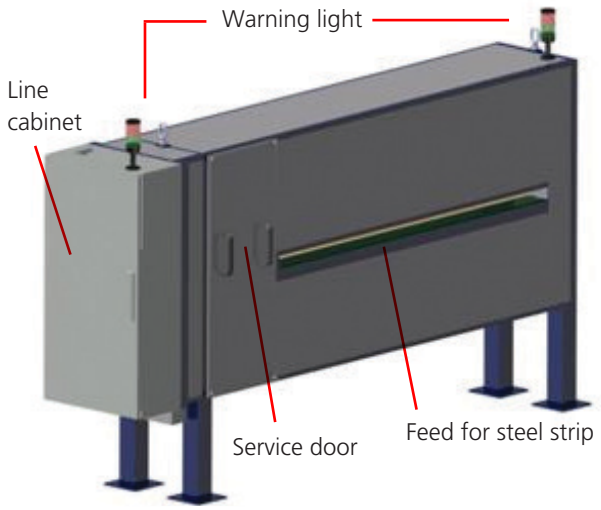
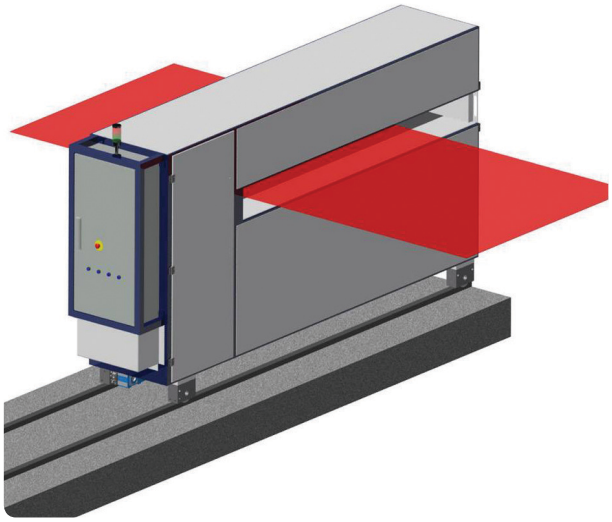
AWC-1800 - Automatic weld control

– NDT scanner for automatic in-line detection of coil weld quality

The AWC-1800 is an instrumentation for automatic in-line quality control of welds joining coils for continuous strip processing. The system is designed for non-contact detection of area weight distribution in a strip segment covering the joint weld and the neighbor sector of the joined steel coils. The system can be placed right after the welding machine.



Sketch of the standard AWC-1800.



Sketch of mobile AWC system that easily can be taken out of the production line.

Application

The main objective of the AWC-1800 is to serve as an automatic warning system indicating risk of strip breakage caused by non-conforming quality of the coil joint weld. The instrumentation can be a valuable tool for breakage prevention in:

- continuous annealing lines
- rolling plants
- inspection lines
- galvanizing lines.

The AWC-1800 data is usable for customer demands like:

- automatic evaluation of weld quality
- welding machine regulation
- product quality documentation.

Features

- Alarm for non-acceptable quality
- Screen display showing area weight and material thickness in weld zone
- Screen display showing width of weld zone
- Screen display showing profiles of area weight and thickness of steel plate along the weld zone
- Storing of displayed data together with other data for quality documentation
- Auto calibration.

Design and function

The AWC-1800 houses an X-ray based detection system. It is constructed as a steel plate covered frame to be placed in the production line right after the welding machine. The welded strip is moved through a detection zone inside the frame with short stops each time a strip weld arrives to the detection zone. The AWC-1800 automatically runs a scan along the weld each time the strip movement is stopped.

Signals from the detection system are transmitted to a cabinet with PC and monitor and processed according to customer defined demands. The X-ray emission system and the radiation zone are shielded. The shielding reduces external radiation to well below acceptable levels. The instrumentation is equipped with a number of safety installations.

Measuring principle

AWC-1800 uses high-resolution X-ray transmission to measure area weight distribution of metal in a segment along the joint weld between steel coils. The intensity of radiation transmitted through the product is detected by a high-resolution detector array. The data from a weld scan are processed to show the area weight distribution in a 140 mm wide sector along the weld.

Calibration and maintenance

The AWC-1800 runs a quick self calibration sequence prior to each scan. A base calibration may be done with six-month interval. The instrumentation is very robust and, apart from regular check and cleaning of the detector surface for debris, almost maintenance-free. Regular maintenance of the X-ray source is not required.

AWC-1800 specifications

Line width	1800 mm
Thickness range	0.1 - 3 mm
Typical scanning speed	200 mm/sec.
Evaluation time	< 1 sec.
Image resolution	0.5 x 1 mm
Min size of detectable cracks	< Image resolution
Thickness resolution	< 3 %
Time of measurement	< 10 sec.

Special designs on demand

We can design the AWC-1800 according to your specific production line, needs and requirements. Please contact us for further information.

Further information
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