ERROR DETECTION OF THE TOWER PARTS IN TOWER FABRICATION INDUSTRY BY IMAGE PROCESSING

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Abstract: Power transmission lines play an essential role for ensuring the reliability of electrical power networks. The precision of each component is of utmost importance in the tower manufacturing industry, where steel components are manufactured and integrated to build these towers. Conventionally, the quality control procedure depends on manual measurements, which is a laborious and time-consuming job, particularly for intricate parts. A novel image-based quality control approach is presented in this work as a potential alternative to traditional human-based inspection techniques. The proposed methodology employs MATLAB for the purpose of digital image processing, with the objective of improving precision and decreasing the duration of inspections. Object detection, line detection, hole detection, and object reconstruction on the coordinate plane are the main stages that comprise the process. Finally, we compare the actual dimensions of the system with those in the technical drawing. The experimental results provide evidence of the efficiency and efficacy of the suggested approach, therefore emphasizing its potential to enhance the efficiency of the quality control process in steel tower manufacturing.

Keywords: Randon Transform, Image Processing, Error Detection.