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Navigating Terahertz Market Dynamics: A Comprehensive Discussion with Dr. Thomas W. Crowe, CEO and founder of Virginia Diodes, Inc. (VDI)



Caption: Dr. Thomas W. Crowe, CEO and founder of Virginia Diodes, Inc. (VDI)(Left); Kathereen Lee, Sales Director of ACE Solution (Right)

Taipei, Taiwan / United States - March 6, 2024 – ACE Solution collaborates closely with Virginia Diodes, Inc. (VDI), responding to the demanding requirements of high-frequency technology. Notably, on December 5-8, ACE Solution (ACE) extended a special invitation to Dr. Thomas W. Crowe to participate in the Asia Pacific Microwave Conference in 2023, marking his inaugural visit to Taiwan. During this significant occasion, Dr. Crowe shared invaluable insights into the collaborative initiatives with ACE and provided a thorough overview of the dynamic market landscape.

Dr. Thomas W. Crowe, CEO and founder of VDI, offered a detailed account of his impactful journey in advancing terahertz technology. Having earned his M.S.E.E. and Ph.D. from the University of Virginia, Dr. Crowe's academic and research contributions have played a pivotal role in shaping the terahertz landscape. His notable work at the University of Virginia centered on developing Schottky diode technology tailored for terahertz applications. Among Dr. Crowe's team's pioneering achievements are the creation of planar diodes and integrated diode circuits, highlighted by the introduction of the first planar mixer and varactor multiplier diodes. This groundbreaking research laid a robust foundation for scientific measurements across a diverse frequency range, spanning from a few hundred GHz to 5 THz. Despite starting as a small business, VDI has grown to 125 employees, serving numerous companies, research labs, and universities worldwide.

During his engagement, Dr. Crowe reiterated the collaborative spirit with ACE and provided an extensive overview of the market landscape, shedding light on the strategic partnership's significance in the ever-evolving realm of high-frequency technology. In addressing the challenges posed by high frequencies, VDI's involves

diodes capable of converting low-frequency microwaves into higher-frequency Terahertz ranges development. This technological breakthrough facilitates the detection of small molecules, opening avenues for applications in astronomy, atmospheric studies, basic scientific research, and semiconductor testing. Established in 1996, VDI has been a trailblazer in accelerating the emergence of terahertz technology for scientific, security, industrial, and commercial applications. VDI's terahertz sources have played pivotal roles in scientific endeavors, ranging from radio astronomy to plasma diagnostics and molecular spectroscopy on a global scale.

Dr. Crowe discussed the strategic collaboration with ACE Solution. He emphasizes "the importance of ACE's expertise in navigating the complex markets of Taiwan. In particular, ACE's understanding of the booming semiconductor industry in these region's positions that VDI to capitalize on opportunities in the 5G and 6G sectors, aligning seamlessly with ACE's business acumen". Terahertz technology holds immense potential across diverse fields, from medical imaging and molecular analysis to security and communications. Dr. Crowe envisions a future where terahertz technology becomes more accessible, facilitating advancements in imaging, spectroscopy, and semiconductor testing.

In conclusion, Dr. Thomas W. Crowe shared insights into the dynamic world of terahertz technology, showcasing VDI's contributions, challenges, and collaborative endeavors with ACE Solution. As the demand for higher frequencies intensifies, VDI faces challenges in a competitive landscape. Dr. Crowe emphasizes the necessity to stay ahead by continuously advancing technology to meet sophisticated customer requirements. The journey continues, promising innovations and breakthroughs in the fascinating realm of terahertz frequencies.

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About ACE Solution

Established in 2000, ACE Solution (<https://www.acesolution.com.tw/en/>) is headquartered in Hsinchu City, Taiwan, with branch offices strategically located in Suzhou and Shenzhen, China. Our company is dedicated to delivering tailored test solutions that cater to the specific requirements of our customers in the field of electrical components, devices, and system manufacturing. Furthermore, we collaborate with our esteemed partners to provide comprehensive technology solutions. At ACE Solution, we specialize in RF, mmWave, and terahertz technologies, boasting an accomplished team of technical experts who offer unparalleled support. Our commitment to professionalism, innovation, and versatility enables us to offer cutting-edge integrated techniques and solutions. By leveraging our expertise, we empower our clients to overcome technological challenges and achieve their desired outcomes efficiently and effectively.

About VDI

Our Mission

To make the terahertz region of the electromagnetic spectrum as useful for scientific, military and commercial applications as the microwave and infrared bands are today.

Our Products

VDI manufactures state-of-the-art test and measurement equipment for mm-wave and THz applications. These products include Vector Network Analyzer, Spectrum Analyzer and Signal Generator Extension Modules that extend the capability of high performance microwave measurement tools to higher frequencies. VDI's component products include detectors, mixers, frequency multipliers and custom systems for reliable operation at frequencies between 50 GHz and 2 THz. All VDI components include in-house fabricated GaAs Schottky diodes and microelectronic filter structures.

Our History

VDI was founded in 1996 by Dr. Thomas W. Crowe, VDI CEO & Founder. From 1996 to 2001 VDI sold only Schottky Diodes for scientific applications including radio astronomy and high frequency radar. During this period, VDI operated as a University of Virginia (UVa) spin-off and utilized the facilities at the University. Around 2001 VDI expanded to include offices in downtown Charlottesville, VA and started selling complete mixer, detector and multiplier products for 50-1000 GHz operation. By 2004 VDI started selling sub-systems such as THz Transmitter & Receiver modules. Also in 2004 all VDI operations moved to the 979 Second Street location in Charlottesville and VDI stopped utilizing UVa facilities. Since then VDI continued to grow the number of product offerings and employees needed to satisfy a broad range of terahertz and millimeter wave customers. Today, VDI employs over approximately 100 engineers, technicians and administrative staff working in a high tech 20,000 sq. ft. facility.