

Reliable Fire and Building Services (REFABS)

Capability Statement

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About Us

We are Fire Life Safety (FLS) Engineers specializing in passive and active fire protection systems design, auditing and maintenance. Apart from ensuring conformity with prescriptive codes and AHJ requirements, we also offer performance based Fire CFD (Computational Fluid Dynamics) and egress modelling for the matching of ASET against RSET for safe evacuation in the event of a fire. We produce fire strategy reports and FLS guidance and status reports throughout the whole cycle (concept design / detail design / procurement / construction / testing & commissioning / occupation) of the project. We offer alternative compliant solutions that are satisfactory to Architects and Engineering Consultants for a particular project. The clientele we serve range from the hospitality to the banking industries.

FLS Objectives

Our main aim is to provide fire safety solutions for the built environment in compliance with local and international codes and in conformity with best practice internationally recognized standards. Our solutions are for both passive and active fire protection. We adhere to the 7 RIBA stages for UK compliance. Thus we endeavour to,

- assist building design consultants (Architects & Structural Engineers) produce projects that enable the prevention of fire
- assist building design consultants (MEP) produce projects that have efficient early warning and detection systems
- assist building design consultants (Architects & Structural Engineers) produce projects that have effective compartmentalization as part of the passive fire protection strategy
- assist building design consultants (MEP) produce projects that have effective fire suppression and smoke control / exhaust systems as part of the active fire protection strategy
- offer performance based (Engineered solution – CFD), where prescriptive requirements cannot be met
- offer evacuation / means of egress solutions that buy enough time for the safe relocation of building occupants
- ensure seamless integration with the local fire department systems
- offer continuous commissioning of fire safety equipment in compliance with local and international codes and standards (Inspection; Testing; Maintenance)

FLS Approach – codes & standards

We design, assess and implement fire safety and protection systems in strict adherence to local (AHJ) and international (Prescriptive) codes. These include,

- Building Regulation 2010 (B1 – B5)
 - ADB-1(BS 9991), ADB-2(BS 9999)
 - BS 7974 – Fire Engineering (calculations and CFD)
 - Smoke Control Association
- NFPA 101 (Life safety code)
 - NFPA 13,14,15,20,25,82,92,96,701,2001
- International Building Code
 - IBC/IFC
- BCA/NCC
- Building Code Kenya
- Marriott Module 14 FLS
- Hyatt Global Technical Standards

In addition to the above prescriptive codes, we also offer performance based fire engineered solutions through spreadsheet calculations and Fire CFD. This objective based approach enables the design of fire safety systems on the premise of tenability conditions, which include visibility, temperature, radiation. The fire CFD inputs we use are usually derived from the various handbooks including SFPE. Other CFD guidance is obtained from NFPA 101 Chapter 5 and BS 7974. From the CFD analysis we are able to obtain the Available Safe Egress Time for tenable evacuation (see subsequent section for timeline as per BS 7974).

FLS Approach – key aspects of fire protection strategy

We also ensure that the basis of a fire safety is in synch with global trends. In particular, we focus on the following:

- Fire Strategy Report (Originally as per PAS 911 – currently withdrawn)
- Fire Prevention
 - Interior finish / furnishings / mattresses / curtains (B2 – internal fire spread / linings)
 - Housekeeping rules including no smoking policy and procedures for hot works
 - Employee training on fire risks and steps to take in case of incident
- Fire / Smoke Compartmentation
 - Fire doors
 - Fire dampers (ducts), Fire stopping (cable, pipes, ducts penetrations)
- Evacuation – means of egress / escape (B1)
 - Evacuation from room / Horizontal evacuation / Vertical evacuation
 - Travel distances – dead ends / common travel paths
 - Occupancy load vis a vis egress capacity
- Fire detection and Alarm (B1)
 - Fire detection plans
 - Fire Alarm Sequence of Operation Matrix
 - Cause and effect matrix
 - Hazard controls

