

# MECHANICAL DESIGN ENGINEERING EXCELLENCE

Hospitality, High-Rise & Mixed-Use Developments

HVAC SYSTEMS, FIRE PROTECTION PIPING DESIGN,  
BIM COORDINATION



Hilton Residences

# MECHANICAL DESIGN ENGINEER

**Professional Summary:** Dedicated Mechanical Engineer with extensive experience in designing high-performance MEP systems for ultra-luxury hospitality and iconic high-rise developments in internationally.

- HVAC Design
- Fire Protection
- Booster Systems
- Sustainable BIM
- Revit MEP Expert
- Navisworks Pro
- ASHRAE/NFPA
- Fire Code

**Software Mastery:** Revit, AutoCAD, SolidWorks, ANSYS, BIM 360, Navisworks Manage.

# ENGINEERING EXCELLENCE & SUSTAINABILITY



## ENERGY EFFICIENCY

Optimizing thermodynamic cycles and equipment selection to minimize building carbon footprints.



## OCCUPANT COMFORT

Ensuring precise thermal control and superior indoor air quality for ultimate luxury experiences.



## RELIABILITY

Designing redundant, high-uptime systems critical for 24/7 hospitality operations.



## INNOVATION

Leveraging cutting-edge BIM and smart building technologies for future-proof engineering.



## LIFECYCLE VALUE

Focusing on long-term operational efficiency and reduced maintenance costs for owners.



## SUSTAINABILITY

Adhering to Estidama and Dubai Green Building Regulations for ethical development.

# MECHANICAL SYSTEMS FOR LUXURY HOSPITALITY

- ✓ **Guest Comfort:** Silent operation, precise temp control, and localized ventilation.
  - ✓ **Indoor Air Quality:** Advanced HEPA filtration and ERV for desert climates.
  - ✓ **Energy Performance:** Meeting Hilton's rigorous sustainability benchmarks.
  - ✓ **Operational Reliability:** Seamless hot water and cooling 24/7/365.
  - ✓ **Smart Integration:** Room Management Systems (RMS) interfaced with MEP.
-

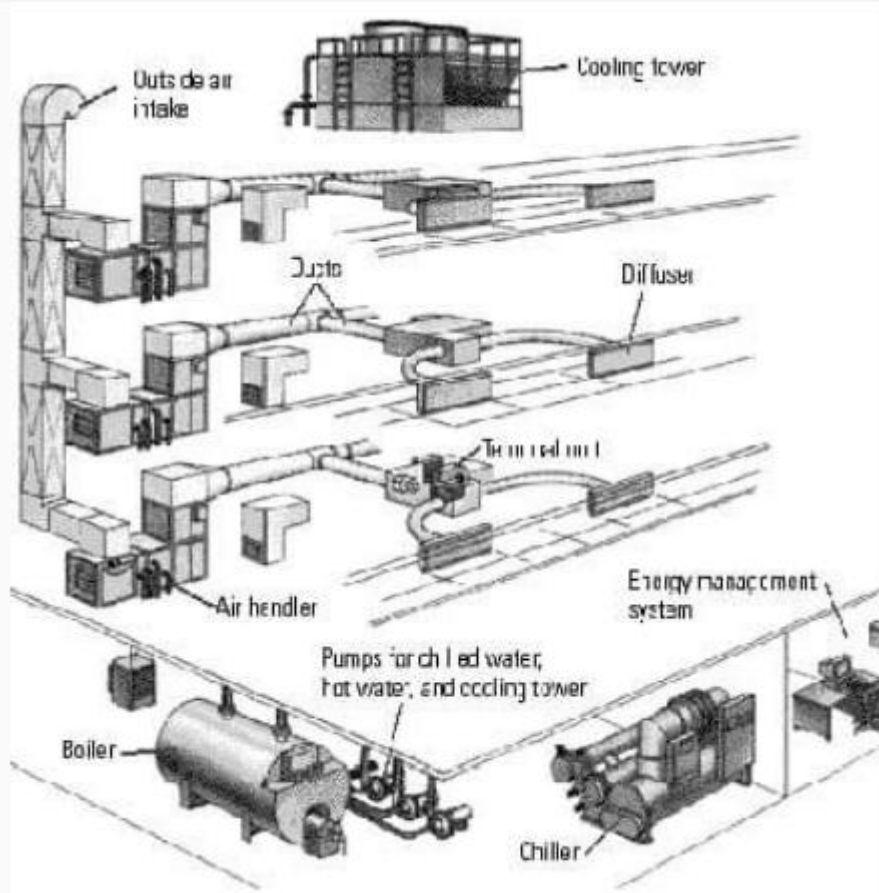
# FROM CONCEPT TO OPERATION



*A holistic lifecycle approach ensuring design integrity from initial sketches to final facility handover.*



# HIGH-PERFORMANCE HVAC DESIGN



## DESIGN METHODOLOGY

Utilizing HAP/Trace for rigorous cooling load calculations:

- **Solar Gain:** High-performance glazing analysis.
- **Fresh Air:** ASHRAE 62.1 fresh air requirements.
- **System Selection:** Water-cooled chillers vs Air-cooled.
- **Air Distribution:** Low-velocity silent ducted systems.

