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Abstract
In this paper, the system takes advantage of the X-ray to determine sheetmetal or the degree of internal damage of sample by the position of output pulse. The parts of this digital signal position detection system can be carried out by the field programmable gate array (FPGA). FPGA can be used by the controller in controlling circuit capability and also offers the large volumes of gate arrays to store complex circuit in one chip. Other advantages are high capacity, low power consumption and high secret and programmable. Specifically, (1) X-ray shines on the sheetmetal for producing a reflective pulse signal, (2) this reflective pulse signal is inputted to the pre-amplifier of high sensitive position diction system, (3) the output signal will be transferred and then be downloaded into FPGA. In this digital circuit, signal will be used for determining the message, which is adopted by discriminator circuit. The noise of this signal will be eliminated by infinite impulse response filter (IIR filter), and then the data will be saved in the waveform memory in FPGA Finally, we can determine the degree and the position of internal damage of our sample through the distribution of X-ray energy by reading the data in its unique software.
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