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Ideal Power Whitepaper: Significant B-TRAN™ Benefits in Numerous Electric Vehicle, Renewable Energy, Data Center Applications

AUSTIN, Texas, Jan. 21, 2021 (GLOBE NEWSWIRE) -- [Ideal Power Inc.](#) (Nasdaq: IPWR), pioneering the development and commercialization of highly efficient and broadly patented B-TRAN™ bi-directional power switches, has posted to its [website](#) a whitepaper, “*B-TRAN™ Applications and Benefits*”. The whitepaper describes how its patented, proprietary, bi-directional semiconductor power switch architecture, Bi-directional Bipolar Junction Transistor (B-TRAN™), drives performance, efficiency and cost savings in key emerging and mature markets.

B-TRAN™ is expected to benefit multiple applications in large segments of its \$6 billion total addressable market, including:

- **Electric Vehicles** (\$1.5 billion segment with 15% forecasted annual growth)

Power semiconductors account for approximately 20% of the total electric power losses of hybrid EVs and potentially more of the losses in an EV.

- ° Powertrain and On-Board Battery Charger: Due to its lower switching and conduction losses, B-TRAN™ is expected to increase drive cycle efficiency, directly resulting in an increase in the range of the EV and/or a reduction in the battery size. Further, due to its bi-directional operation, B-TRAN™-based chargers enable vehicle-to-grid, or V2G, technology allowing consumers to monetize exported power to the grid during times of peak energy demand.

- ° Fast (Off-Board) Battery Charger: It is forecasted that 1 million new fast charging systems will be installed globally in the next 5 years. B-TRAN™ can improve charging efficiency through 50% lower losses, improving the economics for the charging station and potentially shortening charging time for the vehicle owner. When the chargers are paired with buffer batteries, B-TRAN's bi-directionality can provide additional improvements in charging station efficiency and operating cost.

- **Solar and Wind (Renewable) Energy** (\$1.1 billion segment with 12% forecasted annual growth)

Inverters for solar and wind systems utilizing B-TRAN™s could approach 99% efficiency resulting in more usable electricity at lower costs to consumers. When renewables are coupled with battery energy storage, the bi-directionality of B-TRAN™ offers further advantages, including significant round-trip efficiency improvements in the battery charge / discharge cycle.

- **Data Center Uninterruptible Power Supplies (UPS)** (\$0.5 billion with 6% forecasted annual growth)

The largest operating cost for a data center is electricity consumption. All of the electricity entering a data center passes through a UPS system, which accounts for approximately 6% of data center total energy losses. Replacing insulated-gate bipolar transistors (IGBTs) currently in UPS systems with B-TRAN™ could increase efficiency from 90% to 95%, generating substantial annual cost savings for data centers through reduced energy consumption and lower cost, less complex cooling systems.

The whitepaper may be found on Ideal Power's website at: <https://www.idealpower.com/technology/>.

About Ideal Power Inc.

Ideal Power (NASDAQ: IPWR) is pioneering the development of its broadly patented bi-directional power switches, creating highly efficient and ecofriendly energy control solutions for industrial, alternative energy, military and automotive applications. The Company is focused on its patented Bi-directional, Bi-polar Junction Transistor (B-TRAN™) semiconductor technology. B-TRAN™ is a unique double-sided bi-directional AC switch able to deliver substantial performance improvements over today's conventional power semiconductors. Ideal Power believes B-TRAN™ modules will reduce conduction and switching losses, complexity of thermal management and operating cost in medium voltage AC power switching and control circuitry. For more information, visit www.IdealPower.com.

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