

## **Damage identification using wireless structural health monitoring system through smart sensor application**

### **ABSTRACT**

Delamination, disbanding, void, low impact resistance and visible internal damage are some of damages uniquely found in the structure. Any damage found on the structure require repair. The inspection need to be done to detect the damage on structure before the structure can be repaired. Non-Destructive Inspection (NDI) and Structural health monitoring (SHM) concept were used to detect flaws from structures. But the SHM differs from NDT which the system used to monitor the integrity of mechanical structures in a continuous and independent way. SHM helps to reduce financial cost for maintenance. SHM can monitor this situation in active and passive states, either by online or offline monitoring. The use of SHM is to augment the NDI application and not to replace it. This paper presents the damage identification technique by using the improved design of wireless structural health monitoring system. Smart PZT sensors were used as an actuator and receiver, coupled with two XBee's and two Ardiuno as signal generator and signal receiver. Program execution on transmitting and receiving the ultrasonic guided wave via the PZT sensor had been written in Makerplot. The acquired results showed that the wave is more even in non-defected area and disrupted in affected area.

**Keyword:** Arduino; Microcontroller; Piezoelectric; PZT Sensor; Structural health monitoring