From Medical Applications to Quantum Sensing: BWT Semiconductor Lasers Empower the Entire Industry

BEIJING, BEIJING, CHINA, October 29, 2025 /EINPresswire.com/ -- For more than two decades, BWT has been at the forefront of laser innovation, shaping the future of photonics with unmatched technical depth and precision. As a leading expert in semiconductor laser technology, we offer a full-spectrum product portfolio spanning wavelengths from 380 nm to 1940 nm and power levels from 2 mW to 6 kW. Centered on our patented 793 nm–976 nm core technology and enhanced by over ten proprietary innovations such as high-power beam combining, BWT empowers breakthroughs across medical, scientific, and industrial applications—illuminating new possibilities for the global laser community.

I. Medical & Health: The Precision Scalpel of Light
BWT's medical semiconductor lasers combine high efficiency, precision, compact design, and long lifetime to deliver reliable light sources for a wide range of advanced medical technologies and precision treatment systems. Our product portfolio covers wavelengths from 700 nm to 2000 nm in the near-infrared range, 400 nm to 700 nm in the visible range, and below 400 nm in the ultraviolet range, with output powers ranging from 0.2 W to 150 W. The lineup includes single-wavelength series (such as 11-pin and 14-pin packages) and multi-wavelength series (such as MP and AG models), offering both pluggable and fiber-coupled output configurations. With comprehensive wavelength coverage and a complete product family, BWT integrates multiple proprietary core technologies to enable multi-wavelength output through a single optical fiber, providing flexible, high-performance solutions for diverse medical applications.

BWT's medical semiconductor laser products are designed to meet the diverse needs of customers across multiple medical fields, including dentistry, surgery, physiotherapy, photodynamic therapy (PDT), and dermatology. By empowering healthcare professionals with precise and efficient light sources, BWT continues to support the advancement of the global laser-medical industry — helping people pursue a healthier and more beautiful life.

II. Scientific Research: Exploring the Unknown with Pumping Power
BWT's Scientific Laser Series feature a lightweight design and high efficiency, offering wavelength options including 793nm, 808nm, 878.6nm, 885nm, 888nm, 940nm, 969nm, 976nm, and 981nm to meet the demanding pump requirements of cutting-edge scientific research. The products deliver stable output even in complex environments, offering strong fiber compatibility (105–220 μm core) and supporting various beam-combining configurations and power ranges.

For instance, B2/AH/N1/N9 series and NL lightweight wavelength-locked series are widely used in scientific research. They are ideal for the development of fiber/solid-state/ultrafast lasers, supporting frontier fields such as nonlinear optics, quantum science, and laser fusion. These technologies drive the advancement and broader adoption of laser innovation across the scientific community.

III. Smart Manufacturing: The Ultimate Tool for High-Reflective Material Processing
BWT's Blue Semiconductor Laser Series includes 20 W / 40 W engraving light sources and 80 W / 300 W / 1000 W / 2000 W high-power laser systems, featuring advanced optical design and superior beam quality. The 1000 W @ 200 μm blue laser delivers exceptional brightness and significantly enhances processing performance for highly reflective materials such as copper and aluminum. It greatly improves the welding efficiency of new energy battery foils and supports high-precision applications such as cutting, welding, and 3D printing. By enabling higher accuracy and efficiency, BWT's blue laser technology is driving progress across the new energy industries.

IV. Laser Bar Arrays and Stacks: The Modular Foundation for Multi-Field Integration
BWT has launched a series of high-power, high-uniformity, and customizable beam-shape laser bar systems designed for exceptional reliability. With distinct advantages in peak power, integration, and special wavelengths, BWT's laser bar product family includes the E-stack / microchannel series, C-stack / macrochannel series, G-stack / macrochannel series, CS (M10 / M4) / conduction-cooled series, DPM series, and MF fiber-coupled series. The wavelength range covers 630 nm, 690 nm, 780 nm, 792 nm, 808 nm, 878.6 nm, 940 nm, 980 nm, 1064 nm, and 1470 nm. These products are widely applied in high-power solid-state laser pumping, scientific research, medical diagnostics, photodynamic therapy, laser annealing, and surface inspection, providing robust support for diverse industrial and research applications.

V. Illumination & Detection: The Optical Ruler for Night Vision and High-Precision Sensing
BWT's semiconductor lasers for illumination and detection applications including Raman laser sources, offer a broad selection of wavelengths such as 405 nm, 450 nm, 525 nm, 808 nm, 940 nm, and 1064 nm, with customizable power levels starting from 600mW. Featuring multi-platform reusable designs and flexible combinations of light sources and drivers, these laser systems deliver highly uniform and reliable optical performance. Core application areas include automotive laser headlights, stage and architectural lighting, laser projection displays, plant growth lighting, search and rescue illumination, laser ranging, rail inspection, and LiDAR.

As one of the earliest pioneers in China's semiconductor laser industry, BWT has long ranked among the leading domestic laser brands by market shipments. The company has established strong technological and product leadership across four major sectors — medical lasers, laser printing, night vision illumination, and laser pumping sources. From minimally invasive surgery to quantum sensing, BWT continues to break through the boundaries of laser technology under its core philosophy of “Creating Extraordinary Change.” Its semiconductor laser innovations are

accelerating global industrial upgrading and empowering a smarter, more advanced future.

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