

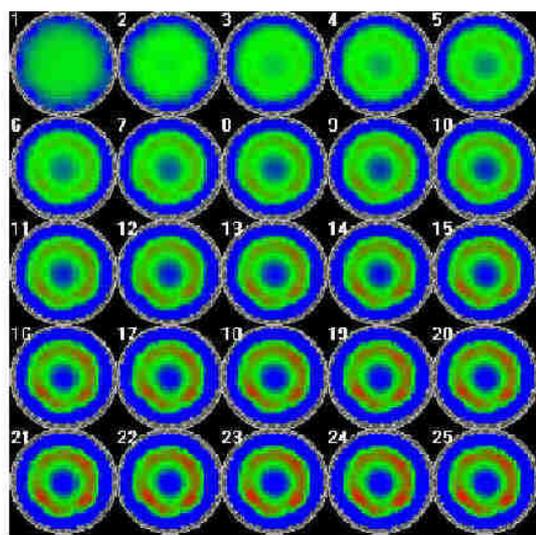
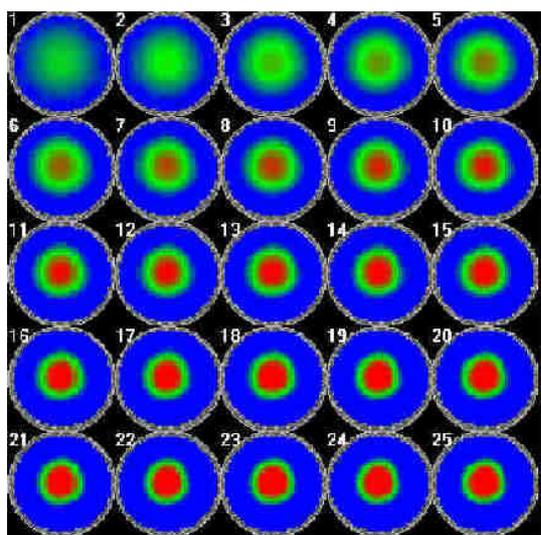
IU2000 POST- PROCESSING IMAGE UTILITIES

OVERVIEW

The IU2000 Image Utility software is an extensive set of tools for processing and viewing captured ECT image data. The software allows captured capacitance data to be converted into image files using a range of permittivity/capacitance models and image reconstruction methods, and is a major extension of the previous standard PTL post-processing software. Facilities are provided for constructing images using a fast iterative method which gives images of superior quality to those achievable using Linear Back-Projection. This iterative method is fast enough to convert entire data files quickly and efficiently.

All previous PTL ECT data file formats (including twin-plane data files) can be read and processed. In addition, a variety of output files can be generated in many different formats, including image, capacitance and volume ratio files as ASCII text files.

The figures shown below illustrate how images are improved by the use of the iterative algorithm, following each of 25 iterations. The left-hand block show a set of images for a 53 cm diameter dielectric rod inside a 150mm diameter 8-electrode ECT sensor. The first image in the block was obtained using linear back-projection. The other images show the results obtained after successive iterations. The second set of images are for a dielectric tube inside a similar sensor.



Details

In the standard PTL ECT operating software, priority is given to capturing capacitance data as quickly and effectively as possible. Simple image reconstruction software, based on the use of a Linear Back-Projection (LBP) algorithm is included with this software and allows basic images to be viewed and replayed. The LBP algorithm is fast and simple and produces approximate (but blurred) ECT images. The ECT operating software assumes a simple linear relationship between the relative proportions (concentration) of the materials inside the sensor and the effective permittivity of the mixture. This relationship is valid for dense phase mixtures but becomes increasingly inaccurate as the concentration falls and the mixture becomes weaker.

Alternative image reconstruction algorithms can produce much-improved images. These use a combination of iterative reconstruction techniques and a more realistic model of the concentration/effective permittivity relationship, based on the use of either series or parallel capacitance models or a combination of these models. These models allow much weaker mixtures to be imaged effectively and can produce much sharper images (within the overall limitations imposed by the need to use a relatively small number of sensor electrodes).

The IU2000 software contains facilities to read all current and previous ECT data file formats and to generate images from these. Images can be displayed in single or multiple display formats and can be posted directly to the Windows clipboard for transfer into other software. A wide variety of file output formats are provided as standard.

The IU2000 software consists of integrated image reconstruction and viewing programs and users can switch effortlessly between these two modes so that various image reconstruction methods and parameters can be experimented with and the results viewed immediately.

For further information, please contact us at the address below, or visit our internet web site at : **www.tomography.com** which contains sales and application data.

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