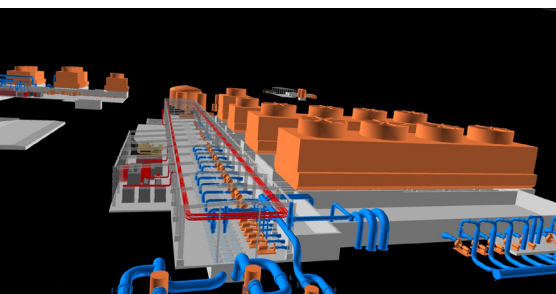


# Manufacturing Infrastructure Services

**The Manufacturing Infrastructure Services (MIS) practice provides integrated mechanical, electrical, piping, structural, civil, and HVAC engineering to support the design and construction of new facilities or the modification, upgrade, or repair of existing facilities.**



## PRE-PROJECT PLANNING (PPP)

CEC projects, like any successful journey, start with a roadmap to success. Our staff has the broad project expertise and experience to guide you through the early stages of conceptual design. Our pre-project planning services include:

- Front-End Loading (FEL) Studies
- Process Flow Modeling
- Definition and Refinement of Project Objectives
- Conceptual Design
- Preliminary Engineering
- Light Detection and Ranging (LiDAR) Scanning of Existing Conditions
- 3D Renderings
- Facility General Arrangements
- Equipment Specifications
- Utility Sizing
- Scheduling
- Work Breakdown Structure (WBS)
- Identification of Long Lead-Time Equipment
- Total Installed Cost (TIC) Estimates
- Risk Analysis
- Permitting

## DETAILED DESIGN

CEC offers multi-disciplinary design solutions tailored to your needs and the needs of your contractors. Value engineering and early engagement of the construction manager and installation contractors allows for clear and efficient designs with reduced construction durations, leading to lower construction costs and a faster time to market. Our detailed design services include:

- Project Management
- 3D Design
- Mechanical/HVAC Engineering
- Piping Engineering
- Electrical Engineering
- Civil Engineering
- Structural Engineering
- Architectural Design
- Scheduling
- Estimating/Cost Tracking
- Document Control

## CONSTRUCTION SUPPORT

Our design team works with the construction manager and installation contractors to provide required information and clarifications allowing them to continue work on site and avoid costly downtime and errors.

- Review of Submittals and Shop Drawings
- Review and Response to Requests for Information (RFI)
- Contractor Change Order Review
- On-site Construction Audits
- International Building Code (IBC) Inspections
- As-Built Surveys and Drawings