

CASE STUDY

CIO

CENTRO DE INVESTIGACIONES EN ÓPTICA

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OVERVIEW

The Centro de Investigaciones en Óptica (CIO) in León, Guanajuato, Mexico, is a premier research institution specializing in the field of optics. For its cutting-edge research, maintaining ultra-clean environments was critical to ensuring the quality and precision required in the optical industry. The challenge was to design, build, and commission a cleanroom facility that met stringent ISO 7 standards, ensuring optimal conditions for both human and machine-related processes.



PROJECT CHALLENGES

Optical research and production processes are highly sensitive to airborne particles, which can cause micro-scratches and other defects on delicate optical surfaces. Key considerations for this project included: Minimizing airborne particle contamination; Designing filtration systems to mitigate particle buildup and gas emissions from research ovens; Maintaining strict environmental parameters: 18°C, 50% relative humidity, and less than 30,000 particles under 0.3 microns per cubic foot; Addressing electrostatic discharge risks to prevent damage to sensitive electronic components.

PROJECT DESCRIPTION



Cobeal was tasked with designing and constructing a 1,300 sq. ft. ISO 7 cleanroom inside CIO's existing facility. The project required a retrofit of the building and the integration of advanced systems to meet the demanding environmental and operational standards.





SOLUTION

Cobeal leveraged its expertise in cleanroom engineering and installation to deliver a fully operational ISO 7 cleanroom:

- **Design and Engineering:** Customized cleanroom layout and environmental controls to meet CIO's specific requirements.
- **Retrofit and Construction:** Installation of proprietary air handling units, industrial dehumidifiers, walls, ceilings, and advanced filtration systems.
- **Filtration Mitigation:** Additional measures to address gas emissions from research ovens, ensuring air purity.
- **Environmental Controls:** Precise regulation of temperature, humidity, and air exchange rates to maintain ISO 7 standards.

The facility underwent third-party validation, including theoretical and particle count verifications, confirming its compliance with ISO 7 requirements.


RESULTS

Following the cleanroom's commissioning:

- CIO achieved ISO 7 certification, ensuring the environment met the highest cleanliness standards for optical research.
- Research in optics and electronics began immediately, supported by the facility's controlled environment.
- The cleanroom's performance enabled CIO to conduct advanced research without concerns of contamination or environmental instability.

Cobeal's innovative approach and technical expertise delivered a state-of-the-art cleanroom that enhanced CIO's Research capabilities.



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