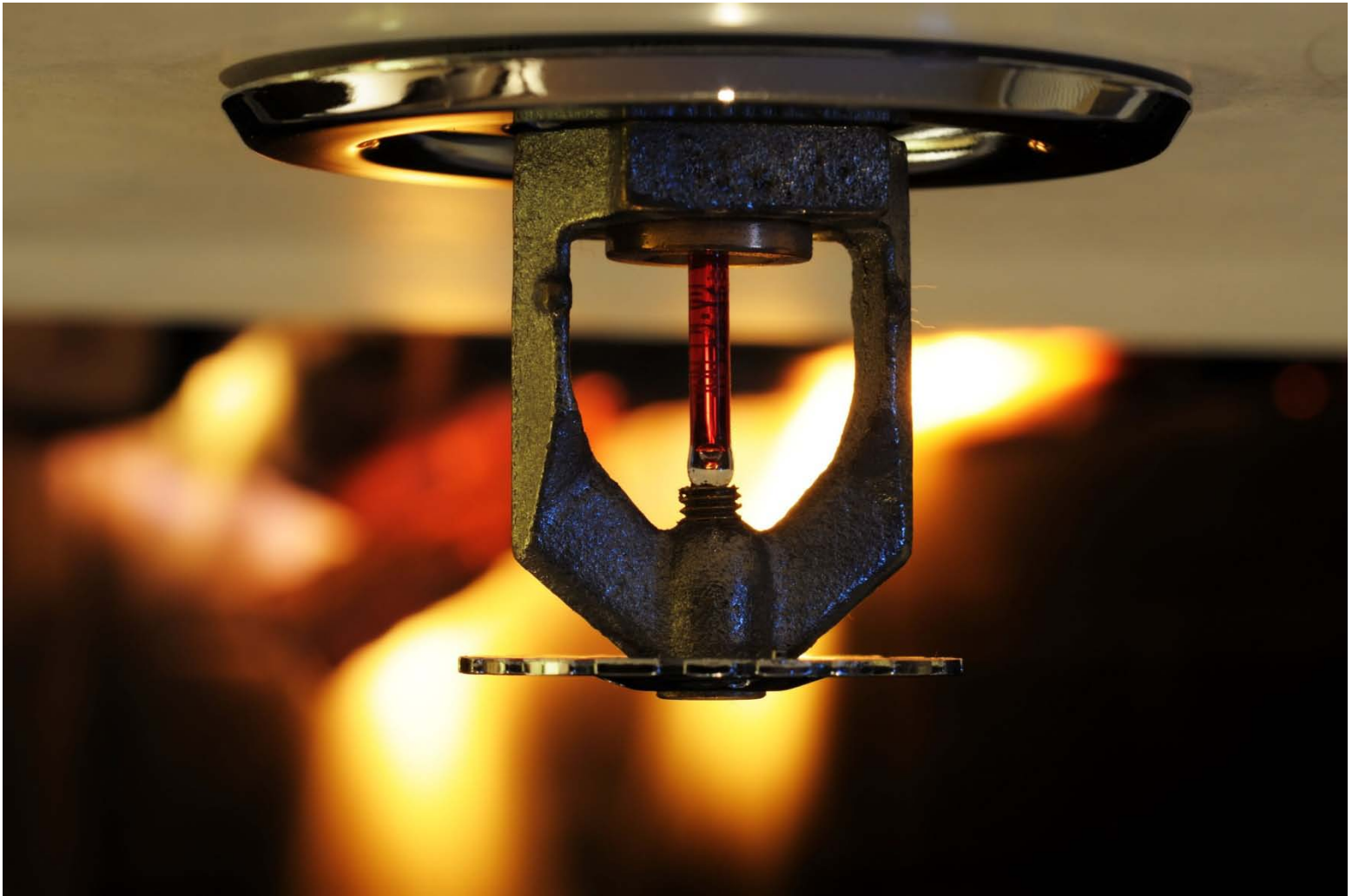




SERVICES DESIGN TECHNOLOGY International



Fire & Life Safety Services



## SDT Fire and Life Safety

At SDT our Fire and Life Safety work draws on our understanding of the authority/Safety forces and our grasp of a safe community and the public interest context for development projects.

