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.
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.