Transmission tomography (CAT scanning) is widely used as a non-intrusive imaging technique in medicine. We believe that its ability to generate distortion-free images of test objects, be they solids or liquids, will be of interest to industry.

Potential industrial applications include:

- R&D studies of such things as multi-phase flow/mixing, casting and extrusion processes,
- inspection of products such as spent fuel containers, test fuel, ceramics, rocket motors, complex castings and structures, concrete columns and beams, turbine blades, artillery shells, and
- dimensional measurements of the internals of complex objects and vessels such as castings, moulds, and even rotating machines.

In these applications tomography can provide precise and detailed data that has not, heretofore, been possible to obtain.

To develop this technology as an industrial tool we have constructed a first generation translate-rotate scanner which we are using to demonstrate the technology to industry. We are also using it in our fundamental R&D program which we are carrying out so that we are in a position to:

- specify the limits of the technology,
- evaluate the efficacy of using tomography in any given application,
- perform service inspections, and to
- specify, design and build state-of-the-art instrumentation for transmission tomography.

We are currently exploring methods that can be used to extend the limits of the technology e.g. by using region-of-interest tomography.

We believe that the features of tomography of most interest to industry are the ability to:

- distinguish features within complex geometries where other non-destructive testing (NDT) techniques are difficult to apply because of the complexity of the geometry,
- detect/locate small density changes/defects within objects, e.g. void fraction measurements within thick-walled vessels, shrink cavities in castings, etc.

- provide quantitative data that can be used in analyses, e.g. of complex processes, or fracture mechanics, and

- provide objective quantitative data that can be used for (computer-based) quality assurance decisions, thereby reducing and in some cases eliminating the present subjectivity often encountered in NDT.