Our work demonstrates a continuing commitment to the highest level of design standards and technical expertise. Working closely with each client, we determine the unique project needs and tailor our services to those needs.

Our goal is to achieve quality designs which integrate the expectations of the client, and the personal commitment of our staff to the fire and safety design process. SDT specialises in providing independent fire engineering consultancy services to save lives, protect property and preserve the environment. We offer comprehensive fire engineering related consultancy services from concept to project completion and beyond.

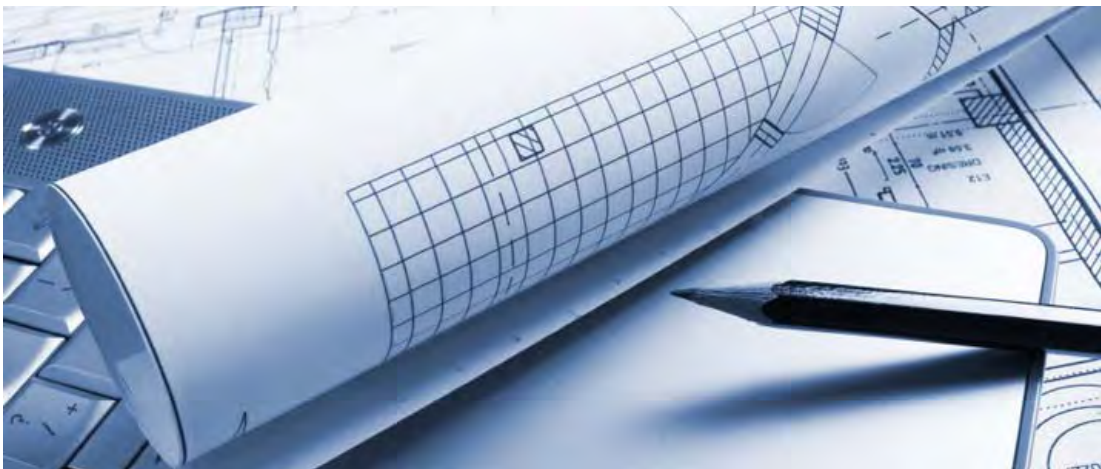
We work closely with the client and design team to understand their design aspirations and apply advanced fire engineering techniques to provide bespoke cost effective fire safety solutions. We strive to implement latest technology and provide innovative solutions to enhance sustainability and ease of construction.





## Our Mission

Our mission is to save lives, protect property and preserve the environment by providing a bespoke fire safety solution.





## Our Vision

At SDT we aim to deliver customer value by being industry leaders in our Fire & Life Safety Services.







# Fire and Life safety Consultancy

We work with owners, developers, fire and building authorities, risk managers, and design professionals to understand and collaboratively integrate fire and life safety objectives into the needs of our clients.

We effectively interpret and apply codes and standards, fire systems, fire engineering and life safety methodologies with a holistic view of fire and life safety and the other protection disciplines for both new and existing buildings, while keeping sustainability, economics and regulatory considerations in mind.

## Our Services:

- Building, Fire and Life Safety Codes Consulting
- Fire and building authorities permitting and regulatory approvals assistance (Civil Defense)
- Fire engineering design briefs and reports
- Performance-based design and alternative solutions
- Analysis of fire resistance, compartmentation, active fire systems, egress and fire service interventions
- Fire and life safety master plans
- Smoke management consulting
- Explosion prevention, mitigation and venting
- Fire sprinklers, standpipes, fire pumps, hydrants, water supply, water spray, foam and other fire extinguishing systems design and consulting
- Special hazards clean agents, carbon dioxide, dry/wet chemicals and explosion controls
- Fire detection, alarms, communication and mass notification systems design and consulting



## Fire Protection

At SDT our design expertise extends beyond traditional fire detection, alarm and fire sprinkler systems to smoke control and special hazard protection. Using leading edge technology, we're able to develop unique design strategies as well as validate alternative performance-based approaches.

