

An investigation of the effect of optimal plane spacing between electrode planes for the EIT
Industrial Applications

ABSTRACT

In this paper, the effect of plane spacing between electrode planes on Electrical Impedance Tomography (EIT) reconstructed images is investigated. Image properties of models for various plane spacings between electrode planes on EIT imaging were investigated by applying conventional measurement strategies. Sensitivity analysis and spatial resolution analysis were used to study the influence of the different plane spacing between electrode planes on imaging properties. In the sensitivity analyses, the results indicate that there are insignificant differences in sensitivity level for the models with different plane spacings, regardless of measurement strategies applied. From the spatial resolution analyses, the findings are conclusive as there are visible differences in the spatial resolution across the off-electrode plane. A comparative study using reconstructed images was also done. The true distributions with the different number of objects are used as references to assess resulting reconstructed images obtained from models with different plane spacing between electrode planes. Results indicate the model with plane spacing between electrodes planes, which is one quarter to the height of the model, provides the better quality of reconstructed images, in terms of estimations of dimension, and colour contrast of the imaged object.