

# Marriott Residences Design

## MECHANICAL ENGINEERING & BIM COORDINATION

Showcase of engineering excellence for a premium high-rise mixed-use development inspired by Marriott Residences, focusing on occupant comfort and operational reliability.

### PROJECT TYPE

High-Rise Tower

### LOCATION

Orlando, Florida

### ROLE

Mechanical Design Lead

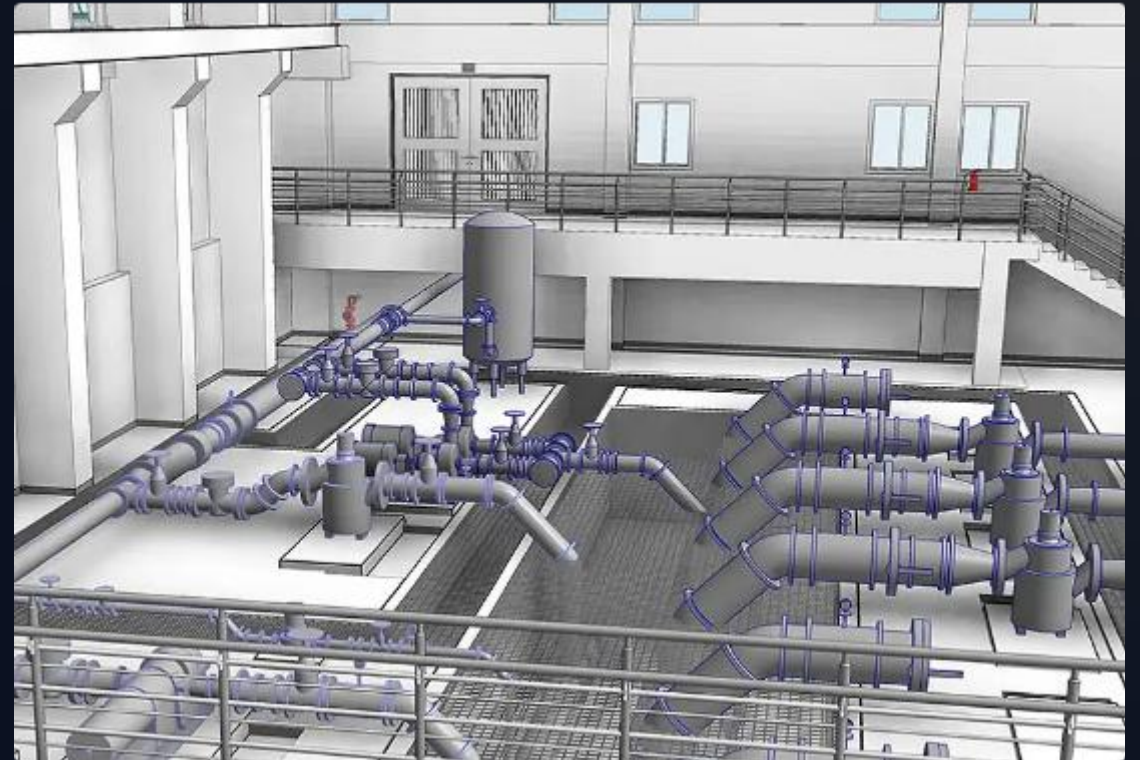


# High-Performance HVAC System Design

- ✓ **Centralized Chilled Water:** High-efficiency plants with variable flow pumping systems.
- ✓ **Air Distribution:** Optimized AHU/FCU selections for luxury guest suites and lobby areas.
- ✓ **Safety Ventilation:** Integrated smoke management and stairwell pressurization.
- ✓ **Engineering Analysis:** Load calculations, static pressure, and thermal simulations.

## Compliance Standards:

ASHRAE • SMACNA • Dubai Municipality Regulations



# Life Safety & Fire Protection Design

## Suppression Networks

Designed comprehensive wet-pipe sprinkler systems and pre-action systems for high-value amenity zones. Optimized fire hose reel and hydrant distribution.

## Infrastructure & Pumps

Hydraulic calculations for fire pump sizing and multi-zone standpipe systems. Coordinated dedicated fire water storage for high-rise demands.





## Regulatory Excellence:


NFPA Standards • Fire & Life Safety Code


Ensuring 100% compliance for authority approvals and occupant safety.

# BIM-Driven Design Coordination

 **Multidisciplinary Sync:** Seamless integration between MEP, Structural, and Architectural teams.

 **Clash Detection:** Automated resolution of spatial conflicts using Navisworks Manage.

 **LOD 400 Models:** High-detail modeling for precise construction shop drawings.

 **BIM 360:** Real-time cloud collaboration with global consultants.



# Sustainable Mechanical Solutions



## Energy Reduction

Implementation of Variable Frequency Drives (VFDs) and Energy Recovery Ventilators (ERV).



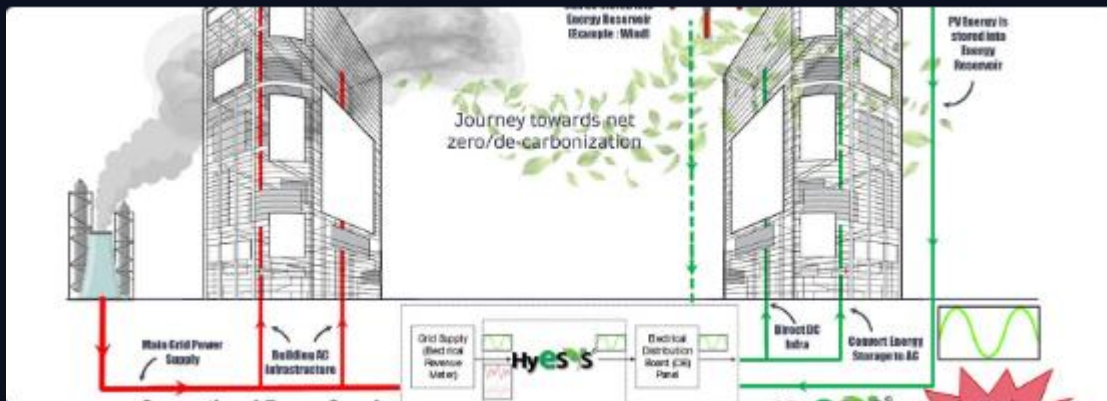
## Smart Controls

Demand-controlled ventilation and smart BMS integration for optimized building load management.



## Water Efficiency

High-efficiency booster pumping systems and condensate water recovery for irrigation.



*"Engineered for long-term sustainability, achieving 20% improvement in operational energy efficiency over baseline standards."*

# | Project Success & Impact

- 🏆 Fully Coordinated Design Ready for Construction
- 🏆 100% Authority Approval
- 🏆 Reliable & Maintainable Mechanical Infrastructure
- 🏆 Premium Occupant Comfort & IAQ Standards

*Delivered innovative mechanical engineering solutions for a luxury branded development through advanced HVAC design, BIM coordination, and sustainable practices, ensuring total regulatory compliance and operational excellence.*

**"Engineering Comfort. Delivering Reliability."**

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