EvoInspect Planar/Radial: Transmission Measurement System

Intego
Vision Systeme

Our solutions to measure the transmission properties of flat or round plastic parts for the laser plastics welding will sustainably improve your quality

Overview

Intego develops and producescustomized,fully automated inspection systemsfor the plastic processing industry. Thetransmission characteristics of the involved plastic parts are of vital importance for the laser transmission welding process. We offer individual solutions to measure the transmissionfor manual measuring stations as an incoming goodsinspection or for a fully automatic contour measurement to the active control of the laser welding process.

Application

Due to the manufacturing process and material properties, transmission variations along the welding path appear in the transparent joining partner which can decisively influence the welding process. Thus there can be an increased reflection and therefore reduced transmission of the laser radiation in regions of accumulated glass fiber content (e.g. at injection point). As a result this area will be affected by an increased energy loss, so that only a reduced amount of laser energy will be available for the actual welding process. Knowing the transmission profiles the welding technology of Evosys Laser GmbH enables the customer to adjust the welding process according to the locally changed transmission characteristics of the plastic component. This leads to a constant energy input of the joining process and a consistent high quality of the weld seam.

Transmission Measurement

To get a reliable forecast of the transmission behavior of an assembly, it is useful to create a transmission profile along the intended weld seam. Intego's transmission measurement systems, which comply the DVS guideline 2243, are equipped with a laser/sensor unit, allowing a simple and reliable determination of the transmission values of common plastic components.

It is possible to trace either predetermined contours, or individual positions within the plastic parts with the help of the integrated motorized xy stage. With corresponding adjustments of the part fixture, welding contours of new components can easily be trained by means of common CAD file types like dxf. The determined transmission values and profiles can be either passed on to a MES or be used for a customized power control of the laser power of the laser welding process. Figure 1 shows exemplary the transmission profiles of four equal automotive components. The variations of the transmission along the laser welding contours are clearly visible. The recorded transmission profiles can be made available to the laser welding to ensure a constant energy input while the entire laser welding process.

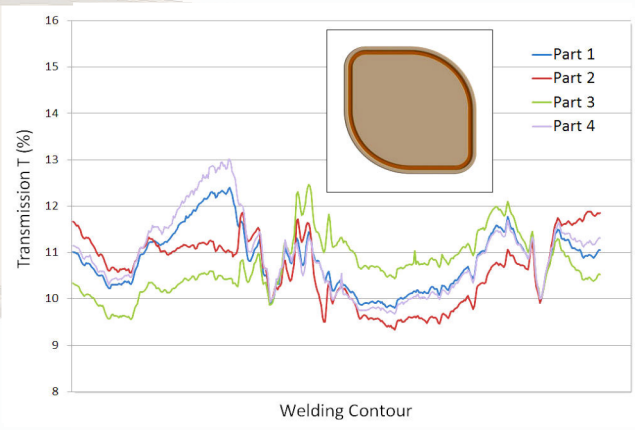

Fig. 1: Component dependent transmission profiles along the welding contour of a typical GFK automotive part

System Technology

Intego offers reliable and applied custom solutions to obtain precise transmission profiles in plastic components. The transmission measurement systems are offset corrected before each measurement (air measurement 100%). Together with the ambient light independent electronics and the accurate offset correction a high resolution and reproducibility will be achieved.

General System Specification

- Transmission measurement at 980 nm (laser class 1)
- Customized beam diameter (e.g., 1 mm)
- Large sensor aperture (up to 10 x 10 mm²)
- Resolution <0.1% transmission
- Measurement precision < 1% transmission
- Space for large component size
- Height adjustable sensor position (lab tool)
- Pilot laser or camera based measurement point visualization
- Transmission measurement is independent of any ambient light
- Integrated display or separate PC
- Measuring points and contours can be defined manually or by CAD data
- Interface to MES or following welding process
- Calibration equipment available
- Component-specific system adjustments possible
- Measurement system analysis software package
- System design either standalone or inline
- Tool calibration based on DIN EN ISO/IEC 17025 certified filters

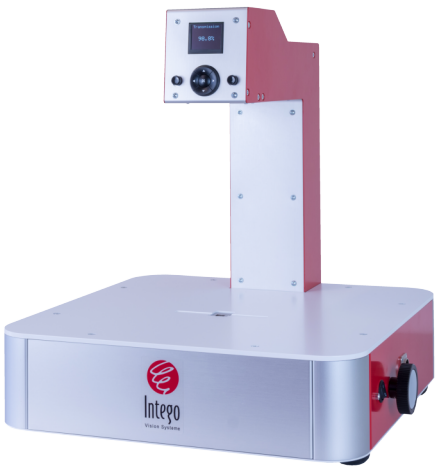

Fig. 2: Standard transmission measurement system EvoInspect Planar for flat parts

Your advantages in using Intego Vision Systems are:

- Fast and objective control
- Reduced inspection costs
- Immediate feedback of production quality
- Inspection statistics and protocols
- Effective process optimization
- Adaptations to your needs

Don't hesitate to contact us with yourtechnical questions!
Intego has many years of experience in challenging image processing. We are able to find solutions for your technical topics!

What are our customers' benefits?
With our inspection systems, our customers achieve amortisation times of well under one year. To be able to provide a risk-free estimation of implementation costs, we offer free feasibility studies based on sample parts. Get in touch with us!

What are Intego's benefits?
For our customers we are long-term and reliable partners. Due to our specialization we continue to offer high-quality, but reasonably priced solutions. Intego is acting worldwide.

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