

Summary

It is necessary to have a documentation of process plants after the construction phase is completed and to update the documentation repeatedly during the entire time the plant operates.

As far as the plant's geometry is concerned, this was formerly documented by drawings and is today mostly presented in 3D CAD models. This is called as-built-documentation.

In recent years the use of close-range photogrammetry has become increasingly popular as a means of as-built-documentations, because it offers a number of advantages over manual measuring:

- Only a very short time in situ is needed to record the images.
- Photogrammetric results are reliable and can easily be verified.
- The total plant geometry can be easily described in a series of images that allows the reconstruction of CAD models on every desired level.

A great amount of research is still needed to make the relatively new technique of close-range photogrammetry a suitable tool for the reconstruction of these objects. Recent approaches that link photogrammetry with digital image processing hold a great potential that has not yet been fully realized.

This paper explores the individual steps of a photogrammetric as-built-documentation based on a series of images of process plants and aims to optimize the procedure. The documentation process is based on the assumption that universally accepted conventional standards of shape and position of typical plant elements have been met. The optimization will lead to a prototype close-range photogrammetric system.

As a new documentation tool this digital photogrammetric system must be made compatible with existing CAE tools that demand certain CAD models and data management.

It is the object of digital photogrammetry to find a way to deal with data acquisition and data interpretation in a highly automated way. This paper presents tools that support an interactive reconstruction with standard data of process plants. Using these tools the design of an automatic as-built-documentation system should be around the corner.