

Shapeline Strip Compact

A flexible, non-contact planity measurement system for narrow material

If you are in the business of producing narrow, flat material, you probably need a device for cross-bow and/or flatness measurement to effectively improve the strip planity. If so, take an extra look at the Shapeline Strip Compact system. The small external dimensions hide a measuring system with the same high qualities and performance as Shapeline's larger models.

With Shapeline planity measurement system can you not only improve the product quality, but you will also get a 100% quality assurance system that notifies you whenever the planity exceeds your tolerance level.

The Shapeline Strip Compact

A Shapeline Strip Compact system consists of one or more sensors and a central unit with connecting cabling. After connecting your monitor, keyboard and mouse the system is ready for use.

Mechanically, the sensor is encapsulated to deal with most cold applications. In dirty environments, the glass surface can easily be wiped off. In order to protect the computer unit from process dust, it can be placed either in a cooled Shapeline cabinet or protected in the operator's room, which may be located 100 meters away.

Integration into the production line is straightforward. Normally the sensor is

placed in a mounting bracket that locks the sensor in position. By using several mounting brackets, a single sensor can be moved between the lines within a matter of minutes.

Each line equipped with a sensor will have a 100% quality control for product widths up to 100 mm (glossy surfaces) or 300 mm (matte surfaces).

Typical applications

The system is built for planity measurement and quality assurance of continuous cold metal strips, such as carbon steel, galvanised steel and stainless steel, aluminium, copper, brass, etc., but almost all types of material can be checked for planity. The

surface is checked when the material passes by, contactless, accurately and continuously. Defective parts are reported to an operator computer and can then be used for process control, removal of a defective part, or as a notification that the process is faulty. The measurements are of a great help when the cutting or slitting of the strip is to be optimised.

Furthermore, with this system you can study how different process settings affect the strip. This way you can better understand what is happening in each step of your line.

- B**enefits **A**ccurate planity quality assurance in the production line. Improvement of product quality.
- B**enefits **N**o moving parts, maintenance-free operation.
- B**enefits **A** cost-effective solution for narrow strip widths up to 100-300 mm, depending on the material.
- B**enefits **I**nformation for optimal cutting, slitting and grading.
- B**enefits **F**lexible architecture with a number of possibilities, now and in the future.



How does it work?

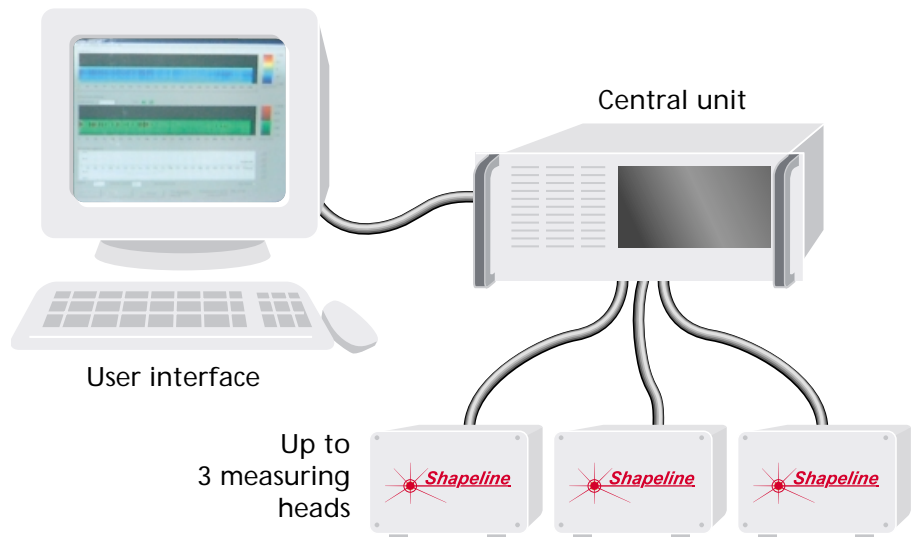
The Shapeline Strip Compact system is based on proven laser measurement technology. A continuous laser line is projected onto the strip, and a camera system observes the line from a different view. If the material is perfectly flat, the line will be straight. However, the smallest imperfection in planity will immediately introduce a bending of the line that will be detected by the camera system. The software computes the bending in microns.

