FND PROFILE ON
HIGH-RISE BUILDINGS

Scope of Services Provided

FND offers a comprehensive range of engineering consultation services in a wide spectrum of electrical & mechanical fields. We serve clients in the commercial, institutional, educational, residential, industrial, hospitality, retail, and cultural market segments. We are one of the largest private sector engineering consultants in Pakistan and regularly undertake projects in all parts of the country.

FND offers services from feasibility studies to project planning, design, specifications, bills of quantities, bidding process and construction supervision. Since its inception in 1987, FND has completed more than 1300 projects for a diverse roster of satisfied clients.

1. Project No.: 812
Muslim Commercial Bank, Karachi – Mechanical & Electrical System

Muslim Commercial Bank is a multi-storied high rise office building, on I. I. Chundrigar Road, Karachi. With a height of 116m, this building has the prestigious distinction of being the tallest building in Pakistan.

The building has twenty stories above ground and three basements used for parking. The building above ground has approx. 174,000 sft covered area, utilized as office; restaurants, plant rooms, and core area on each floor containing stair cases, lifts, toilets, pantry, foyer, communication room, air handling unit room and shafts for building mechanical and electrical services.

The work was completed & commissioned in 2005.

2. Project No.: 931
Dolmen City Clifton, Karachi – HVAC & Fire Suppression System

Dolmen City, located on the southern end of Karachi on the sea coast, is a multi-purpose development consisting of the following features.

- Executive Tower – 17 storied office tower
- Harbor Front - 19 storied office tower
- Shopping Mall

The design of the project started in 1987, but the progress was in fits & starts. The first tower to be completed was the Executive Tower, whose air-conditioning system was commissioned in circa 2006. A temporary plant room area was built with 2 X 1000 TR chillers to serve the Executive Tower & Harbor Front.

In 2006 FND carried out a study to evaluate the use of sea-water for cooling of chiller condensers. Four options were evaluated:

- Direct use of sea-water into condensers.
- Indirect use of sea-water in condensers.
- Use of sea water cooling towers.
- Use of RO Plant to produce fresh water from sea-water.

These options were compared to use of fresh water obtained through tankers. Due to many constraints in the installation of a sea-water intake system, and the assurance of the city government that piped fresh water, at comparatively very reasonable rates, would be available to the project,

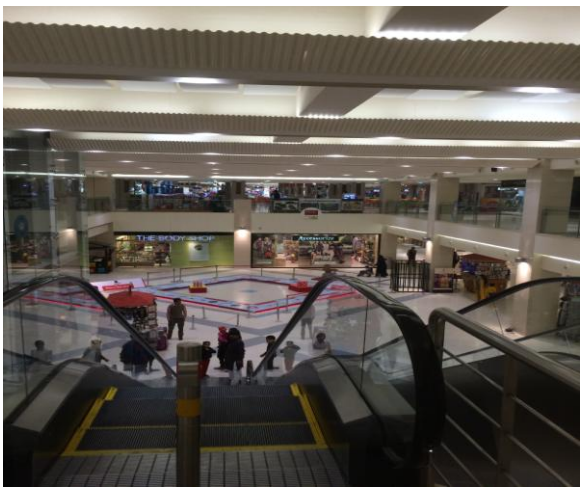
the project owners decided to drop the option of using sea-water.

Construction gained momentum in 2006, and the Shopping Mall opened in November 2011.

The complex has two basements of approx 390,000 sqft with ductless ventilation system (Impulse ventilation system).

The central plant room of 7250 ton is commissioned in 2011 to serve Executive Tower, Harbor Front & Shopping Mall. The plant room is located on 8th floor above the open parking area.

The complete complex has a dedicated fire suppression system as per NFPA with UL/FM fire suppression pump of 1250gpm.