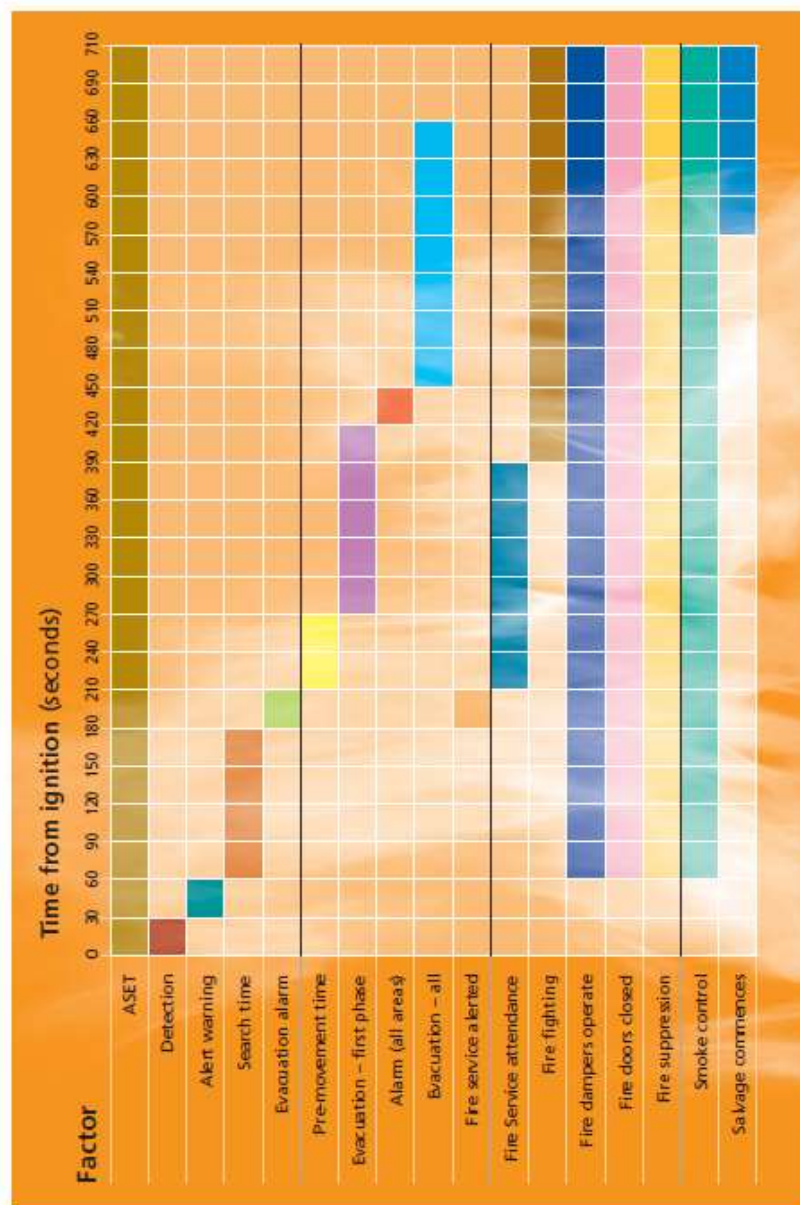
FLS Approach – key aspects of fire protection strategy

- Automatic fire suppression (B3 – internal fire spread/structure)
 - Compliant design for sprinkler networks as per NFPA 13 (with usual exemptions)
 - Special hazard fire suppression (server room, commercial kitchen, generator / transformer rooms)
- Smoke Control (filling, natural, mechanical)
- Portable fire extinguishers
 - Fire extinguishers classes A to K
 - Fire hose reel
 - Employee training on fire risks and steps to take in case of incident
- Stand pipes & Fire department connections
 - Compliant design of stand pipes / risers (wet and dry)
 - Breeching inlet location
- Building separation from other nearby structures (B4 – external fire spread)
- ADA Criteria for physically challenged persons
- Emergency Lighting
- Emergency Signage
- Fire Department access (B5)
- Emergency Response Plans

FLS Approach – fire strategy timeline

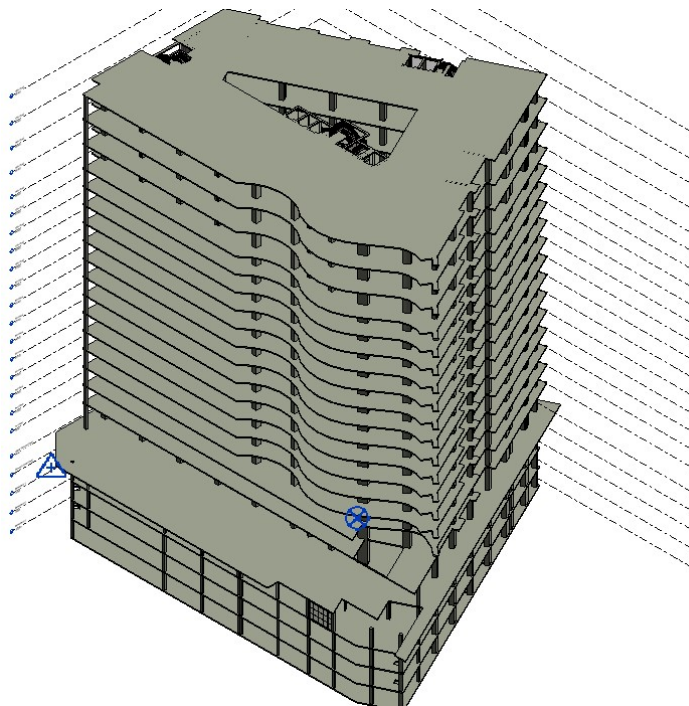
The output of my CFD analysis yields the fire strategy timeline akin to the example given in BS 7974 as shown below:

Table 1 – Components of the fire strategy: example of a time line
 (Taken from the ASET model of Figure 4 of BS 7974).



