

# PROFILE



## ABOUT US

Design Confidence provides expert and comprehensive Building Regulatory and Engineering services to the Construction Industry, within Australia, the Middle East, Africa, and India, offering specialized services in key areas from concept design to the completion of construction.

In an environment where regulatory compliance is critical within the overall building design, control, and approvals process, Design Confidence ensures best practice in the interpretation and application of international building regulations, codes, standards, and best practices.

In addition to our proven experience in the interpretation of highly technical codes, our active involvement in changes to legislation and regulatory requirements, coupled with constant liaison with the relevant Authority Having Jurisdiction, allows Design Confidence to remain at the forefront of regulatory compliance.

With offices located in Sydney, Australia, and Dubai, U.A.E our GLOBAL REACH and LOCAL EXPERIENCE enables Design Confidence to achieve the best possible outcomes for all stakeholders.

## GLOBAL REACH, LOCAL EXPERIENCE

Design Confidence brings together a global team qualified to offer expert Building Regulation consulting and engineering services during the design, construction, and completion of developments throughout Australia, the Middle East, Africa, and India, working with internationally acclaimed architects, developers, and engineers.

Stability, integrity, professional expertise, and innovation ensure our ongoing success; and our reputation is based on the ability to provide an exceptional level of constantly updated professional knowledge, working with global code development organizations, and our outstanding project performance.

We work with all stakeholders at all stages of the project, ensuring that there are no costly compliance issues to hold up completion. Design Confidence is there every step of the way. Being at the forefront of changes in legislation and new legislation is vital to our service, and the pace of projects is enhanced by this knowledge which is passed on to all stakeholders.

Design Confidence is affiliated, and holds the requisite memberships, with the following organisations/institutions –

- NFPA (National Fire Protection Association)
- ICC (International Code Council)
- IFE (Institute of Fire Engineers)
- SFPE (Society of Fire Protection Engineers)
- AIBS (Australian Institute of Building Surveyors)
- ASHRAE (American Society of Heating Refrigeration and Air Conditioning Engineers)
- RICS (Royal Institute of Chartered Surveyors)
- PMI (Project Management Institute)

# SERVICES



Our range of specialty services encompasses specific key areas within the design and construction of building developments.

<b>Fire &amp; Life Safety</b>
Fire & Life Safety Consulting Fire Engineering Civil Defence Applications Fire & Life Safety Inspections Third-Party Reviews
<b>Façade Drawing Review, Approval &amp; Inspection</b>
Facade Design Review Authority Approval Inspection
<b>Emergency Response Planning</b>
Evacuation Procedures Evacuation Diagrams
<b>Accessibility</b>
Equal Access Compliance Equal Access Audits

We offer all clients the benefit of our involvement and our demonstrated expertise in providing building regulatory consultancy and engineering services to many of the largest and most complex developments ever undertaken within the Middle East, Africa, and India.

# LEADERSHIP



## Tom Sagris



Tom Sagris is the Group Principal of Design Confidence and has been based in Dubai, U.A.E for over 9 years.

As a qualified Fire & Life Safety Consultant, Tom Sagris has in excess of 20 years of experience working on developments within Australia, United Kingdom, the Middle East, Africa, and India.

Afforded with the responsibility of leading the Design Confidence team globally, he has an unprecedented understanding of international best practices and respect for local practices which underscore his ability to execute the specialist services provided internationally by the Group.

## Aaron Mc Daid



Aaron Mc Daid is the Principal – Middle East Leader of Design Confidence's Dubai office and is part of the senior leadership team.

Aaron has a Master's degree and honours degree in Fire Safety Engineering and has published several scientific papers in the field of fire safety. He has guest lectured in fire engineering at several universities around the world and is passionate about improving the current understanding of fire safety science. An accomplished problem solver, Aaron brings strong technical skills and enthusiasm to project teams to deliver coordinated solutions.

## Anam Asad



Anam Asad is one of the team leaders of Design Confidence's Dubai office. As a Principal, he works with the fire engineering team and performs team activities, deliverables, and technical support for the team on a day-to-day basis.

Anam has extensive knowledge in designing fire strategies for various types of buildings in all the design stages using prescriptive or performance or risk-based design.

Anam has a Master's degree in Fire Protection Engineering and a Bachelor's degree in Fire Engineering and has gained experience from several countries which use different prescriptive codes.

## **FIRE & LIFE SAFETY CONSULTING**

Utilizing the International experience held by Design Confidence we provide Fire and Life Safety Consulting services in accordance with the applicable international building regulations and local code requirements.