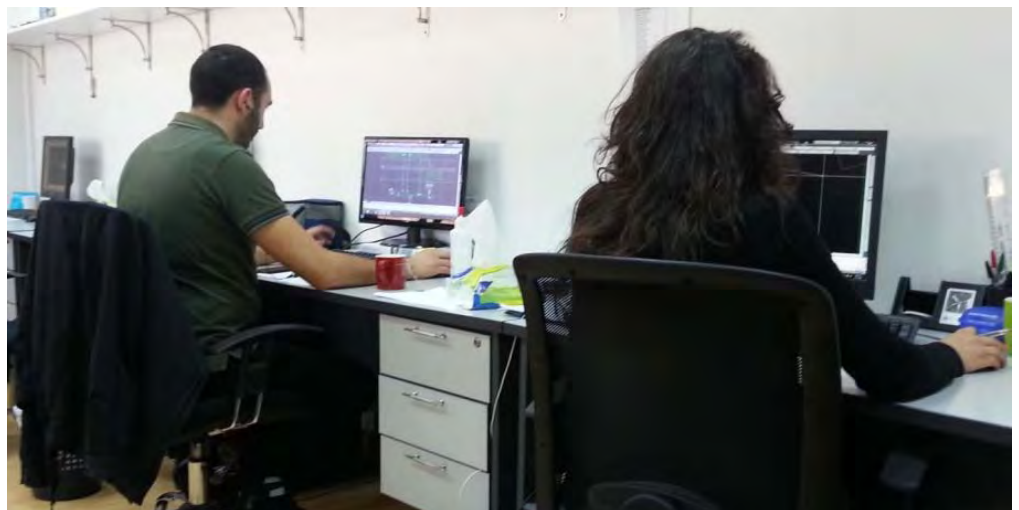
- Code Consulting
- Systems Review/Evaluation
- Specification Development
- Systems Design
- Drawings Review
- Fire/Smoke/Egress Plans
- Coordination of Disciplines
- Construction Supervision







At SDT we have trained our engineers to use the latest fire modeling software programs