Past Jobs

1) Hyatt Place – Nairobi (2018 – 2020)



Building Description:

- Located in Westlands, Nairobi, Kenya
- About 10,000 sqm
- 3 Basements, 17 Stories
- Under construction (75% complete)
- Originally Designed for Office Blocks but will now house Hyatt Place

FLS Task:

- Configure Atrium Smoke Control System
- Prescriptive Code (NFPA 101) compliance
- Performance based Fire CFD alternative solution for Atrium Exhaust (especially due to balcony spill fire)
- Performance based solution for natural makeup air
- Produce fire safety strategy

Past Jobs

2) Trade Development Bank (TDB) - Nairobi (2020 - current)



Building Description:

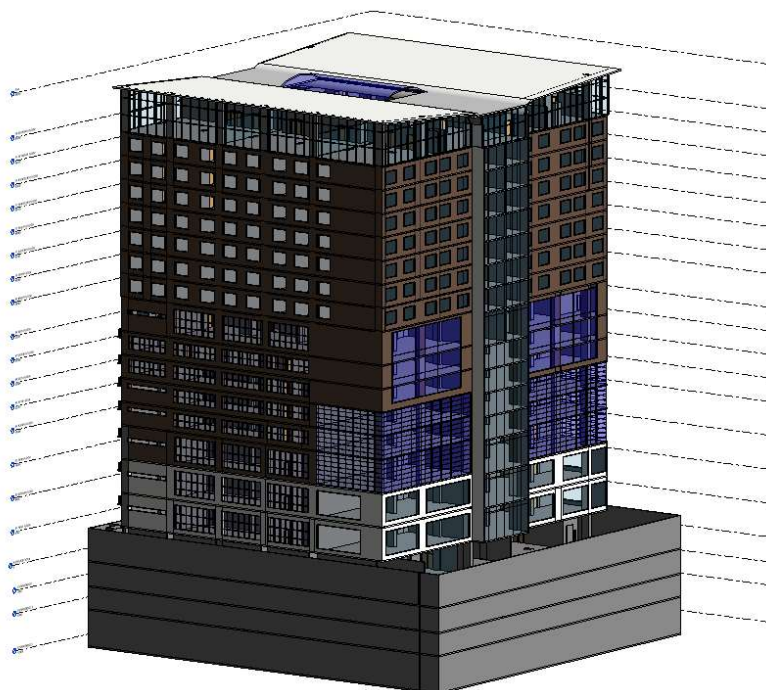
- Located in Kilimani, Nairobi, Kenya
- About 6,900 sqm
- 3 Basements, 21 Stories
- Under construction (60% complete)

FLS Task:

- Configure Atrium Smoke Control System
- Prescriptive Code (NFPA 101) compliance
- Performance based Fire CFD alternative solution for Atrium Exhaust (especially due to balcony spill fire)
- Performance based sky garden solutions for smoke venting
- Fire Safety Strategy

Past Jobs

3) Hyatt Regency - Nairobi (2022 - current)



Building Description:

- Located in Westlands, Nairobi, Kenya
- About 32,000 sqm
- 3 Basements, 19 Stories
- Under construction (90% complete)
- Building converted for hotel use

FLS Task:

- Preparation of FLS Design Brief
- FLS (Smoke control, Egress, Early warning, FRR, Emergency Lighting & Signage) Reports
- Configure Atrium Smoke Control System
- Prescriptive Code (NFPA 101) compliance
- Performance based Fire CFD alternative solution for Atrium Exhaust (especially due to balcony spill fire)
- Testing and commissioning of complete hotel FLS system

Reliable Fire and Building Services (REFABS)

Past Jobs

4) IBERAFRICA (EA) POWER - Nairobi (2021 – 2022)



Building Description:

