

# **Root cause analysis using extended cause-effect chain analysis plus method for cleanroom relative humidity problem in the semiconductor industry**

## **Abstract**

This study presents a systematic root cause analysis (RCA) to investigate the relative humidity (RH) problem. The RCA method, known as extended cause-effect chain analysis plus (CECA+) is proposed. The method provides a systematic and attractive manner to manage multi-inter relationships of causes and effects of a problem. Based on the solutions idea generation and verification processes, a final solution idea was obtained. The cleanroom RH trend showed significant improvement that it met the specification of fewer fluctuations at <50%. In addition, the cleanroom temperature trend remained unchanged at the normal allowable cleanroom operation temperature target of < 23.5°C. These results indicate the proposed solution idea is effective for the problem being investigated. The proposed method has the potential to be applied independently to solve other complex manufacturing problems due to its generic structure design. Finally, it can be applied concurrently with other continuous improvement methodologies such as Lean Six Sigma.

## **Keywords**

Extended Cause-Effect Chain Analysis Plus; RCA; Root Cause Analysis