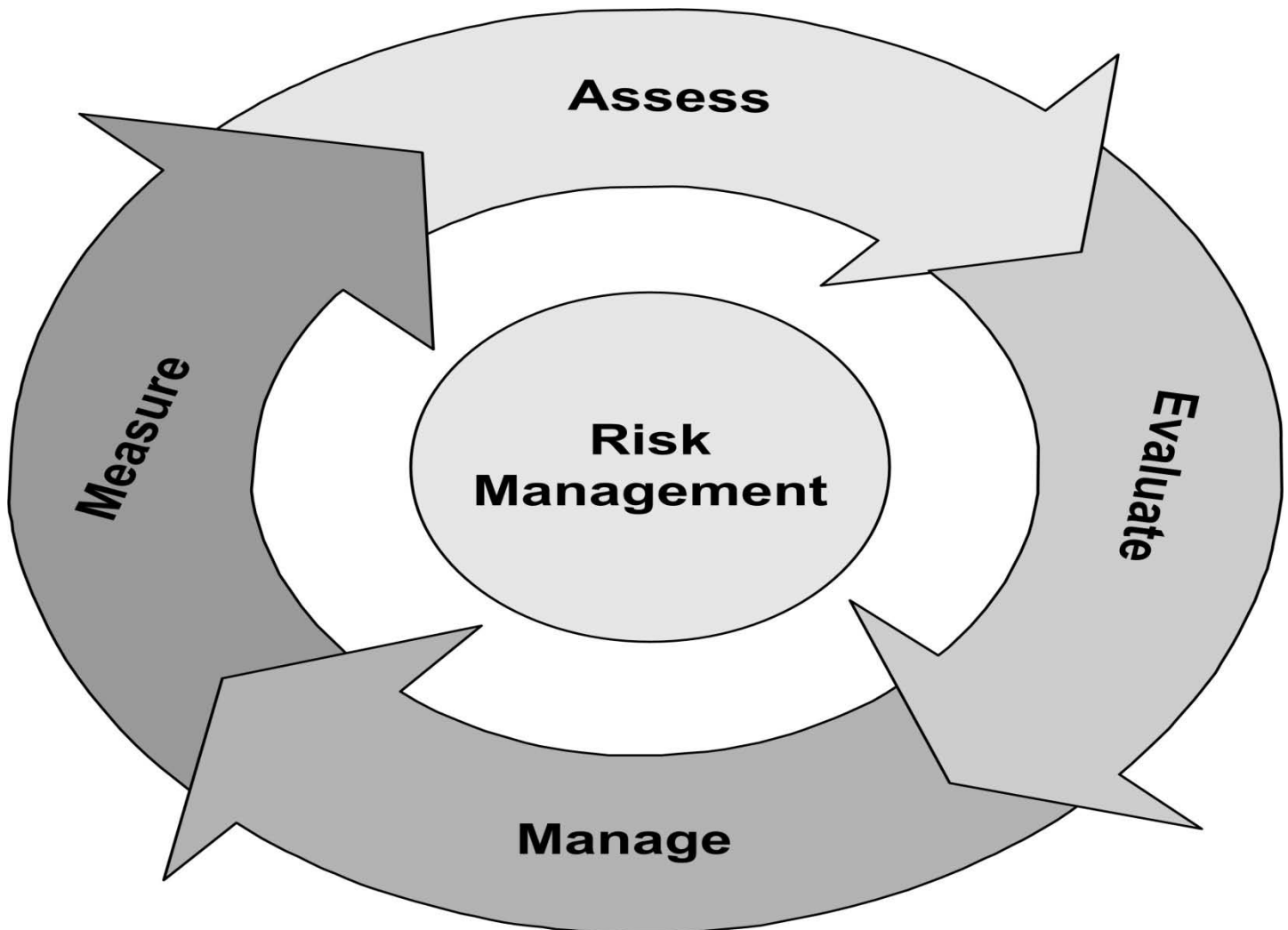
# Risk Management

The SDT team delivers risk management solutions designed to optimize our clients' risk profiles. Its suite of services encompasses risk consulting; risk control, claims and engineering, and captive management. The risk consulting team focuses on risk assessment and advisory services, actuarial and analytics, enterprise risk management and risk financing solutions.