These services commence at the concept design stage of development and continue through the Schematic, Design Development, Tender, and Construction phases.

Building Regulatory advice and Fire and Life Safety reports are prepared by Design Confidence to ensure proposed designs accord with the requirements of the relevant Authority Having Jurisdiction (AHJ) utilizing our extensive knowledge of international building codes and standards.

We emphasize an innovative risk-managed system approach to building control, through successfully facilitating certification and compliance for all types of building developments, working with existing and developing standards and legislation.

By being involved from the very beginning of projects, code compliance is assured, without any costly code issues to hamper development. At the same time, we always look for ways to maximize design creativity within the intent of the codes and examine approaches to meet compliance without compromising aesthetic concerns.

## **CIVIL DEFENCE APPLICATIONS**

Design Confidence undertakes the necessary negotiations during the design stage of a building development with the applicable Authority Having Jurisdiction (AHJ) for the purpose of attaining the relevant No Object Certificate (NOC).

Design Confidence is positioned to lead, and project manage the application process, ensuring that all submission requirements are accurately complied with, including the preparation of a dedicated set of Civil Defence (Fire Department) documentation.

This prestigious service is both highly valued and respected by both clients and the local authorities and results in the significant reduction of approval times, whilst ensuring design compliance exceeds International Best Practices, and accords with the local code requirements as enforced on a project-specific basis.

All our negotiations are conducted with due respect for all parties concerned, and our documentation and streamlined approach has served to cement our reputation of excellence in Civil Defence Applications.

## **THIRD PARTY REVIEWS**

We review the shop drawings to ensure they are in accordance with the approved design drawings by the Authority Having Jurisdiction, as well as compliance with the relevant codes and standards.

We review the proposed Fire & Life Safety materials to be used in the construction to ensure that they are approved by the Authority Having Jurisdiction and relevant approval centres.

We also verify the use of the material for the proposed application or as an assembly.

## FIRE ENGINEERING

The Fire Engineering team of Design Confidence applies scientific and engineering principles along with the sound understanding of International Codes & Standards such as NFPA, Indian Building Standards, Australian Fire Code and UAE Fire & Life Safety Code to evaluate the performance of fire & life safety designs and strategies in ensuring *life safety of the occupants* inside building and structures such as Malls, Airports, Warehouses, Tunnels, Atria, Airports, Car parks, Stadiums, Exhibition halls, Mission critical data centers, Factories, Temples, Sports complexes, Swimming pools, Gymnasiums, Libraries, Underground metro stations, Mining areas, Marine accommodations, Offices, Residential buildings, Clean rooms, Laboratories, Retail stores and Museums.

For innovative designs, meeting the prescriptive code requirements may sometimes pose a challenge to the design team in terms of practical application and cost feasibility. The provision for an "Alternative Solution" in the best recognized international codes and standards such as NFPA 5000 addresses this issue by laying emphasis on the performance of the fire and life safety system in ensuring *life safety of the occupants* rather than on meeting the prescriptive code requirements. Such alternative designs and solutions are best recognized as "Performance Based Designs".

The Fire Engineering Division of Design Confidence works as a logical extension of the core design team to encourage and supplement state-of-the-art designs by providing state-of-the-art solutions for fire & life safety in order to achieve "Performance based Designs" which meet the following objectives –

- Cost effective design
- Increased rentable floor space
- Encouraging innovative and flexible design
- Potentially shorter construction programmes
- Minimized risk to life

Design Confidence Fire Engineering Designs and Solutions are backed by our in-house team of Computational Fluid Dynamics (CFD) specialists and our expert judgment based on an understanding of the phenomenon & effects of fire and of the reaction & behavior of people to the fire.

### **Fire & Smoke Modelling**

A fire breakout in an occupied enclosure such as a mall, atrium, airport, etc. generates a large amount of heat and smoke which proves fatal for any human presence.

CFD is an excellent tool for simulating a Fire Scenario in an occupied enclosure and visualizing the crucial parameters such as smoke concentrations, temperature contours, and visibility profiles at different time intervals, which in turn demonstrate the effectiveness of the design in maintaining tenable conditions for human presence in case of fire.

### **Human Evacuation**

The most important objective of a fire and life safety design is to ensure that people can safely escape from a building in an emergency fire scenario.

Simulating a scenario where the occupants present inside a building or structure evacuate the premises of the building or structure gives a visualization of the movement of occupants while evacuating the premises and an estimation of the total time required by the occupants to completely evacuate the premises.

