





Market Name Standard	ZigBee™ 802.15.4	GSM/GPRS CDMA/1xRTT	Wi-Fi™ 802.11b	Bluetooth™ 802.15.1
Application Focus	Monitoring and Control	Wide Area Voice and Data	Web, E-mail, Video	Cable Replacement
System Resources	4KB-32KB	16MB+	1MB+	250KB+
Battery Life (days)	100-1000+	1-7	.5-5	1-7
Network Size	Unlimited (2 <sup>64</sup> )	1	32	7
Bandwidth (kBps)	20-250	64-128+	11,000+	720
Transmission Range (meters)	1-100+	1000+	1-100	1-10+
Success Matrices	Reliability, Power, Cost	Reach, Quality	Speed, Flexibility	Cost, Convenience

Figure 3: Comparison of ZigBee™ network

The schematic diagram for XBEE Pro series1 is given below in figure 4.

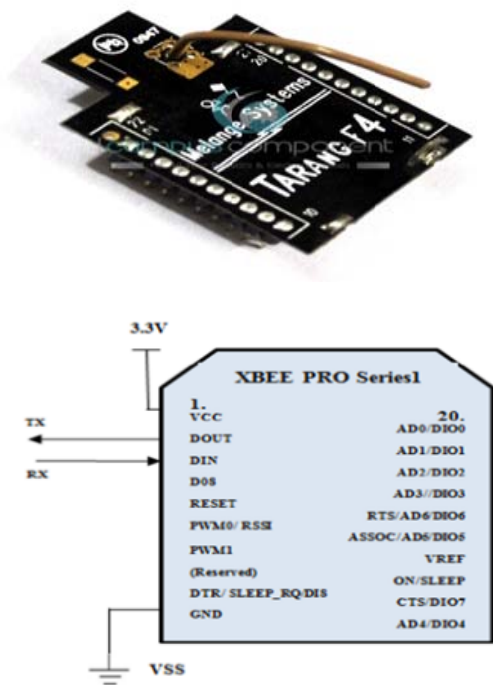


Figure 4: Schematic diagram for XBEE

F. Sensor

IR (Infrared) sensors function is to detect the infrared light; it is transformed to into electric current which is detected by a IR detector. It can sense certain characteristics through its surroundings by emitting or

detecting infrared detection since these waves are invisible to human eye due to its wavelengths varies from 0.75 to 13micro meters.

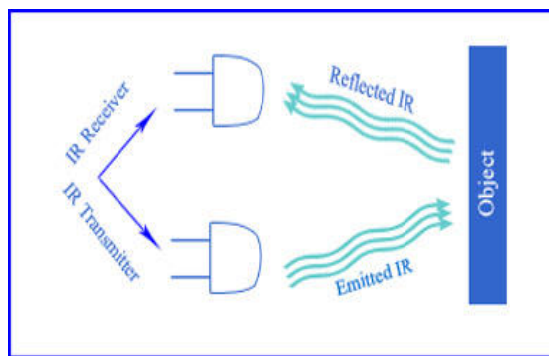


Figure 5: IR pairs

Here we used set of IR pairs to detect the object of different shape or size.

3. Results

Figure 6 shows flow diagram our proposed project in which initially when the system gets started looks for objects that were sensed by suitable IR detectors arranged on the conveyor belt which is rotating at constant speed.

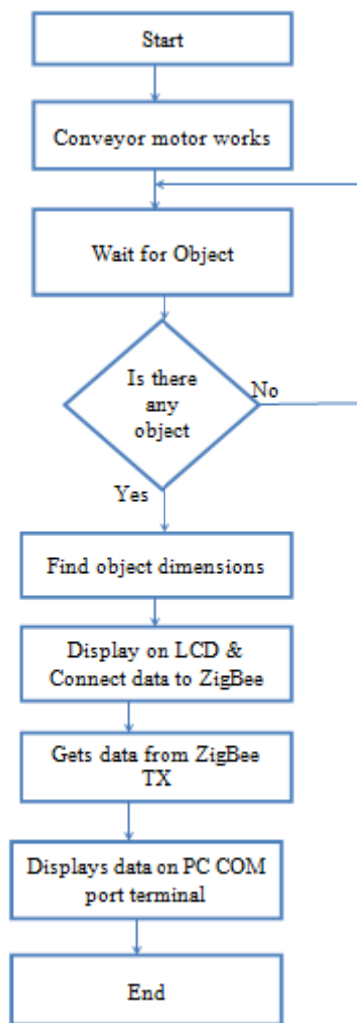


Figure 6: Experimental Setup

When the sensor detects object immediately places this data on serial communication port as well as LCD. Now the RF ZigBee sends this data to remote PC for displaying for user.

#### 4. Future Scope

The Material sorting machine designed and fabricated by us is an elementary system. There is tremendous scope of improving this system and incorporating additional features, which will further its scope and facilitate its incorporation into a real time automation machine, some of the improvements possible are:

- a. Introducing a robotic arm that will separate the different height of component and it will be put on another belt from where they can be collected.
- b. Ensuring FOOL-PROOFING so that the operator can never make a mistake of mixing of different height of material.

#### 5. Conclusion

The concept of developing a Object sorting system with conveyor belt has been executed. We have developed an automated machine, which would be the precursor for the future developments. The conclusion of the proposed work is as follows:

1. In the past, there were no such materials handling system which can sort the object on the basis of their heights.
2. We have achieved a result in which the material can be sorted based on their different heights.
3. The size of the material will be shown in LCD and simultaneously sent to remote PC using wireless media.

#### References

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#### Author Profile



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