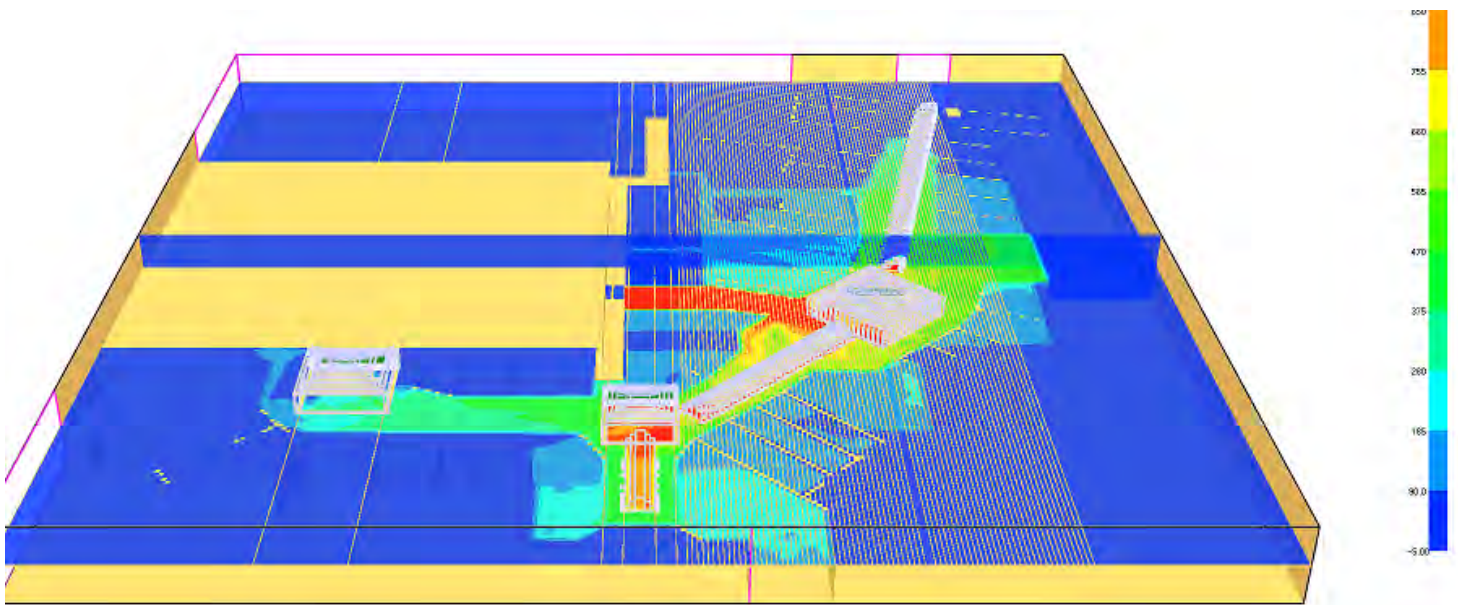
At SDT, we are also fully committed to remaining on the cutting edge of technology for improved client service. We develop custom database, risk management and fire protection reports; CAD-based insurance diagrams and computer-based tools for analyzing fire protection systems.

Our risk control services include:

- Fire Alarm Systems
- Fire Sprinkler Systems
- Plan Review Services
- Risk Analysis
- Risk Management Systems
- Security Systems
- Smoke Management Systems
- Suppression Systems



