

Calibration of Cistern volume with 3D laser scanner

Peter Merck¹, Linus Molund², Andre Tanco³

¹Service Division Industrial Inspection, DEKRA SE, Sweden, ¹NDT and Calibration, DEKRA Industrial AB, Sweden, ¹Mechanized Testing, DEKRA Industrial AB, Sweden

Calibration and testing is handled similar in regards of fulfillment of accreditation standard, ISO/IEC 17025. In this article it will be described how a process and method for volume calibration of a cistern can be done using a 3D laser measurement system together with results from NDT. Volumes of oil cisterns are important in the process of planning the distribution of media and the cistern itself is used as a measure. A third party organization is often used annually or when the cistern is being rebuilt to get a certificate of the volume. This certificate is the proof of the volume of the media at a certain temperature. It is also dependent of many other variables, some of them measured with NDT methods. In this article, the process of volume calibration with 3D laser equipment is described. This combined method is generating a cloud of points using time of flight laser measurement. This is discussed regarding the importance of traceability and the way of handle this in a new method. It is also discussed the way of calculating the volume and the uncertainties. The applicable standards and their applicability are mention and discussed in the light of this new method.