**Systems:** Chilled Water, VRF, DX, AHU/FCU, FAHU with ERV.

# MIXED-USE CASE STUDY

## 5-STOREY LUXURY TOWER

Parameters: 120,000 sqm GFA | 14,500 TR Load

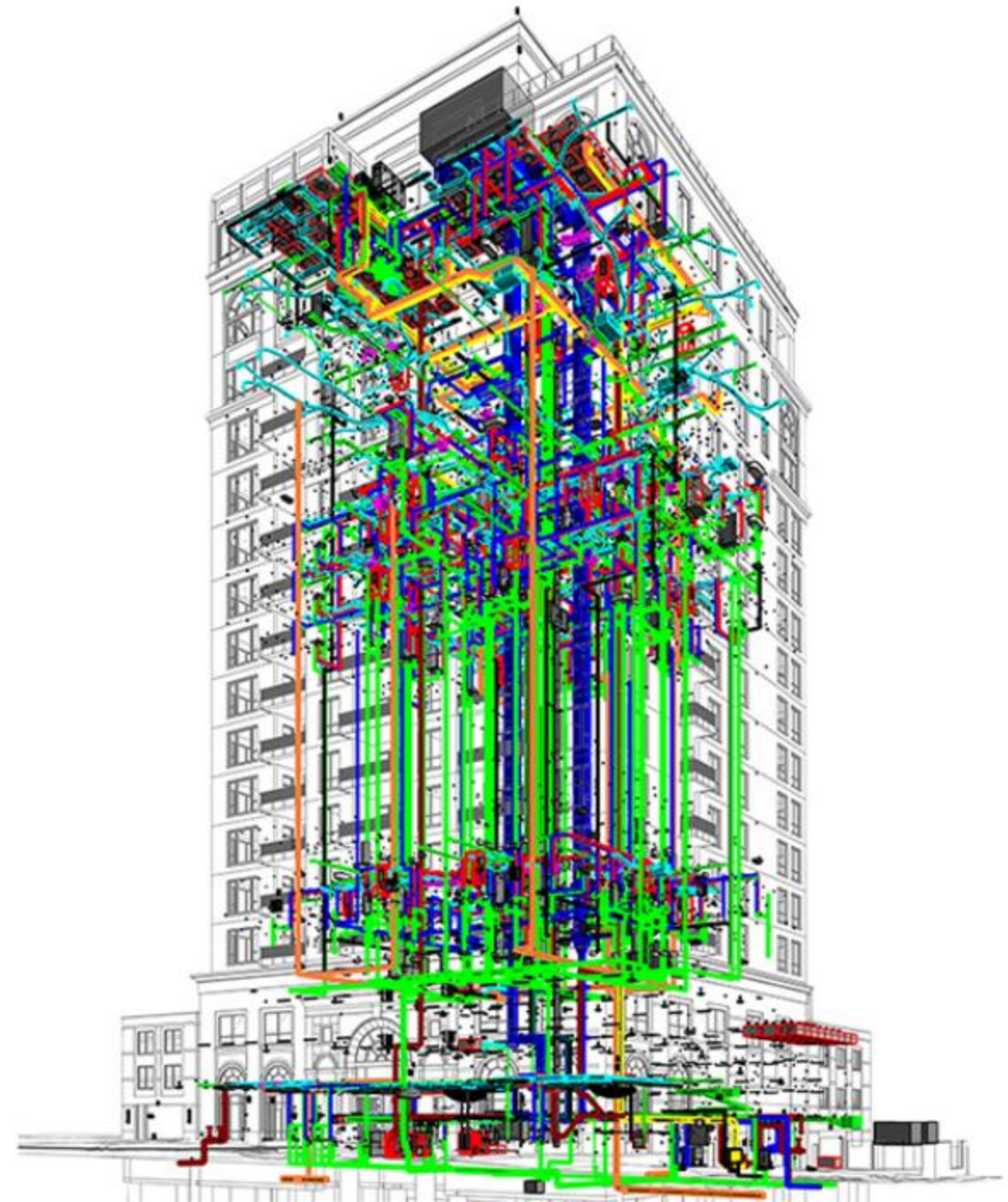
Designed a high-efficiency central cooling plant featuring water-cooled chillers with VFDs and variable primary flow pumping. Integrated Energy Recovery Ventilation (ERV) across all fresh air intake.

