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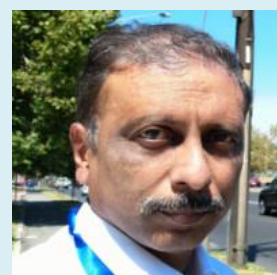
**Bharti Airtel Lecture**

**on**

# **Energy Efficient IoT Devices - the Quest for Longer Battery Life**

**Mr. N. Venkatesh**

**Senior Director, Engineering, Silicon Labs,  
Hyderabad**



**DATE: 29<sup>TH</sup> JULY, 2021  
TIME: 2:00 - 4:00 PM**

**Speaker's Profile :** N. Venkatesh is Senior Director, Engineering at Silicon Labs through its March 2020 acquisition of Redpine Signals of which he was one of the founders in 2002.

Mr. Venkatesh has over 35 years of engineering and management experience in wireless system design, IoT solutions, semiconductor design, and avionics. His current areas of interest are on building semiconductor and system solutions in the field of the Internet of Things. Prior to Redpine Signals, he was General Manager at California based Paxonet Communications developing semiconductor devices for optical and telecom networks, and prior to that at HAL developing airborne communication systems.

He is an active IEEE volunteer and was the Chair of IEEE Hyderabad Section in 2019. He is a Board Member of TiE Hyderabad and helps foster entrepreneurship.

Mr. Venkatesh holds a Masters Degree in Electrical Engineering from the Indian Institute of Technology, Madras, India. He holds 22 US patents, has contributed to IEEE standards development and has written numerous articles in technical journals. He is a Fellow of the Indian National Academy of Engineering and a recipient of the VASVIK Award for Industrial Research in 2011..

**Abstract:** Many or most connected devices - like smart watches, smart locks, location trackers, medical monitors - require long battery life. Since battery technology is not growing at the same pace as the volume of data transferred between devices, innovative methods and techniques to improve energy efficiency have become critical. The question of energy consumed is important in all activities of IoT devices including sense/control, compute, intelligence and communication. This talk covers the current practices in fundamental HW/SW architectural considerations, and algorithmic methods for achieving a very low power wireless end node ASIC design without sacrificing performance. Areas of focus such as HW/SW partition, algorithms, energy efficient wireless receiver algorithms, sleep states, and dynamic performance scaling will be drilled down to explain practical challenges faced in design of wireless SoCs. The talk includes how battery life enhancement is a joint endeavour involving semiconductor device construction and control, the simultaneous use of multiple architecture level techniques, and a seamless approach to wireless design involving algorithms, hardware realizations and software control.