

Title: Systematic Mechanisms Limited Yield: Trends, Practices and Challenges

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Abstract: The authors carried out a survey of yield loss trends and yield management practices across the 350nm, 250nm and 180nm technology nodes at five International Sematech member companies. The focus of the survey was yield losses from systematic mechanisms, i.e., losses not attributable to stationary, random particulate contamination. The yield data from this study, combined with prior data, suggest that industry average yields appear to be worsening with each succeeding technology generation since about the 250nm generation and that a primary cause is an increase in systematic mechanism yield loss. We review prevalent and emerging types of systematic losses, we identify industry best practices for identifying, quantifying and addressing systematic mechanism yield loss, and we provide recommendations for improved practices and further research.