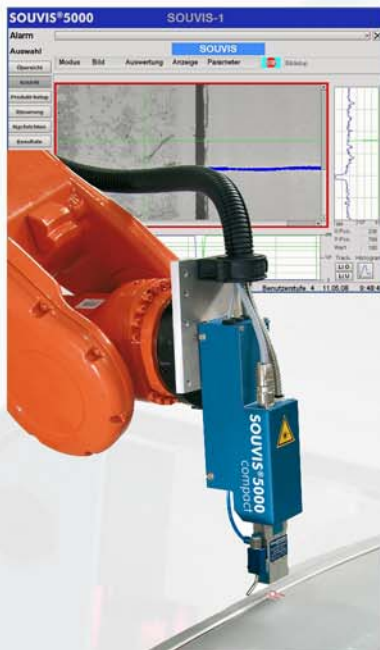




SOUVIS® 5000

Seam inspection system - automatic monitoring of welded and brazed seams



The SOUVIS® 5000 image processing system monitors welded and brazed seams in a fully automated process. A profile analysis enables the calculation of geometric 3D information (e.g. the convexity and concavity of the seam), while special algorithms simultaneously analyse a high-resolution grey scale image of the seam. The smallest defects, like pores and weld pool expulsions from 100 µm upwards can thus be detected. Illumination units adapted to the application provide optimal image quality and a correspondingly high level of reliability in detection.

>> EFFICIENT

- high monitoring speeds, up to 30 m/min
- high level of detection reliability
- minimal false detection rates

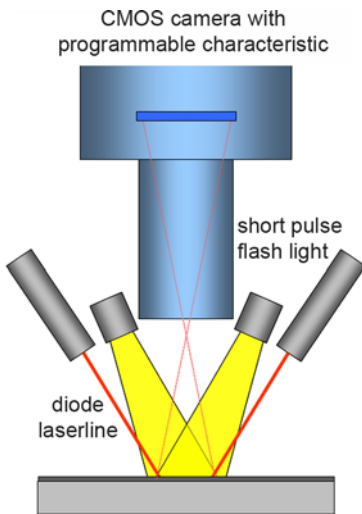
>> FLEXIBLE

- adaptable for all welding and brazing applications
- fits to all robot types
- integration in existing manufacturing cells and machines
- all common field bus interfaces available

>> USER-FRIENDLY & SAFE

- user interface tested in industrial applications
- user levels with flexibly designed access rights
- simple set up thanks to parameter assistant
- many references from the automotive engineering industry

Measuring Principle & User Interface



Measuring principle

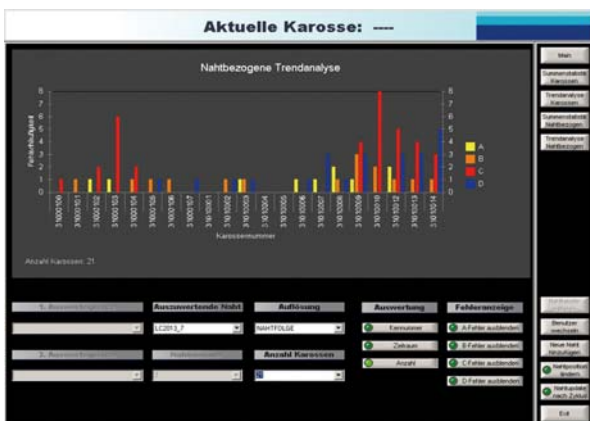
>> In industrial manufacturing, image processing technology plays a key role in automated process and quality monitoring. SOUVIS® 5000 uses a CMOS camera with a programmable response characteristics and two types of illumination lighting. This combination enables the simultaneous capture of the geometrical data and the surface characteristics of the joint.



User interface

>> The application can be parameterized using the appropriate menus. Measurements and results of the current application are displayed in a way that is easily understood.

The user interface in the illustration on the left shows the 2D grey image analysis of a welded seam and two laser profile lines.



Statistics module

>> The statistics module enables the results and analyses to be documented (can be freely parameterised). It visualises quality data, adapted to customer-specific requirements.

A product-related trend of various defect categories which have occurred over a defined period of time or with a defined number of parts is shown in the illustration on the left.

Examples of Application



Laser-welded differential

>> An example for Precitecs large experience in laser joining with concerted process and quality control is the welding of gear parts with SOUVIS® 5000. The inspection head can be switched fully automatically from the preceding operating mode for the position control of the laser beam to the succeeding measurement of the seam position and quality. Circumferential weld seam allow correlating the joint position to the seam position and therefore the system evaluates lack of fusion caused by faulty seam positioning even perfect seam appearance.



Inspection of the laser-brazed seam at AUDI

>> A profile analysis is used to calculate geometrical 3D information, like the convexity and concavity of the brazed seam, while more characteristics are analysed by means of a high-resolution grey scale image of the seam surface. Local defects such as pores from 100 µm upwards can thus be detected.



Inspection of the laser-brazed seam on the BMW decklid

>> The SOUVIS® 5000 quality monitoring system was specially adapted to perform fully automated decklid seam inspections - it offers an efficient and reliable alternative for manual visual inspection.

Typical seam defects are displayed on the monitor. The measurement data is compared with preset, part-dependent threshold values and classified as "OK", "Rework" or "Reject".

Technical Specifications of SOUVIS® 5000

SOUVIS® 5000 compact primarily used for laser welding and brazing seams



max. operating area	10 mm x 10 mm
resolution x/y (z)	10 µm (16 µm)
detectable defect size (application dependent)	> 100 µm
max. inspection speed (application dependent)	30 m/min.

SOUVIS® 5000 macro primarily used for MIG, MAG, TIG seams



max. operating area	35 mm x 35 mm
resolution x/y (z)	35 µm (55 µm)
detectable defect size (application dependent)	> 350 µm
max. inspection speed (application dependent)	30 m/min.

>> The SOUVIS® 5000 optical seam inspection system can be used in

**welding machines,
robot equipment,
gantry systems.**



The given data was generated for a typical application and may be different given other circumstances. Furthermore misprints, changes and/or innovations may lead to differences in the listed measurements, technical data and features. Therefore **all information is non-binding and technical data, measurements as well as features are not guaranteed by information in this product information.**

01/Bg/24.08.2009



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