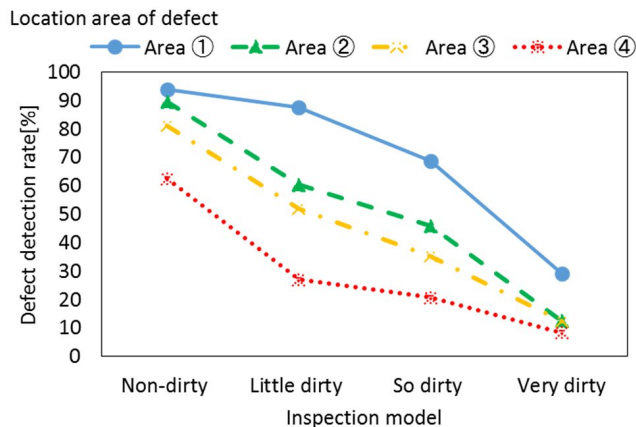


Effect of dirty inspection surfaces on the accuracy of visual inspection

16 December 2019



Relationship between dirt levels of inspection surface and defect locations. Credit: University of Electro-Communications

To supply high-quality products to the market, visual inspection by human senses is conducted in many manufacturing industries. It is generally recommended that visual inspection for a high-quality product be performed in a clean room.

However, in situations where the production process becomes more complex and more outsourcing in recent years, visual inspection is not often performed in a clean room because of constraints of existing equipment and economic problems.

Now, Ryosuke Nakajima at UEC Tokyo and colleagues at Aoyama Gakuin University have utilized [peripheral vision](#) to clarify experimentally the relationship between dirt levels of inspection surfaces and defect detection in visual inspection.

The experiment was a three step processes: analyze images of inspection surfaces in an actual factory and then create an inspection model for dirt

density based on the pixel values of the images; design experiment using dirt levels of inspection surfaces, defect locations, and defect characteristics as experimental factors; examine the effects of these factors on the defect detection accuracy with 12 subjects.

A sudden reduction in the defect detection rate was observed as the inspection surface became dirtier.

The research shows the importance of a clean inspection surface for a highly accurate visual inspection process, and it is important to take measures such as making the [production process](#) in a [clean room](#) and cleaning an inspection surface before the visual [inspection](#) process.

More information: Ryosuke Nakajima et al. The Relationship between Dirt Levels of Inspection Surface and Defect Detection in Visual Inspection Utilizing Peripheral Vision, *Industrial Engineering & Management Systems* (2018). [DOI: 10.7232/iems.2018.17.1.102](#)

Provided by University of Electro Communications

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