It is a unique simulation since it depends on a number of parameters like a number of occupants, the familiarity of occupants within the building premises, exits/doors/staircases available to the occupants, physical characteristics of the occupants, health of the occupants, alarm system, social interaction between occupants etc.

Design Confidence in its pursuit to achieve realistic simulations and analysis uses state-of-the-art technology FDS+Evac to link egress modelling to the fire & smoke modelling such that the effects of fire & smoke such as increased temperature levels, decreased visibility, and high carbon monoxide (CO) concentrations are also accounted for while analyzing the movement and egress of occupants.

## **ASET/RSET Analysis**

### **ASET (Available Safe Egress Time)**

It is the amount of time available for the safe evacuation of occupants from an occupied enclosure in case of a fire.

It is calculated by simulating a fire scenario (fire & smoke simulation) and evaluating the time available to the occupants for safely evacuating the fire-affected premises before the conditions become untenable. in terms of temperature, visibility, and carbon monoxide.

The tenability or untenability of conditions for occupancy is defined in terms of temperature, visibility, and carbon monoxide and each of these parameters is observed individually with respect to time to evaluate the time available before the onset of untenable conditions. The time from the start of the fire to the time when any of the three parameters of tenability i.e. temperature, visibility, or carbon monoxide reaches untenable levels is called the Available Safe Egress Time (ASET).

### **RSET (Required Safe Egress Time)**

It is the actual amount of time required for the safe evacuation of occupants from an occupied enclosure in case of a fire.

It is based on the human evacuation simulation.

The time taken to completely evacuate the building is observed and this time period is called Required Safe Egress Time (RSET).

The acceptance criterion for this analysis is that the smoke layer interface should not descend to a height that can endanger the life of evacuating occupants for a period equal to 1.5 times the calculated egress time.

## **Thermal Comfort Analysis**

Thermal Comfort Analysis refers to the process of analyzing the performance of an HVAC design in maintaining conditions that are conducive to the comfort, health, and productivity of the occupants present inside an enclosure such as a mall, auditorium, cinema hall, etc.

Air conditioning of buildings, mainly concerns the comfort of occupants and the critical factors affecting comfort, namely –

- Temperature
- Humidity
- Air motion

Design Confidence leverages its expertise and experience in the field of Computational Fluid Dynamics (CFD) in dynamically analyzing the performance of HVAC systems using CFD and computer modelling techniques and applying suitable mitigation arrangements in order to achieve design optimization.

## **Data Center Thermal Modeling**

Data centre thermal modeling using Computational Fluid Dynamics (CFD) is gaining popularity as a tool for analyzing the effectiveness of cooling within the racks and aisles. CFD provides companies with a detailed 3-D analysis of how cold air is moving through a data centre, identifying potential hot spots where equipment is receiving too little airflow. Thermal mapping can also find areas in a data centre that are receiving more cold air than needed, wasting cooling and energy. With the push for greater efficiency in data centre power and cooling; CFD is becoming an essential tool for many companies.

## **Jet Fan Ventilation**

Jet Fan ventilation systems have been developed to ventilate underground structures such as car parks and tunnels for both carbon monoxide (CO) removals during normal working conditions and extracting smoke during emergency fire situations. Both these requirements of a ventilation system can be handled by a single ductless jet fan ventilation system in a more effective and economical manner than the traditional ducting systems.

The complete system consists of jet fans and main axial fans for extract & makeup air. Normally fresh air fans are designed for underground structures where there is no availability of cut-outs or ramps for natural supply of makeup air. In addition to fans a unique control system is designed which uses the signals from the CO/heat/smoke sensors operate the system at different speeds according to the need of the situation, thus saving substantial amount of energy.

The following two critical objectives of a jet fan ventilation system are achieved with the help of Computational Fluid Dynamics (CFD) simulations;

To find the optimal location and orientation of jet fans for Normal Mode functioning i.e. extracting carbon monoxide (CO);

To analyse the performance of the ventilation system in Fire Mode functioning i.e. extracting smoke and maintaining tenable conditions during an emergency fire scenario.

It is imperative that the jet fan ventilation system for an underground structure is effective in both normal mode ventilation and fire mode ventilation. Therefore, a number of CFD simulations have to be carried out for a number of design options before an optimal design is obtained for a jet fan ventilation system.

