

Emsol delivers clash-free MEP coordination for Muscat International Airport MRO

CASE STUDY

Five-discipline BIM coordination and installation-ready shop drawings that closed out 317 clashes before site works began on a live Oman aviation programme.

INDUSTRY

Aviation Infrastructure (MRO)

LOCATION

Sultanate of Oman

About the Muscat MRO Project

The Muscat MRO Main Building is a high-capacity maintenance facility delivered under the Development of Muscat International and Salalah Airports programme. Emsol produced the coordinated shop drawings, layouts, and Builders Work packages for the First Floor (Area E2), integrating five services disciplines in one federated model.

The Challenge

MRO halls combine long structural spans with dense, high-capacity services: heavy cable containment, large-bore HVAC ducting, and a strict fire protection grid competing for the same ceiling zones. Every Builders Work opening had to be fixed before concrete pours and blockwork, because a missed penetration in a load-bearing element means structural remediation, RFI cycles, and programme delay. The contractor needed installation-ready drawings from day one.

Mechanical & HVAC Coordination

Produced installation-level HVAC layouts with enlarged plans for high-density plant zones. Duct routing was sized and elevation-checked against containment and sprinkler runs, protecting airflow performance, climate control, and maintenance access across sensitive aviation zones.

Electrical Containment

Developed segregated cable containment layouts for power and data distribution, with tray elevations and support zones resolved against mechanical services across the full Area E2 floor plate.

Public Health & Fire Protection

Coordinated high-capacity drainage and domestic water alongside the building-wide fire protection grid. Every pipe drop, gully trap, and sprinkler run was checked for gradient, access, and aviation safety compliance before issue.

Builders Work Coordination

Delivered clash-free Wall Opening and Builders Work layouts covering every duct, pipe, and cable tray penetration, verified against the structural model before pours and blockwork. This removes the most expensive class of site rework: cutting service routes into finished structure. Emsol's packages passed a documented two-stage QA review before issue, giving owners confidence at handover and site teams certainty at installation.

RESULTS

43%

COORDINATION COST REDUCTION

By partnering with Emsol for offshore shop drawing production and coordination, the principal contractor cut engineering and modeling overhead by 43% against the assessed cost of equivalent in-house delivery.

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DISCIPLINES INTEGRATED

HVAC, electrical cable containment, fire protection, water services, and drainage coordinated across the Area E2 floor plate in one federated model, with a single clash register tracked to closure.

317

SPATIAL CLASHES RESOLVED

Emsol's structured 3D overlay reviews identified 317 inter-disciplinary clashes and tracked every one to closure before installation, cutting material waste, contractor disputes, and weeks of on-site rework from the programme.

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REMEDIAL STRUCTURAL CUTS

Every Wall Opening and Builders Work location was verified against the structural model before pours. No penetration required remedial cutting into load-bearing structure during installation.

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