



SFMC is the largest medical complex ever built in the Middle East. Complex features around 2.5 million m² site area and the single structure hospital of over 491,000 m² buildout area with 1,248 hospital beds. ICS Arabia provides Design-Build services for 31 ICT System for 300+ buildings including Hospital building.

FA & VE Systems

ICS Arabia Life Safety Solutions

History has proven that early detection of a fire and signaling of an appropriate alarm remains significant factors in preventing large losses due to fire. Properly installed and maintained fire detection and alarm systems help to increase the survivability of occupants and emergency responders while decreasing property losses.

Fire Alarm Systems is often called Life Safety Systems. Fundamental design criteria is to protect human life in case of fire. ICS and its SMEs have selected the best proven technology, UL listed NFPA compliant system, and followed the best design practices to achieve earliest possible detection of Fire and Alarm Annunciation throughout the facility and minimize unwanted alarm incidents.

This Fire Alarms cover every one of the 300+ buildings and structures, including hospital with 1,248 beds, and the requirement for design flexibility is appropriately compliant to updated NFPA & SBC Codes and Standards. Functionality, expansion capabilities and advanced technology are direct benefits to the end user.

The design and execution covered details of graphics, battery sizing calculations and device address list along with coordination with final system programming and labeling. System Operation Description, detailed FAS description for complete SFMC, including method of operation, Complex Integration requirements and supervision of each type of circuit and sequence of operations for manually and automatically initiated system inputs and outputs. Cause and Effect Matrix showing in a matrix format, the effect of every initiating device on the MFAACP/SFACCP, notification devices, evacuation scenarios, HVAC, smoke management system, firefighting systems, and all system peripherals.



Project Highlights Fire Alarm and Voice Evacuation Systems

- More than 140+ Fire Panels Networked
- 120+ Annunciators
- 40,000+ Point Type Detection Sensors
- 450+ Duct Mounted Sensors
- 50+ Beam Detection Units
- 65+ ASD
- 6kms+ LHD
- 18,000+ Modules
- 6200+ Alarm Devices

Design Approach





Campus Wide Integration and Network

Design and Build of Advanced Fire Detection and Voice Evacuation System

The system design is non-coded, intelligent analog-addressable-system with manual and automatic alarm initiation, automatic sensitivity control of smoke detectors wherever applicable, and multiplexed signal transmission dedicated to fire alarm service only. There is also a system bilingual graphic user interface for the system front end software with UL listing. FACP and SFACP panels, displays, function keys and facility to configure using laptops for programming and maintenance are considered.

Interfacing and Integration with building management system (BMS), both through open protocol and dry contacts, is incorporated as per NFPA recommendation and as per site requirements. Alarm transmission is done to Remote Alarm Receiving Station (Fire Brigade) by having a GUI within Civil Defense building in the campus.

The Fire Alarm System integrates with Public Address and Mass Notification System for integrated emergency voice evacuation audio messages and distributes stored EVAC messages on a per paging zone or all call/area wide distribution based upon the Fire Alarm zones in the associated buildings.



Complex Fire Alarm Integration with Other Systems

- ♦ Fire Suppression Panels
- ♦ Door Holders
- ♦ Signal to AHUOs and Elevators
- ♦ Smoke Control System
- ♦ PAVA MNS through relay cards in each panel centrally
- ♦ Flow Switch and Tamper Monitoring
- ♦ Fire Pump monitoring for (failure/dead phase or phase reversal)
- ♦ Interface with each exit doors
- ♦ Interface with Elevators Station to bypass card reader control upon fire condition
- ♦ BMS Interface using BACnet at Data Command Center
- ♦ Integration with I2B server in DCC using BACnet interface for signals to Security System
- ♦ For ACS to provide Automatic and/or manual unlocking of fail-safe security electric locking mechanisms and CCTV recording wherever feasible and planned upon a fire alarm condition)

Other Highlights

- ♦ More than 1.2+ Million Linear Meter Fire Rated Cable Used
- ♦ Advance Technology Multi Sensors and various application type Point Type and Volumetric Smoke and Heat sensors used
- ♦ System Integrated with 20+ systems
- ♦ Value Engineered using PAVA and MNS accordingly to NFPA

Stringent Codes and Standards

SBC Fire Protection 801, NFPA 101 Life Safety Code, NFPA 70, NFPA 72, IBC Chapter 9, NFPA 75, NFPA 76, NFPA 82, NFPA 720, NFPA 30, NFPA 92A & 92B- Smoke Control, UL 864 9th Ed. UL 2572 for MNS, NFPA 99 Health Care Facilities Code, NFPA 170 Fire Safety and Emergency Symbols, FGI Facilities Guidelines Institute