## **Other CFD Applications**

Unique building designs often come with unique design challenges for the designers/ architects/ engineers which can be easily understood and overcome through engineering analysis using Computational Fluid Dynamics (CFD). For Example;

### **External Flow Analysis**

The airflow around a high building with considerable heat or vapor-generating equipment such as outdoor AC units can be accurately simulated at the design stage to foresee its effect on the surrounding buildings and structures. Also, the geometry of an array of buildings and structures along with the prevailing wind conditions may lead to a 'funnelling' effect which could lead to high local wind speeds and thus cause discomfort to pedestrians.

### **Cooling Towers**

The hot saturated air (plume) emitted from the discharge side of a cooling tower may be partially driven towards its inlet due to the prevailing flow dynamics around the cooling tower. Such a phenomenon is called the re-circulation of the plume. Such a phenomenon increases the wet bulb temperature of the inlet air and considerably decreases its cooling capacity. Through CFD the dynamics of airflow around a cooling tower can be simulated to check any amount of re-circulation and corrective measures can be taken in the design stage.

## **FIRE & LIFE SAFETY INSPECTIONS**

Design Confidence provides independent and objective Inspection and Auditing services designed to determine the extent of non-compliance within existing buildings as well as those under construction.

We are expert in the preparation of Fire and Life Safety Building Audit reports, in accordance with the local code requirements of the Authority Having Jurisdiction (AHJ) and the applicable internationally accepted standards.

Recommendations, based on sophisticated risk analysis techniques, are provided to address identified deficiencies, so that the building and its systems comply with the performance requirements of the AHJ, and other relevant international standards.

Building design and the level of risk posed to occupants will vary from case to case, which will influence the upgrade requirements, fire safety priorities and expenses involved in any proposed upgrade.

We also conduct staged inspections of buildings under construction, affirming the extent of compliance with the approved Civil Defence (Fire Department) documentation and approvals.

Design Confidence offers two levels of service, depending on clients' needs. We can either provide a comprehensive report detailing the level of compliance and improvement



## Fire & Life Safety



recommendations to achieve compliance, or we can prepare a report summarising our key findings and recommendations.

We provide independent and objective Inspection and Auditing services designed to determine the extent of non-compliance within existing buildings as well as those under construction.

We prepare Fire and Life Safety Audit reports, in accordance with the local code requirements of the Authority Having Jurisdiction (Authority Having Jurisdiction) and the applicable International Standards of Best Practise.

Recommendations, based on sophisticated risk analysis techniques, are provided to address identified deficiencies, so that the building and its systems comply with the performance requirements of the Authority Having Jurisdiction, and other relevant international standards.

We conduct staged inspections of buildings under construction, affirming the extent of compliance with the approved Authority Having Jurisdiction documentation and approvals.

We offer two levels of service, depending on clients' needs. We can either provide a comprehensive report detailing the level of compliance and improvement recommendations to achieve compliance, or we can prepare a report summarising our key findings and recommendations.

We assist in the preparation of the building for the formal inspection by Authority Having Jurisdiction, including witnessing of the Testing & Commissioning of the systems, to ensure that the Fire & Life Safety Systems of the building will meet the requirements of the local authorities.

# FAÇADE DRAWING REVIEW, APPROVAL & INSPECTION



The Facades of a building play an important role in contributing to the amenity and attractiveness of an area. However, over the past couple of years, it is observed many building fires that spread into the outer facade cladding systems, and then rapidly developed both vertically and horizontally across the façade face of the building.

The UAE Fire & Life Safety Code of Practice 2018 has updated its safety policy as part of wider action to ensure façades are adequately fireproofed to prevent future accidents.

Design Confidence as an Independent Fire & Life Safety Consultancy has an experts Facade team who are code specialists and have extensive knowledge and understanding of the latest UAE Fire & Life Safety Code of Practice 2018 and other international codes and standards. Design Confidence provides the following services in accordance with the UAE Fire & Life Safety Code of Practice 2018:

## **FAÇADE DESIGN REVIEW AND AUTHORITY APPROVAL**

- Design confidence will provide a checklist of the document required for review and submission to Civil Defence.
- Review of the approved material submittal including test reports, Civil Defence approval, Certificate of compliance (COC), undertaking letters, etc.
- Review of the project-related façade information.
- Highlight noncompliance (if any) and provide a solution to comply.
- Lead the preparation of the formal submission document to Civil Defence; content to be provided by others and develop a final technical assessment report.
- Submission of the technical assessment report to Civil Defence for approval.
- Lead technical discussions with Civil Defence for formal approval.

