 N), and 700 lbf (3114 N). Batteries were charged until a

full SOC was achieved after each trial. Testing was conducted in controlled environmental conditions at ambient room temperature and humidity. Data was reported as average cycles until battery depletion. A Fisher’s test for variability followed by a two-tailed Student’s t-test for differences between means with significance declared at $p < 0.05$ at 95% confidence was used.

Results

For the unloaded cot, the average cycles to battery depletion of the FERNO ENDURACHARGE Battery was 64% greater

than the Stryker SMRT Battery ($p < 0.05$). Under a 250 lbf (1112 N) patient load, the ENDURACHARGE demonstrated a 69% greater number of cycles until depletion ($p < 0.05$). At a 500 lbf (2224 N) patient weight, there was an 87% increase in the number of cycles for the ENDURACHARGE ($p < 0.05$) over the Stryker SMRT Battery. At a patient weight of 700 lbf (3114 N), the Stryker SMRT Battery would not lift the cot for any of the three trials, while the ENDURACHARGE achieved 41 cycles (Figure 1).

Conclusion

The number of cycles achieved from a fully-charged battery used in conjunction with an EMS cot has significant impact on patient transport, call efficiency, medic satisfaction, and, at times, patient and medic safety. Reducing the number of times a battery must be charged during a typical EMS shift ensures patients receive timely, dependable care when they need it most. With a 250-lb patient, the FERNO ENDURACHARGE lasted 69% longer than the Stryker SMRT battery. On average, across all patient weights, it lasted 80% longer.

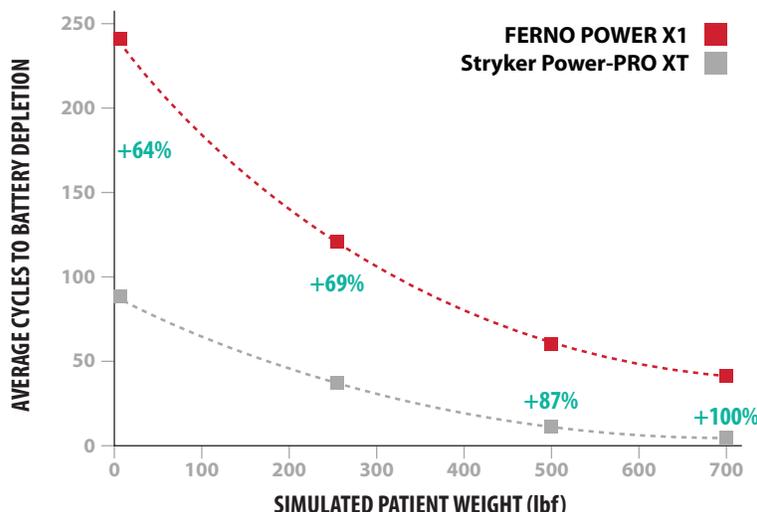


Fig. 1: Cycles per battery charge at each tested weight.