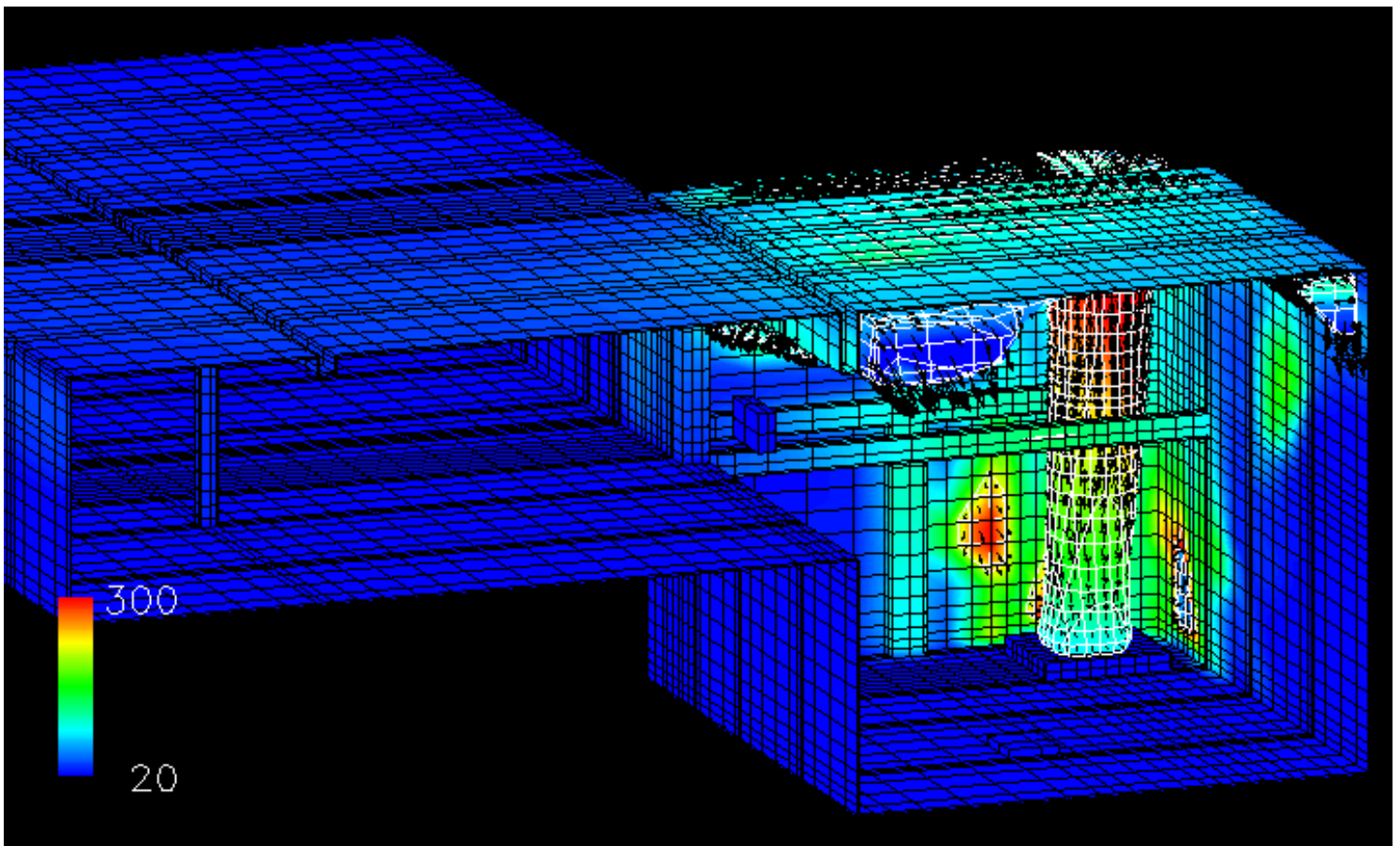




# Fire and Smoke Modeling

At SDT we use fire and smoke modeling tools in understanding fire and smoke spread. It considers various factors such as fire characteristics, building geometry, ambient conditions, active and passive fire protection measures, smoke management system design and their interfacing to accurately predict fire and smoke spread.

Our staff have extensive experience with fire software analysis in various project types and applications to provide a practical cost effective design solution.





## Fire risk assessments and audits

Fire risk assessment is valuable in understanding the fire hazards present, likelihood of it occurring and their consequences. The calculated fire risk can then be appropriately treated and managed to provide an acceptable level of fire safety. Fire safety audits are normally required annually to verify status of fire safety measures, the fire risks and recommend appropriate mitigation measures.

SDT provides fire risk assessment and audit services to evaluate and manage fire risks for life safety, property protection, business operations and the environment.





## Life Safety

The purpose of life safety is to minimize the possible danger to life and property from various threats including fire and smoke. SDT's life safety experts have a deep understanding of fire and life safety codes. Our team members have conducted industry best practice workshops, and performed leading roles in developing and implementing industry standards for life and safety. Our professionals systematically assess the risks and potential contributors to an emergency event, fire or hazardous material incident that could put occupants at risk.

### Life Safety Services:

- Fire and Life Safety Evaluation
- Fire and Life Safety Master Planning
- Mass Notification System Design and Planning
- Evacuation Planning and Egress Modeling
- Emergency Preparedness Planning



# Egress Modeling

Egress (evacuation) modeling is a valuable tool in not just understanding occupant behavior during emergencies but also in designing the pedestrian circulation and means of egress.

We have the expertise to undertake complex egress modeling allowing for occupant movement using elevators, stairways, escalators, moving walkways and ramps. The analysis also considers the number and age of occupants to predict realistic movement and evacuation times.







## Emergency Response

Most complex buildings require emergency response and evacuation plans to be developed. This document needs to include procedures for reporting emergencies, evacuation procedures, requirement for fire drills, etc.