3. Project No.: 1043
NADRA Provincial Headquarters Building, Islamabad – Electrical & Mechanical System

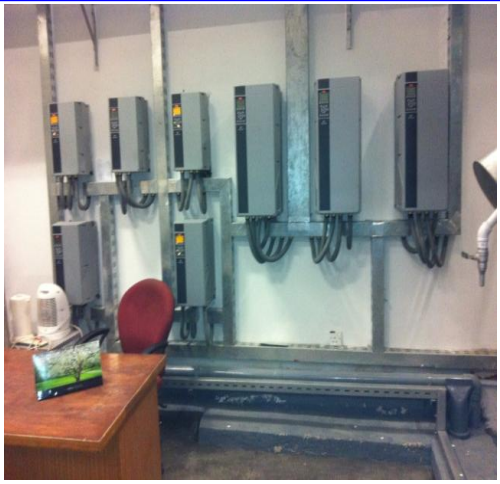
NADRA (National Database Registration Authority) Provincial Headquarters Building Islamabad is a seven storey office building comprising of two basements (lower & upper levels) & five floors above ground level.

HVAC services were provided in the following areas:

a) Cooling and heating system for all offices from ground floor to 4th floor.
b) Cooling and heating system for 5th floor VIP residential areas. Small split units shall also be provided for night operation. Heating shall be via hot water panel radiators.
c) Dormitory areas shall be provided with Hot Water Radiator heating.

d) Ventilation system for Mechanical and Electrical Plant Rooms & Car Park in Lower /Upper basement.
e) Ventilation system for Toilets and Pantries from ground floor to 5th floor.

The work was completed & commissioned in 2009.



4. Project No.: 1055
PEMRA Head Office Building, Islamabad – Electrical & Mechanical System

PEMRA (Pakistan Electronic Media Regulator Authority) Building Islamabad is a nine storey office building comprising of one basement, one lower ground floor & five stories above ground level

HVAC (Heating, Ventilation & Air-Conditioning) services were provided in the following areas:

a) Cooling for all office areas from ground floor to 5th floor.
b) Ventilation system for mechanical and electrical plant rooms & car park in Lower & upper basement floors.
c) Ventilation & Exhaust system for Toilets & Kitchen areas from ground floor to 5th floor.
d) Ventilation system for AHU room from ground to 5th floor.

The work was completed & commissioned in 2011.

5. Project No.: 1065
Citi Towers, Karachi – Mechanical & Plumbing System

Citi Towers, a 19 storey building consist of six parking floors and ten offices floors plus entrance lobby at ground floor, with a total covered area of approximately 190,000sft. The offices were provided with a central air conditioning & plumbing system, capable of maintaining a comfortable indoor environment, using chilled water obtained from central chilled water plant located at roof. Toilets & pantries were provided with a mechanical exhaust system.

The work was completed & commissioned in 2008.

6. Project No.: 1083
PTET Tele House, Islamabad – Mechanical System

PTET Telehouse is an office building consisting of two basements (upper and lower), and 9 office floors above ground floor level.

HVAC (Heating, Ventilation & Air-Conditioning) services were provided in the following areas:

a) Cooling for all office areas from ground floor to 9th floor.
b) Ventilation system for mechanical and electrical plant rooms & car park in Lower & upper basement floors.
c) Ventilation & Exhaust system for Toilets & Kitchen areas from ground floor to 9th floor.
d) Ventilation system for AHU room from ground to 9th floor.
e) Liftwell pressurization

The work was completed & commissioned in 2011.

7. Project No.: 1096
PNSC, Karachi – Electrical, Mechanical System & Fire Suppression System

Refurbishment of the complete Electrical, Mechanical & Fire Suppression services is provided in the 17 storey fire-gutted building. Five floors are occupied by the client itself while eleven floors will be rented out to tenants.

The building is equipped with the central air-conditioning through chilled water obtained from 3x 380 TR absorption chillers. Each floor has been provided with the provision for 24 hr cooling water service for data centers.

The fire suppression is carried out as per NFPA standards. All equipment is UL Listed/FM approved.

