
Non-destructive testing — Gamma ray scanning method on process columns

*Essais non destructifs — Méthode de balayage de rayon gamma sur
les colonnes de processus*

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This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 5, *Radiographic testing*.

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Introduction

Gamma ray scanning is a non-intrusive and non-destructive method, which is widely used in petrochemical and chemical process plants for troubleshooting and diagnosing purposes. Gamma ray scanning provides an indication of online conditions inside processing columns and vessels. Gamma ray scanning has proven itself as a method for the identification of plant and process problems, resulting in considerable economic savings. The gamma ray scanning method is an inspection which is carried out while the process is in operation, without interruption.

The benefits, obtained from the application of the gamma ray scanning method for problem solving, are many folds, such as safety improvement, environment pollution prevention and economic savings.

Gamma ray scanning is based on the gamma ray transmission techniques. When a gamma ray passes through a column, the intensity of the transmitted beam is related to the path length and density of the material through which the beam passes. An appropriate gamma source and a detector are aligned at the same elevation opposite to each other on the exterior of the column. Measurements of radiation intensity are taken at appropriate positions as the source and detector are moved together along the column. The source-detector data thus obtained are shown in plots of radiation intensity or material density as a function of the position. Detailed analysis of these data enables making assessments about the condition of internal structures and process materials within the column.

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