**“Optical system for on line monitoring of welding: a machine learning approach for optimal set up”**extension of **“On line control of optimal setup a laser sheet system for real time monitoring of welding”**discussed at 14th IMEKO TC10 Workshop Technical Diagnostics, Milan 27-28 June 2016

Major points of extension:

* The introduction has been extended including topics concerning the use of machine learning techniques for image processing.
* The methodology has been remarkably developed for online measurements by reducing the number of images requested for settings assessment.
* The result section has been remarkably enriched with data concerning the application of the machine learning algorithm and its validation.