8. Project No.: 1097
Building Centre, Karachi – Mechanical System (Under Design)

This project is under design. Building Centre building located at Shara-e-Faisal is a mixed used development (MUD) project which includes retails and offices. The building is proposed to be constructed in 2 phases. In phase 01 one basement, ground floor and three (03) floors above ground will be constructed which generally includes retails only. In 2nd phase seven (07) office floors will be constructed. Also 6 parking floors will also be constructed in 2nd phase.

HVAC (Heating, Ventilation & Air-Conditioning) services will be provided in the following areas:

a) Cooling for all retails, corridors and office areas.
b) Ventilation system for mechanical and electrical plant rooms & car parking.
c) Ventilation & Exhaust system for Toilets & Kitchen areas.

d) Ventilation system for AHU room.
e) Stair well and Lift well pressurization.
f) Smoke management system.

Phase 1 has been completed and commissioned in January 2015.

9. Project No.: 1188
FFBL Head Office Building, Islamabad – Mechanical System (Under Design)

This project is under design. FFBL head office building located at Islamabad is a single-tenant office building consisting of two basements, and seven office floors above ground floor level. Total building area is 155,000 sqft out of which 87,000 sqft is the air-conditioned area.

HVAC (Heating, Ventilation & Air-Conditioning) services include the following:

a) Cooling for all office areas from ground floor to 7th floor.
b) Heat recovery between building exhaust and outside air.
c) Ventilation system for mechanical and electrical plant rooms.
d) Impulse Ventilation system for car park area.
e) Ventilation & Exhaust system for Toilets & Kitchen areas from ground floor to 7th floor.
f) Stairwell pressurization
g) Lift well pressurization
h) Smoke management system

The HVAC work completed and commissioned in 2013.

10. Project No.: 1191
OEC Tower, Islamabad – Mechanical, Plumbing and Fire Suppression System (Under Construction)

This project is being awarded to the contractor and is under construction. OEC Tower located at Islamabad is a multi-tenant office building consisting of two basements, and nine office floors above ground floor level. Total building area is 185,000 sqft out of which 92,000 sqft is the air-conditioned area.

HVAC (Heating, Ventilation & Air-Conditioning) services include the following:

a) Cooling for all office areas from ground floor to 9th floor.
b) Heat recovery between building exhaust and outside air.
c) Ventilation system for mechanical and electrical plant rooms.
d) Impulse Ventilation system for car park area.
e) Ventilation & Exhaust system for Toilets & Kitchen areas from ground floor to 9th floor.
f) Stairwell pressurization
g) Lift well pressurization
h) Smoke management system

Plumbing services include the following:

a) Cold water distribution system using Hydro-pneumatic pumps.
b) Hot water distribution system.
c) Plumbing fixtures & fittings.
d) Sanitary drainage & vent piping.
e) Connection of sanitary drainage to existing manholes system running outside of the building.
f) Condensate drains piping of HVAC equipments.
g) Storm water drainage system for roof and plot.
h) Natural gas piping distribution for kitchen.
i) Rain water storage and harvesting
j) Re-use of building waste water for external irrigation.
k) Drip irrigation

Fire Suppression services include the following:

a) Water based Fire Suppression system including fire sprinkler system as per NFPA 13 & fire hydrant & fire hose reel system as per NFPA 14.
b) Dedicated fire water storage to provide 60 minutes of fire suppression capability.
c) NFPA -20 compliant & UL/FM fire suppression pumps.
d) Supervision & Monitoring of fire suppression system at fire alarm panel

The Mechanical, Plumbing and Fire Suppression work are in final stages of construction.

11. Project No.: 1283
Dolmen City Clifton, Karachi –Towers A & B- Complete MEP Design

This project's Phase-2 consists of two towers each of 36 stories, with a total covered area of approximately 1.5 million sft.

- Tower A – 38 storied office tower
- Tower B – 19 storied office tower
- Tower B – 18 storied hotel tower

FND is designing the complete MEP System for both the towers. The design work is in an advanced stage of completion.