P-scan – Automatic Ultrasonic Inspection

Introduction
The P-scan system is a computerised ultrasonic system, developed by FORCE Technology for automatic, mechanical or manual ultrasonic examination of welds and materials.

The system has documentation and storage facilities for all data related to each inspection operation, and include visualisation of the inspection results in the form of images of the material volume examined. It enables the operator to examine an object from a distance by use of a remote controlled scanner device and present the data in a manner easier to understand by the interpreter.

The P-scan system was developed and has been used since the 1980’s and is under continuously improvement.

The P-scan system allows for simultaneous collection of data from more transducers and/or simultaneous collection of different types of data from the same transducer. Projection images and the corresponding A-scan data can thus be created/collected and saved simultaneously.
The P-scan system provides A-scan, B-scan, T-scan (thickness measurement) and ToFD (Time of Flight Diffraction) mode including averaging for sizing of defects.

Furthermore, the system provides projection images of the object under examination, e.g. images of the weld or part of an object. In the three projection images, called TOP, SIDE and END views, the flaws which have been detected are automatically shown at their correct location.

P-scan is named because the processed data are depicted in so called Projection View Images and the system is then called P-scan in short for Projection-view-Scan.

Top view equal to scanning surface and X-position
Side view equal to Z-position / depth
End view equal to Y-position and possible to measure Z position.
Flexible inspection set-up
P-scan and ToFD are a very command inspection set-up, the Psp4 inspection system are flexible according to the arrangement of the inspection set-up types depending on the customers’ requirements.

P-scan for weld inspection

T-scan for corrosion mapping

Through Transmission

ToFD for detection and sizing

Full A-scan recording for off-line processing
**Manipulators**

*Standard manipulator*
A series of standard or special purpose scanners have been developed for the P-scan system, some manually controlled others automatically controlled. Some are primarily designed for ultrasonic inspection of welds in nuclear power plants.

The scanners can be used with different probe scanning modules (Y-modules) for a specified number of probes and probe displacements. The automatic weld scanners has water couplant supply and automatic water flow regulation. The scanner control is carried out from the P-scan unit or from a hand-held remote control unit.

*Specially developed manipulators*
Special components need special manipulators. E.g. if the space around a component (can be a pipe through a concrete shield) is limited, a special scanner can be build in order to inspect the component with as much as possible coverage of the weld.

FORCE Technology develops manipulators according to the costumers requirements in order to fulfil the inspection task as good as possible and in order to cover as much as possible of the weld or component to be inspected.

The tolerances for the manipulator accuracy in the X and Y position will usually be within ± 5 mm.

To obtain the variations of the Manipulators from FORCE Technology and control by our P-scan inspection software, you have to choose FORCE Technology as your Partner.

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