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Optical to electrical power conversion devices with the highest efficiency ever (Eff > 60%) based on the vertical epitaxial heterostructure architecture (VHESA) design

Broadcom has recently acquired Azastra Opto Inc and is releasing its product line of Vertical Epitaxial HeteroStructure Architecture (VEHSA design) products for various applications. Such phototransducer products are capable of the highest ever optical to electrical power conversion efficiency. The applications typically use a fibered semiconductor laser of a few watts to deliver power optically to the the power converting device. The approach enable the safe delivery of watts of isolated electrical power with high galvanic isolation as the optical fiber is immune to EMI and RF noises. These components are therefore ideal for applications requiring complete electrical isolation in highly demanding industrial environments. For example, they can be used for powering electronic circuitry where electrical wired solutions are not feasible due to high voltage, electromagnetic inductance or strong magnetic fields. In this presentation, an overview of the field will be given and some examples of applications of Optical Power Converter will be reviewed. Applications also include: Sensor applications to provide isolated power for various sensors; electric power utilities to provide fully isolated power to protect sensor devices; lightning for protection of key circuits; biomedical and neuro-stimulation to provide safe and tailored voltage and current sources; RF power electronics circuits for interference and ringing reduction; at oil & gas industry to eliminate the risk of sparks from metal; for chemical plants to use power over fiber in corrosive areas where metal wires can be attacked; avionics to use power over fiber instead of metal wires to reduce weight and EMI; medical instrumentation- Resonance Magnetic Imaging (RMI) and for security to trigger and power sources unaffected by EMI-RFI.

Biography

Simon Fafard is Co-founder & President of Broadcom a large public company that recently acquired Azastra and which has been an innovative Canadian optoelectronic company. He has been focused on optoelectronic at uSherbrooke and at Azastra, a corporation that commercialized laser power converter products based on the new VEHSA technology. He has an h-index of 45 and is the inventor of over 30 patents. He raised over \$20M of private and venture capital funding and also obtained numerous research grants. He led Cyrium to become a manufacturer of one of the highest performance multijunction III-V solar cells and led Azastra to manufacture the highest performance phototransducer products. As an entrepreneur, he cumulates over 25 years of experience in Optoelectronics and Photonics while developing and commercializing numerous devices and products in the industry at Azastra, Aton, Cyrium, Alcatel Optronics, Kymata and also in research labs at uSherbrooke, NRC and UCSB.

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