The result is a simultaneous measurement of more than 600 points, a high-precision surface profile, independent of strip movements and vibrations. Each profile is the target of an exhaustive profile evaluation that consists of several hundred tests per profile. If the specification is not fulfilled in any part, an alarm is generated, and the area is marked red in a defect map. Other optional results can also be presented.

Functions

Standard functions include:

- User interface software for software configuration, calibration and manual strip data input (For practical reasons, a monitor, keyboard and mouse are not included)
- On-line current cross-bow profile
- Automatic or manual registration of strip identity (date and number) to enable traceability of old strip data
- Profile evaluation software with a user interface for profile definition and tolerance settings. With profile map and defect map
- Modem and software for on-line support



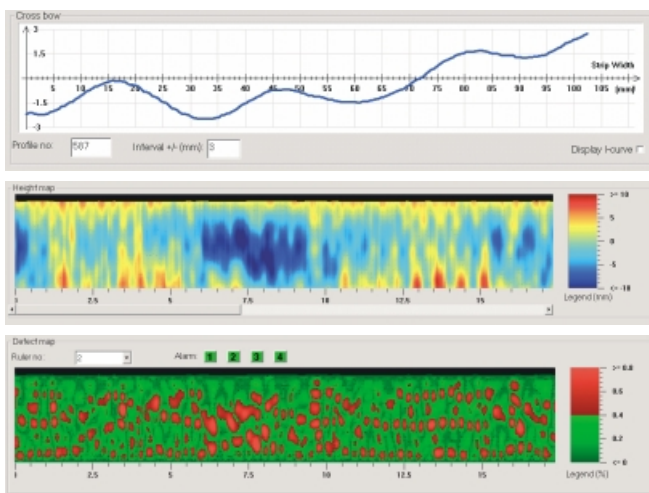
- Ethernet interface
- Viewer software for off-line data analysis

Optional functions that can be provided upon request:

- Pulse transducer interface with software for constant profile per meter ratio for qualification of strip position
- Printer interface and measurement protocol printouts
- Profi Bus interface
- Flatness (I-unit profile) measurements
- Statistics
- Computer cabinet for rough production environment
- Arrangement with up to three sensors connected to one central unit
- Data safety package solutions
- Fast system, providing up to 300 profiles per second

Fast customer support

The system has been dimensioned for optimal reliability with a minimum of maintenance. However, to provide fast customer support, all systems are equipped for off-site service and updating via modem or network.



The current profile (upper graph) is updated once per second and displayed in real-time to a high precision.

The profiles also build up a height map (middle graph) that shows the overall planity of the strip. In this map, the horizontal axis represents strip length and the vertical axis position in width.

The profiles are also evaluated in real time, and the result is a defect map (lower graph).

Technical specifications

(The technical specifications are system specific. Please contact Shapeline for further details.)

FIELD-OF-VIEW: 10-100 mm, depending on the application.

STAND-OFF DISTANCE: 25-500 mm, depending on the application.

ACCURACY (STANDARD DEVIATION): Down to 1 micron per measurement point. The accuracy varies with point density, number of profiles per second and field-of-view.

MEASUREMENT FREQUENCY: User selectable over a wide range, up to 25 (300 for fast option) profiles per second. The frequency can also be controlled by a pulse transducer.

USER INTERFACE: Monitor, keyboard and mouse (customer supplied).

HARDWARE INTERFACES: Ethernet, printer port, pulse transducer interface.

For other interface requirements, contact Shapeline.

OPERATING CONDITIONS: 0-50°C. Humidity: 10-90%, non-condensing.

PHYSICAL SIZE: 300x208x120 mm (sensor, LxHxD, without mounting brackets).

POWER REQUIREMENTS: 220-240 VAC, 150 W max.

