Pre-Switch

Soft-switching leader, Pre-Switch, demonstrates 'astonishing efficiency' across full load range

100kHz reference inverter is 98.5% efficient at 5% load - peak efficiency is 99.57%

March, 2023 San Jose, Ca., USA: Pre-Switch, Inc., the company that has developed the world's first AI-based forced-resonant, soft-switching technology enabling ultra-efficient DC/AC, AC/DC inverters running at 100kHz, has announced new data proving the efficiency of the company's architecture at low load as well as full load. Tests performed on Pre-Switch's CleanWave2 reference inverter at 100kHz switching speed show the system is 98.5% efficiency at 5% load. Peak efficiency is 99.57%.

Bruce Renouard, Pre-Switch CEO comments: "Over a year ago we announced peak efficiency figures of over 99%. Since that time, we have been improving our AI algorithm to improve low-load performance. The results are astonishing. 98.5% efficiency at 5% load is far in excess of what can be achieved by any other approach today, proving that soft-switching and the Pre-Switch™ architecture will lead the emobility electrification revolution."

Pre-Switch eliminates switching losses, enabling 10X higher switching frequencies, resulting in huge efficiency gains. In EVs this leads to improved motor efficiency, range and reliability. The Pre-Switch architecture addresses the challenges that, until now, have prevented industry from making the transition to soft-switching for EV inverters. The exceptional efficiency at low loads and high frequency low distortion sign wave to the motor significantly improves WLTP (EPA's European milage test system) range performance. The topology is a variation of the Auxiliary Resonant Commutated Pole (ARCP) soft-switching converter design. However, Pre-Switch employs sophisticated, embedded artificial intelligence to solve complex switching system timing calculations dynamically to ensure accurate soft-switching under changing input voltage, output load, device tolerances, and temperature changes. Adaptations are made on a cycle-by-cycle basis to minimize losses and maximize efficiency.

Adds Renouard: "We believe that our technology is the paradigm shift that EV OEMs have been searching for, enabling essential efficiency differentiation and EV leadership. These results prove how effective our technology is and definitively validate our previous claims."

Pre-Switch is already working with leading EV makers and other emobility companies; evaluation systems are available for other interested parties.

Pre-Switch: Further, Faster, Lighter, Cheaper – Cooler

About Pre-Switch

Pre-Switch, Inc. is a Silicon Valley company that delivers AI-based soft-switching power architectures that minimize switching losses, resulting in dramatic improvements in efficiency, size, performance and reliability. Key applications include electric vehicles, electric aircraft and other e-mobility solutions, solar inverters, wind turbines, UPS, storage and motor drives. Pre-Switch™ technology increases EV range, reduces battery size, shrinks power converter size and cost, while minimizing cooling requirements. Pre-Switch was founded by industry experts in power semiconductors, power systems, test, robotics, and artificial intelligence. Pre-Switch technology is patent pending globally.

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