
From: Dickinson, Blake [dickinson@avinc.com]
Sent: Sunday, January 16, 2011 2:33 AM
To: batterychargers@energystar.gov
Cc: 'Davis Sean'; John E. Kim
Subject: Comments on Draft 1 Version 2.0 Specification
Attachments: HF Charger Hardware Efficiency Test Results.pdf; 7 Day Operational Efficiency Test Results 2.pdf; Round-Trip Efficiency Test Results.pdf; 7 Day Operational Efficiency Test Results 1.pdf

EnergyStar Team,

I want to specifically comment on the test procedure for charger/battery systems with battery energy greater than 10 kWhs and used with industrial vehicles (material handling vehicles such as forklifts and airport ground support equipment). Today industrial vehicle operations can be divided into two major categories; 1) forklifts that change batteries and 2.) forklifts than opportunity charge. The EnergyStar test procedures are generally appropriate for industrial vehicles that change batteries since the battery is discharged to a deep discharge in the forklift and then fully recharged by the charger in the battery room. But, for industrial vehicles that opportunity charge, the test procedure will not provide the real energy efficiency and energy usage of the battery/charger system.

Here are some definitions we use with our internal testing and discussions with customers:

Charger Hardware Efficiency Test - AC to DC energy conversion efficiency of the charger as a function of output power, most charger companies report the peak value from this type of test in their literature. See attached example of the results from a charger hardware Eff test.

Roundtrip System Efficiency Test - Roundtrip efficiency of charger plus battery including overcharge. This replicates the charger/battery system efficiency when used in an industrial vehicle that changes batteries. See attached example of the results from a roundtrip system efficiency test.

Operational Efficiency Test - A week long test that simulate the operation of an industrial vehicle used in a multi-shift operation with opportunity charging and one day for equalization. The results are highly dependent on the ability of the charger to limit the overcharge into the battery during the opportunity charge periods and give a complete EQ.

So in summary, I recommend that the test procedure for the industrial vehicles include a week long test that simulates the real operation of the industrial vehicles in order to accurately rate the energy efficiency and energy use (kWhs) of the charger/battery system.

Please let me know the next step to provide further detailed feedback on the test procedures.

Best regards,

Blake

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