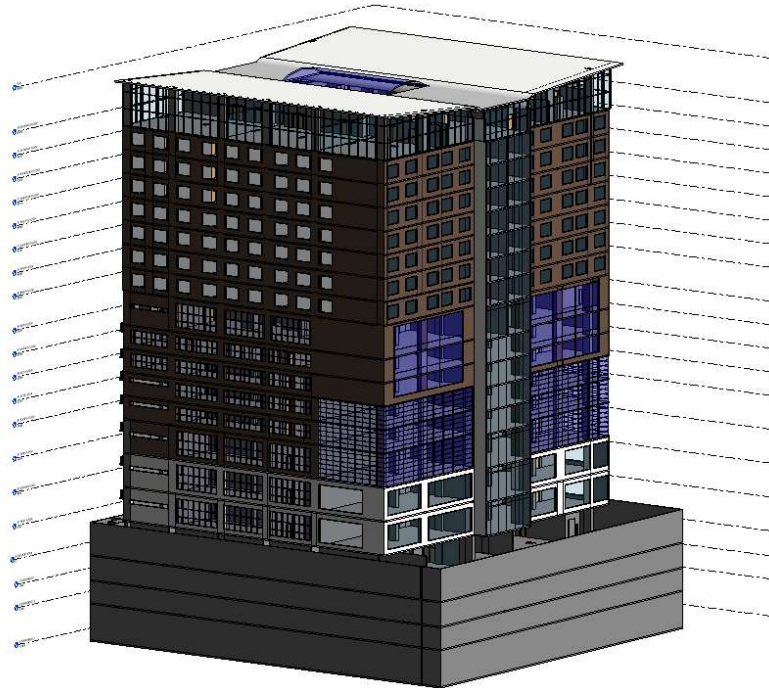
- Located along Lunga Lunga Rd, Nairobi, Kenya
- Produces thermal energy for the national grid

Inspection & Testing (IT) of Water Based Fire Protection Systems:

- IT for Hydrants
- IT for Sprinkler systems
- IT for Foam based Systems
- IT for Fire Pumps

Past Jobs

5) Carnival Casino - Nairobi (2022 - current)



Building Description:

- Located in Westlands, Nairobi, Kenya
- About 2,250 sqm
- 2nd floor of Hyatt Regency building

FLS Task:

- Fire Safety Master Plan
- Fire Prevention Strategy
- Fire Stopping Strategy
- Fire Compartmentation Strategy
- Means of Egress Strategy
- Emergency Power Strategy
- Means of Detection & Warning Strategy
- Fire Department Connection Strategy
- Fire Risk Assessment

Past Jobs

6) Accor Mgallery - Nairobi (2022 - current)



M-Gallery

Building Description:

- Located in Gigiri, Nairobi, Kenya
- About 14,000 sqm
- 3 Basements, 9 Stories
- Under construction (75% complete)
- Will house Accor Mgallery

FLS Task:

- Fire Strategy Report
- Fire Prevention Strategy
- Fire Stopping Strategy
- Fire Compartmentation Strategy
- Means of Egress Strategy
- Emergency Power Strategy
- Means of Detection & Warning Strategy
- Fire Department Connection Strategy
- Fire Risk Assessment

Past Jobs

7) Fire Engineering Consultancy (FEC), UK - (2022)



Figure 1: Property image, Park View, 345 Moss Lane East, Manchester, M14 4LA

Building Description:

- Located in Manchester, UK
- 5 blocks each with own stairs
- Accommodation for students

FLS Task:

- Fire Strategy Report in compliance with ADB (Volume 1), BS 9991, Regulation 38
- Performance based Fire CFD alternative solution in compliance with BS 7974

Skills Set

Software

We specialize in Computational Fluid Dynamics and in particular Fire CFD. We use the following software packages (3D modelling, meshing & simulation):

- AutoCAD & Revit
- Salome Mecca
- Fluent
- Comsol
- SolidWorks
- OpenFOAM
- FireFOAM
- Pyrosim
- Pathfinder
- Fire Dynamic Simulator (FDS)

Technical Report Writing

We are able to produce these FLS compliance reports for the passive and active fire protection of a building:

- Fire Strategy Report
- Fire Risk Assessment Report
- Fire Prevention Strategy
- Means of Egress Compliance Report
- Fire Resistance Rated Construction Compliance Report (Lining)
- Emergency Lighting/Power Compliance Report
- Exit Signage Compliance Report
- Fire Stopping Compliance Report
- Fire Detection Compliance Report
- Fire Warning / Alarm Compliance Report
- Fire Suppression Compliance Report
- Smoke Control Compliance Report
- Fire Department Interventions Compliance Report

Reliable Fire and Building Services (REFABS)

Professional Bodies

Local:

- Engineers Board of Kenya

International:

- Society of Fire Protection Engineers (SFPE)
- Combustion Institute – British Section

Referees:

1. Mr Govind Gopal
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7. Mr. Jean Paul Lagaly
Director Building Systems
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