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Ideal Power Releases Whitepaper on B-TRAN™ Enabled Solid-State Circuit Breakers

AUSTIN, Texas, Nov. 02, 2021 (GLOBE NEWSWIRE) -- Ideal Power Inc. (Nasdaq: IPWR), pioneering the development and commercialization of highly efficient and broadly patented B-TRAN™ bidirectional power switches, has released a whitepaper, "*B-TRAN™ Devices in Solid-State Circuit Breaker Applications*". The whitepaper describes how Ideal Power's patented, proprietary, semiconductor power switch architecture, the Bidirectional Bipolar Junction Transistor (B-TRAN™), solves the limitations of both mechanical circuit breakers now in widespread use, as well as those of solid-state circuit breaker (SSCB) solutions using power semiconductors such as the Insulated-Gate Bipolar Transistor (IGBT).

The fast switching and low conduction losses of the B-TRAN™, along with its inherent bidirectional capability, potentially lay a path to broad SSCB adoption to support both existing and emerging applications in the global circuit breaker market, which is projected to reach nearly $26 billion by 2027, growing at a forecasted compound annual growth rate of 6.6%.

A B-TRAN™ enabled SSCB could potentially displace mechanical circuit breakers, which are roughly ten times slower than SSCBs (operating in milliseconds instead of microseconds) and prone to arcing and wear. Ideal Power believes that B-TRAN™ would also solve the problems posed by SSCBs using conventional switches such as IGBTs that suffer high conduction losses, resulting in significant wasted energy that must be dissipated in the form of heat. Along with energy savings, the inherent bidirectionality and lower conduction losses of B-TRAN™ should also reduce component count and thermal management requirements and, therefore, the cost of SSCBs.

As validation of the performance breakthrough of B-TRAN™ for circuit breaker applications, Diversified Technologies, Inc. (DTI), in collaboration with Ideal Power, was awarded a contract with the U.S. Navy/Naval Sea Systems Command to develop a B-TRAN™ based solid-state direct current (DC) circuit breaker rated at 12 kV, 500 A (6 MW) for mission-critical technology in the Navy's ship electrification program.

Further funding has also been received from the U.S. Department of Energy for Phase I of a program for an alternating current (AC) version of a B-TRAN™ based SSCB. This SSCB is intended to be used in medium voltage power distribution and renewable energy / microgrid connection to the United States' main power grid. If Phase I is successful and a Phase II grant is awarded, DTI will build and test a full 50 MW AC SSCB using Ideal Power B-TRAN™ devices.

Ideal Power also recently announced that a Forbes 2021 Global 500 diverse power management market leader will be testing and evaluating B-TRAN™ for use in bidirectional DC SSCB applications for solar and wind systems. B-TRAN™ will be evaluated against insulated-gate bipolar transistors (IGBTs) and silicon carbide power devices. This represents Ideal Power's first test and evaluation announcement in the industrial and utility SSCB space.

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 bidirectional power switches, creating highly efficient and eco-friendly energy control solutions for industrial, alternative energy, military and automotive applications. The Company is focused on its patented Bidirectional, Bipolar Junction Transistor (B-TRAN™) semiconductor technology. B-TRAN™ is a unique double-sided bidirectional 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.

Forward-Looking Statements

All statements in this release that are not based on historical fact are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995 and the provisions of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. While Ideal Power's management has based any forward-looking statements included in this release on its current expectations, the information on which such expectations were based may change. These forward-looking statements rely on a number of assumptions concerning future events and are subject to a number of risks, uncertainties and other factors, many of which are outside of Ideal Power's control that could cause actual results to materially differ from such statements. Such risks, uncertainties, and other factors include, but are not limited to, the risks and uncertainties associated with market conditions and our expectations that the B-TRAN™ will solve the limitations of both mechanical circuit breakers now in widespread use and of solid-state circuit breaker solutions using power semiconductors such as IGBTs, that the performance characteristics of the B-TRAN™ potentially lay a path to broad SSCB adoption to support both existing and emerging applications in the global circuit breaker market, the anticipated size of the global circuit breaker market and that a B-TRAN™ enabled SSCB could potentially displace mechanical circuit breakers, as well as risks and uncertainties set forth in Ideal Power's quarterly, annual and other reports filed with the SEC. Furthermore, Ideal Power operates in a highly competitive and rapidly changing environment where new and unanticipated risks may arise. Accordingly, investors should not place any reliance on forward-looking statements as a prediction of actual results. Ideal Power disclaims any intention to, and undertake no obligation to, update or revise forward-looking statements.

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