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Gorbit - the Flexible Gamma Computed Tomography System for Pipeline Inspection

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Gamma computed tomography is a non-intrusive technique, which is capable to provide the density based images of structure or phase distribution inside the industrial components without shutting down or disturbing normal operation. However, the field applications pose a lot of challenges to a tomography system which are related to mobility, compatibility to mount on the components, weight and cost of system, etc.

GORBIT – a flexible gamma computed tomography system was designed and fabricated for pipeline inspection. The first version of GORBIT was based on the parallel configuration that allows inspection of the pipeline of OD up to 60 cm at any angle, easy installation and mounting on the pipe and automatic scanning. The image resolution can be achieved 16 x 16, 32 x 32, 64 x 64, 128 x 128 and 254 x 254 pixels. The image reconstruction software was also developed based on Filter Back Projection (FBP) and Algebraic Reconstruction Technique (ART) algorithms.

The GORBIT system has been deployed to inspect the pipeline of petroleum industry for detection of corrosion, deformation and blockage. GORBIT was also used for in-house experiments to validate the CFD simulation results of fractional phase flows.

The new version of GORBIT was recently developed based on the modified 3rd generation using fan beam that reduced significant operation time while maintaining the resolution of image.

Country/Organization invited to participate

Viet Nam

Primary author: Mr DANG NGUYEN, The Duy (Centre for Applications of Nuclear Technique in Industry (CANTI), Viet Nam)

Co-authors: Mr PHAM VAN, Dao (Centre for Applications of Nuclear Technique in Industry (CANTI), Viet Nam); Mr BUI TRONG, Duy (Centre for Applications of Nuclear Technique in Industry (CANTI), Viet Nam); Mr NGUYEN HUU, Quang (Centre for Applications of Nuclear Technique in Industry (CANTI), Viet Nam)

Presenter: Mr DANG NGUYEN, The Duy (Centre for Applications of Nuclear Technique in Industry (CANTI), Viet Nam)

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