At SDT, we can assist in developing project specific emergency response and evacuation plans to ensure the building occupants are better prepared for any emergencies



**EMERGENCY  
PLAN**





## The Code

At SDT we have a code consulting team that develops innovative solutions to resolve code conflicts where multiple building codes and standards apply. We don't just interpret fire protection and life safety codes, we deeply discuss each clause with our specialist to give the best outcome to our clients. We can offer more innovative ways to make sure the projects open on time and are in compliance.

Some of the codes we refer to are:

- International Code Council (ICC)
- National Fire Protection Association (NFPA)
- International Building Code (IBC)







**SERVICES DESIGN TECHNOLOGY International**

## About SDT

SDT international was established in 1991 as an engineering consultancy company that provides comprehensive range of services in the Structural, Mechanical, Electrical, Infrastructure, Environmental and Plumbing design.

For the past 22 years, we have been a pioneering force in the planning, design and implementation of development projects in the Middle East and UK.

With five offices in five countries, we employ high caliber specialized engineers capable to apply innovative approaches to design and deliver practical and cost effective solutions.

**UK . Lebanon . KSA . Qatar . Dubai**

[www.sdtconsultant.com](http://www.sdtconsultant.com)



**SERVICES DESIGN TECHNOLOGY International**

## Appendix B – Our People and References



# Nabil Moussa

## KEY SKILLS SUMMARY

Dedicated Fire and Life Safety Consultant with more than 20 years of diversified project experience; responsible for projects monitoring, design and tender documents, preparing fire and life safety strategies and report, providing technical recommendations, and coordinating between different departments.

## PERSONAL INFORMATION

- Nationality: French,
- Place & Date of Birth: Beirut, 1964

## EDUCATION

BE Civil Engineering

Approved Fire Engineer with ARFFS – Dubai Airport

Certified for practicing as fire safety systems coordinator (SSI) in France from CNPP at VERNON- FRANCE (Centre National de la prevention et de la protection- Vernon- France)- 2012

Certified for practicing fire safety design in France (1994) following test by the French Ministry of Interior. (Certified categories C (architectural fire safety) & D (mechanical fire safety systems) as per French regulation)

Diploma MBA (Master of Business Administration), Ecole Superieure des Affaires (ESA) - Lebanon- 2005

## EXPERIENCE

2010 –Present	SDT international	Beirut, Lebanon
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### Fire and Safety consultant

Project Monitoring, Preparing Tender Documents, Technical Recommendations, Architectural Drawings Review and Development of Fire and Life Safety Strategy report for the various projects mentioned below in perspective of international standards such as NFPA, IBC, French Regulation for Fire and Life Safety, and Gulf Countries Fire Safety Codes

### Major Fire and Life Safety Projects:

- NEW DOHA INTERNATIONAL STADIUM - QATAR.
- STADIUM / MULTIPURPOSE HALL- DOHA - QATAR.
- FOUR SEASONS HOTEL- DOHA- QATAR.
- NEW DOHA INTERNATIONAL AIRPORT- DOHA - QATAR.
- ALRASHED MALL & HOTEL- DAMMAM- KSA.
- CHOUEIFAT MALL- BEIRUT- LEBANON.
- PARK INN HOTEL- JEDDAH.
- HEALTH CARE CLINICS- ABU DHABI- UAE.
- AMERICAN INTERNATIONAL SCHOOL- RIYADH- KSA.

	<b>Employment History</b>	
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- 2010- present **BatiPlus** Middle East Region
- 2008 – 2009 **BUREAU VERITAS** - Middle East Region
- 2006 – 2007 **SGS** - Middle East Region
- 1998 – 2005 **APAVE** - Middle East Region
- 1996 – 1997 **QUALICONSULT** - France
- 1990 – 1995 **CEP- Control & Prevention**–France

