National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Comprehensive Modeling and Design of Low Cost Piezoelectric Based Ultrasound Wireless Power Transfer for Submersible Sensors.
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Supervisor	: Prof Sudip Kundu.
Venue	: EC303, Seminar Room
Date and Time	: 13 Mar 2025 (05.15PM)
Abstract	: This paper proposes a low-cost ultrasound (US) based wireless power transfer (WPT) link for powering lowpower electronics devices used in underwater conditions. The proposed US-WPT link comprises a pair of low-cost ultrasonic transducers, one as a transmitter (Tx) and the other one as a receiver (Rx), and a low-cost full bridge rectifier circuit using Schottky diodes. The paper extensively discussed the modeling of the ultrasound devices, focusing on the energy harvesting perspective and also on designing a low-cost efficient rectifier to generate DC power from ultrasound signal received at the piezoelectric-receiver module. It also may be noted that the developed US-WPT link is capable of generating power wirelessly as high as 3.7 mW in underwater conditions. Therefore, it can be claimed that the overall design of the US-WPT link is quite simple yet highly efficient for immersible sensor nodes.