



Comprehensive Gap Analysis of Cleanroom Characteristics in an ISO 14644-1 Class 7 Facility at Polibatam

Final Project

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Statement of Authenticity of Final Project

I, the undersigned, certify that the contents of part or all of my Final Project entitled: "Comprehensive Gap Analysis of Cleanroom Characteristics in an ISO 14644-1 Class 7 Facility at Polibatam" is my own work, completed without the use of materials that are not permitted, and is not the work of other parties which I acknowledge as my own work. All references cited or referred to have been written in full in the bibliography. If it turns out that my statement is not true, I am willing to accept sanctions in accordance with applicable regulations.

Batam, 10 Agustus 2026



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Approval sheet

The Final Project is structured to fulfill one of the requirements for
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Abstract

A clean room is an environment with strict control of air particles, temperature, humidity, pressure, and airflow to maintain production quality in the semiconductor industry. This study aims to analyze the suitability of clean room characteristics to the ISO 14644-1 Class 7 standard using the gap analysis method. Data were obtained through direct measurements using a particle counter, hot wire anemometer, airflow meter, and CPS airflow meter. The parameters analyzed included particle count, airflow velocity, temperature, relative humidity, and differential pressure, which were compared with the standard to determine the gap value and level of compliance. The results showed that the particle count and differential pressure met the standard, while the airflow distribution, temperature, and relative humidity still showed discrepancies. Improvements to the HVAC system, humidity control, air balancing, and regular maintenance of the HEPA filter are needed to improve clean room performance and ensure compliance with the ISO 14644-1 Class 7 standard.

Keywords: Clean Room, Characteristic, ISO 14644-1, Gap Analysis, Semiconductor

Foreword

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