	<b>Projects</b>	
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- **ABRAJ KUDAI** - A complex including Business and Residential super high rise towers, Malls and assembly areas- Saudi Arabia
- **NGHA Project** - Five Hospitals in KSA- [ Riyadh Maternity Hospital, 300 Bed / 67,580 m<sup>2</sup>] –[ Jeddah Specialized Children Hospital, 350 Bed / 99,962 m<sup>2</sup>] –[ Jeddah Neuroscience and Trauma Care Center: 176 Bed / 46,615 m<sup>2</sup>] –[ Taif& Al Qassim Specialized Hospital : 300 Bed / 80,504 m<sup>2</sup>]
- **DRAGON MART EXTENSION Project** –Dubai- UAE- A Mall of 2 stories (150000 m<sup>2</sup>) and parking on the roof – Client: Nakheel
- **RESIDENTIAL AND BUSINESS COMPLEX**- Dushanbe- Tajikistan
- **KING ABDULLAH CULTURAL CENTER AND THEATRE COMPLEX** - Amman- Jordan- (Architect - ZahaHaddid)
- **KING ABDUL AZIZ INTERNATIONAL AIRPORT**- Jeddah- KSA- New passenger terminal complex with a capacity of 30 million passengers per annum including a train station, transportation center and passenger Terminal – (Consultant Atkins)
- **SECURITY BUILDINGS** - Makah- Saudi Arabia- 4 High rise buildings up to 100m height including residential, business and assembly uses.
- **PNU Project –Princess Noura University for Women**- KSA- Educational complex 2.7 million m<sup>2</sup>, including 15 colleges, 2 research laboratories, 300 bed Hospital, central library, administration building, ceremonial piazza, housing units for 11000, sports facilities, mosques and central utility plants.
- **KSAU Project- King Abdul Aziz University**- Several educational buildings including a Hospital (KASCH) of 550 beds/190.000 m<sup>2</sup>.
- **KIND ABDUL AZIZ FINANCIAL CITY**- Projection of three towers designed by Perkins& Will including shopping Malls and basement car parking.
- **College of Arts and College of Education at the New Kuwait University Shadadiyah Campus**- NEW University City, Kuwait. Study, design and supervision of construction for the colleges. Total built-up area 147286 m<sup>2</sup>.
- **Two Residential & Business buildings at Khor Al Raha**, Abu Dhabi- UAE.

- **AFRICAN SOCCER CUP STADIUM 2010** - 4 Stadiums- Angola
- **JABAL OMAR Projects**- 30 High rise buildings- KSA
- **Three Residential Towers at Dubai marina**- Dubai- UAE.
- **DARWISH TOWER**- Doha- Qatar- 49 stories with a height of 175m and a built-up area of 88000 m<sup>2</sup>.
- **DAMAC Buildings (Plots 5B1- 5B2- 5B3- 5B4)** – Abdali- Amman- 35 storey buildings with a height of 131m.
- **FOUR SEASONS HOTEL TOWER** - Beirut- Lebanon- (Consultant Dar Al Handassah)
- **Mixed use development complex** in Syria. (Consultant Khatib&Alami)
- **ROTANA QUEEN CENTER HOTEL** - Damascus- Syria
- **Twin Towers**- High Rise Residential buildings, Beirut/Lebanon
- **Fuel Storage tanks** in Sharjah/UAE
- **Villa ChagouryMiziara**– Lebanon
- **BLF Bank**- Beirut – Lebanon

#### PROFESSIONAL LICENSES

- Membership of the Lebanese Order of Engineers and Architects (OEA) - Beirut – Registration No 11214
- Lebanese Fire and Life Safety regulation committee (LIBNOR)
- Active member in the editorial committee of the Lebanese Fire& Life Safety Code published by LIBNOR No 147(August 1996)

#### SEMINARS

- Leeds University Fire Safety Design - 5 Days - Leeds- UK (2010)
- NFPA 13 & 20 - Sprinkler System - Fire pumps - 5 Days- Riyadh (2010)
- NFPA 72- Alarm system -3 days- London (2009)
- Leeds University Fire Safety Design - 5 Days- Leeds- UK (2010)
- Several Seminars on Building Code in France

#### LANGUAGES

Native French and Arabic. Fluent English