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Global Trend of Precision Cleaning Technology and the
Application in Hard Disk Drive Industry

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As industry trend for hard disk drive and related electronic devices are moving towards high capacity and miniaturization. A big challenge is to find increasing efficient ways to clean the parts which are regards as the most stringent in cleanliness. The critical issues include the methodology for identifying the contaminants and how to choose a correct cleaning chemical and cleaning technology. Today's hard disk media particularly the perpendicular recording media is capable store up to 300GB per disk under which the distance between the recording head/disk have to be reduced to a few nanometers. It will bring more difficulties for increasing the reliably and disk capacities. On the other hand, all components within the hard disk drive are required to avoid submicron particulate contamination ($<0.1\mu\text{m}$). Megasonic and ultrasonic cleaning are the most effective and promising technology to remove such contaminants. This presentation will discuss about the technical trend and possible solution of precision cleaning and the strategy for selecting the cleaning chemicals and technologies to meet the cleanliness requirement through a case study.