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Best Practice for Measurement using Laser Trackers and Optical Tooling

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1) Title of Abstract: **Best Practice for Measurement using Laser Trackers and Optical Tooling**

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4) Abstract: Laser trackers are commonly used within large scale high value manufacturing for coordinate measurements. Considerable work has been carried out to model and minimize the uncertainties of these systems. For many industrial measurements intermediate tooling is required to interface between the part being measured and the spherically mounted reflector which is measured by the laser. This intermediate tooling is referred to as facility tooling or optical tooling. This paper provides the first rigorous analysis of the uncertainties introduced by optical tooling and best practice guidelines for the design of this tooling to minimize uncertainty. Case study work has been carried out with a major aero engine manufacturer to optimize measurement processes through improved tooling design and the resulting improvements are described.