

Surface Hole Defect Detection of Rolled Sheets Based on Pixel Classification Approach

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Abstract : Rolling is a pressure treatment technique that modifies the shape of steel ingots or billets between rotating rollers. During this process, defects may form on the surface of the rolled sheets and are likely to affect the performance and quality of the finished product. In our study, we developed a method for detecting surface hole defects using a pixel classification approach. This work includes several steps. First, we performed image preprocessing to delimit areas with and without hole defects on the sheet image. Then, we developed the histograms of each area to generate the gray level membership intervals of the pixels that characterize each area. As we noticed an intersection between the characteristics of the gray level intervals of the images of the two areas, we finally performed a learning step based on a series of detection tests to refine the membership intervals of each area, and to choose the defect detection criterion in order to optimize the recognition of the surface hole.

Keywords : classification, defect, surface, detection, hole

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