

Efficient wireless power transmission to remote the sensor in restenosis coronary artery

ABSTRACT

In this study, the researchers have proposed an alternative technique for designing an asymmetric 4 coil-resonance coupling module based on the series-to-parallel topology at 27 MHz industrial scientific medical (ISM) band to avoid the tissue damage, for the constant monitoring of the in-stent restenosis coronary artery. This design consisted of 2 components, i.e., the external part that included 3 planar coils that were placed outside the body and an internal helical coil (stent) that was implanted into the coronary artery in the human tissue. This technique considered the output power and the transfer efficiency of the overall system, coil geometry like the number of coils per turn, and coil size. The results indicated that this design showed an 82% efficiency in the air if the transmission distance was maintained as 20 mm, which allowed the wireless power supply system to monitor the pressure within the coronary artery when the implanted load resistance was 400 Ω .

Keyword: In stent restenosis; Magnetic resonance coupling; Power transfer efficiency; Stent; Wireless power transmission