

OPTICAL TOMOGRAPHY: A REVIEW ON SENSOR ARRAY, PROJECTION ARRANGEMENT AND IMAGE RECONSTRUCTION ALGORITHM

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ABSTRACT. *This paper reviews previous research on sensor arrays, projection arrangements and image reconstruction algorithms of optical tomography for industrial processes. These include the review of sensor selection and projection arrangement technique to optimize system performance. Issues on types of algorithm for image reconstruction purposes, which is one of the factors to increase the resolution of the image, will also be elaborated. This review could provide a preliminary decision overview for students or researchers before initiating a research related to optical tomography.*

Keywords: Optical tomography, Projection, Sensor, Image reconstruction, Industrial process

1. Introduction. Tomography flow measurement is well known in the industrial process. Tomography is vital to investigate activities of internal structures of a vessel without the need to invade it. There are several important parameters that can be investigated by using tomography method such as mass flow rate, velocity profile and concentration profile. These parameters are crucial for industrial process in obtaining good quality product with high safety features. Thus, this paper highlights the initial work of this system, which is essential before beginning any operation. Several methods of tomography are being used in industrial application and one of them is optical tomography introduced by Abdul Rahim et al. [1]. X-ray tomography is the earliest technique applied in medical field before it is widely adapted for industrial application. Both methods have the same concept which consists of a group of sensors placed around the vessel or pipelines to view the distribution of the component within the sensing zone. The main difference between medical and industrial application is the state of the subject that needs to be measured. In medical, the measured subject is static while, in process industry, it involves