**25%**

ENERGY SAVING

**ZERO**

NOISE COMPLAINTS

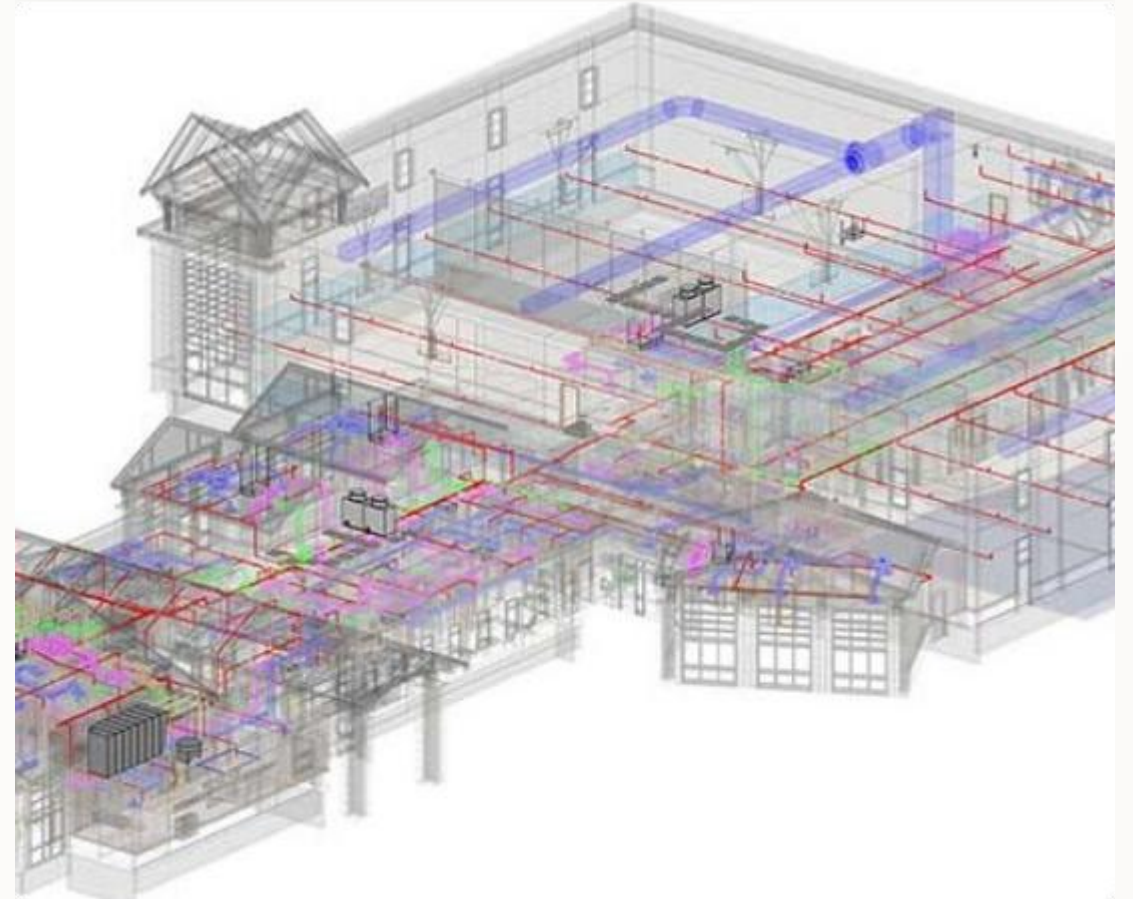


# LIFE SAFETY & FIRE PROTECTION

**Compliance Standards:** NFPA 13, 14, 20 & UAE Fire and Life Safety Code.

## **ENGINEERED SOLUTIONS:**

- ✓ Automated Sprinkler Systems (Wet & Dry Pipe)
- ✓ High-Pressure Fire Standpipe Networks
- ✓ NFPA-Compliant Fire Pump Rooms
- ✓ Smoke Control & Stairwell Pressurization
- ✓ Dedicated Fire Water Storage Optimization



# ADVANCED BIM ENGINEERING



## LOD 400 MODELING

Highly detailed 3D modeling of all mechanical services in Revit, enabling precise material take-offs and pre-fabrication workflows.



## CLASH DETECTION

Automated clash detection using Navisworks Manage to eliminate inter-disciplinary conflicts before construction begins.

**BIM 360**  
Real-time Cloud  
Sync

**COORDINATION**  
Zero On-site  
Rework

**4D  
SCHEDULING**  
Visual  
Construction

# ENGINEERING IMPACT & KPIS

**100%**

ASHRAE  
COMPLIANCE

**25%**

ENERGY  
REDUCTION

**ZERO**

BIM CLASHES

**100%**

NFPA ADHERENCE

Performance Indicator	Result Achieved	Status
Indoor Air Quality (IAQ)	Exceeds ASHRAE 62.1 Standards	✓ OPTIMIZED
Operational Reliability	24/7 Redundant Systems Verified	✓ MISSION CRITICAL
Acoustic Performance	NR-25 in Guest Suites	✓ SILENT OPERATION

# ENGINEERING VALUE CREATION



## TECHNICAL EXCELLENCE

Precision-led calculations and system designs that meet global standards.



## PROJECT EXCELLENCE

Proactive coordination, timely deliverables, and seamless interdisciplinary leadership.




## BUSINESS EXCELLENCE


Enhancing asset performance and guest satisfaction while reducing O&M costs.

# THANK YOU

Designing Sustainable, Efficient, and High-Performance Systems

"Transforming hospitality and mixed-use developments through innovative mechanical engineering solutions."

 Engineering Excellence

 Orlando, Florida

---