

## **EFFICIENT QRS DETECTION**

*In past lot of research on algorithms for QRS detection has been carried out. All such methods mostly rely on a priori knowledge of the shape of the QRS complexes and general aspects of the ECG. Most of approaches require more CPU time and involve complex mathematics which is difficult to implement for low cost, low power pacemaker design. Moreover, baseline shift, power line interference, muscle noise and other artefacts poses further bottleneck for accurate QRS detection. Detailed analysis of various approaches and their constraints for real time pacemaker application has been done in this paper. A simple, cost competitive smart design has also been proposed. Our solution has very low power requirement and achieves high QRS detection performance without compromising timing accuracy and reliability. To achieve improved QRS detection reliability, various noise components have been attenuated by clever implementation of optimized pre-filtering in conjunction with A/Dconversion and Zero-crossing detection. Complete system proposed in this paper has been designed around a PIC microcontroller, data acquisition module and a display unit. Proposed design has been tested for extensive data collected from hospitals. Result achieved confirms the design approach illustrated.*