

Krautkramer Testing Machines

Seamless Tubes

When seamless tubes are used in safety part applications, e.g. in the complete field of power plants, the nuclear industry, oilfields and in the area of general safety such as car construction and aerospace, they are in many cases tested with automatic ultrasonic testing machines. Nondestructive testing of these tubes is exactly determined according to type and scope in application-related specifications. Seamless tubes are normally tested ultrasonically during a final inspection.

Due to the fact that seamless tubes, as opposed to welded tubes, do not have any particular weak areas regarding production, they have to be tested along their total length and total circumference. Testing for longitudinal flaws, transverse flaws, laminations as well as wall thickness measurement is required depending on tube application. In the oilfield industry the demand for testing of oblique flaws on tubes is on the increase.

These high demands on the ultrasonic test, with a simultaneous proportionally large production output especially in the small and middle sized tube diameter ranges, can only be fulfilled by a rotational probe system. In doing this, the tubes are transported to the testing machine on a linear roller conveyor. A guiding and transporting device, also known as the "test bench", guarantees a constant run-through speed and accurate tube guidance during the test.

There are various rotation testing machines (ROT family) available depending on the tube's diameter range. All of these work on the principle of the rotating water chamber, testing with water delay



(wear-free tube contact) and a loss-free signal transfer using special slip ring systems. In addition to flaw testing, the geometrical data are also monitored, e.g. wall thickness, diameter, ovality and eccentricity. Test speeds between 30 and 120 m/mm are achieved depending on the type of testing machine, number of probes and flaw lengths.

Our CLUSTER technique is used for large diameter tubes which cannot be tested with rotation testing machines and also for tubes having a middle range diameter but being produced in lower batch numbers. The CLUSTER is a special probe holder containing up to 9 probes for testing longitudinal flaws, transverse flaws, oblique flaws as well

as laminations and wall thicknesses. It is normally fitted with spiral tube transport and test mechanics with 4 CLUSTERS symmetrically arranged (90°) around the tube. It is also possible to have a configuration with the tube rotating on the spot and the CLUSTERS travelling along the tube crest.

All tube testing machines are equipped with latest state of the art computer controlled and monitoring electronics. A master PC enables easy parameter entry via a graphics user interface with stored data and also extensive evaluation of test results with storage and hardcopy reporting.

GE imagination at work



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