## **FAÇADE INSPECTION**

Building facades should not just look good but they should function well too. It is not an assurance the Façade system on site will always comply with the approved design drawing. Henceforth as part of approval from Civil Defence and as noted in the UAE Fire & Life Safety Code of Practice 2018, facade Inspection shall take place in every successive stage as installation proceeds.

Design Confidence inspection team will inspect the façade system installed on site matches the wall assembly test and Civil defence approved design drawing at every successive stage and ensure installation is done properly. Our team will provide the Inspection report on every successive stage to ensure compliance with the prescriptive code requirements and meet the required tested system.

# EMERGENCY RESPONSE PLANNING



## EVACUATION PROCEDURES

Design Confidence specializes in preparing Fire Evacuation Procedures to accommodate both construction sites and occupied buildings.

Our procedures and operating manuals are written in clear and unambiguous language tailored to the expressed needs of users. These procedures include emergency contact numbers and emergency services details; actions if a fire or emergency is discovered, including bomb threat procedures; operating a fire extinguisher; operating a fire hose reel; and Safety Guidelines and Procedures.

In the first instance, our team will inspect construction sites and occupied buildings to determine the required exit strategy from each part of the site; the location of the operational fire equipment; the orientation of the site with respect to the location of each of the available exits; and the required assembly points.

Following inspection and collation of all necessary information, detailed Fire & Emergency Evacuation Diagrams are prepared in accordance with International Best Practices, including -

- Floor plates with relevant rotations
- Emergency procedures
- Evacuation paths
- Assembly points

## EVACUATION DIAGRAMS

The formulation and implementation of Evacuation Diagrams within buildings is vital for enhancing the safety of life. Evacuation Diagrams shall be required to be soundly based on a combination of preventative measures designed to limit the exposure of a building's occupants to danger, and the provision of immediate and appropriate response tactics where such an emergency does arise.

Design Confidence prepares Fire Management Plans designed to enhance the level of occupant life safety within the development to the highest possible level, in line with 'world's best practice' in Fire & Life Safety Management.

To avoid confusion during an emergency, the Evacuation Diagrams prepared by Design Confidence provide clear and concise information for designated persons within, to facilitate a safe and orderly evacuation, as deemed necessary.

Evacuations may sometimes involve large numbers of people, and crowds moving quickly can be dangerous. This factor is taken into account during the development strategy of the Evacuation Diagrams.

Our Evacuation Diagrams provide consideration to all types of emergencies and risks to life safety, including internal or external fire outbreaks, gas leaks, bomb threats, medical emergencies, and the discovery of a suspicious package.

## EQUAL ACCESS COMPLIANCE

Design Confidence specializes in the provision of Disabled Access Compliance ensuring proposed buildings and refurbishment works comply with International Best Practices and give equality to persons with special needs.

Disability access is an integral part of design from inception, bringing together design and access elements from the very beginning, as a cost-effective measure, rather than an expensive afterthought.

We provide Disability Access Assessment reports for project design plans in compliance with disability access and mobility design legislation and guidelines, ensuring that inclusive design is a feature of the development.

The level of information we supply is comprehensive and of great assistance where negotiation is required with controlling authorities, and where the assessment of the building proposal is required.

We respect the rights and views of the disabled, and peer review of proposed disabled access and emergency egress plans is a feature of our service.

Our services extend to include –

- Disabled Access Audits of buildings for compliance with International Standards, the UAE Disability Act (Federal Law No 29/2006), Americans with Disabilities Act or the Approved Document M (United Kingdom)
- Expert advice for compliance with the disability access principles of equality in the United Nations Convention on the Rights of Persons with Disabilities (Adopted in 2006 and came into force Internationally on 3 May 2008)
- Formulating Disability Action Plans to accommodate varying functional needs

## EQUAL ACCESS AUDITS

Design Confidence has the necessary professional expertise to efficiently audit and inspect existing buildings for compliance with the relevant International Best Practices relating to Disabled Access within and around buildings. Our streamlined team approach brings together all elements of the audit and inspection process.

Our cost-effective and timely disabled access audit reports ensure our clients are fully informed across the spectrum of special needs, including –

- Specific liability threatening non-compliances
- A risk register identifying the risks and associated costs with respect to non-compliance
- Recommendations for improvement and /or upgrading in accordance with International Standards, including the UAE Disability Act, Americans with Disabilities Act, or Approved Document M (United Kingdom)
- The provision of expert advice for compliance with the disability access principles of equality in the United Nations Convention on the Rights of Persons with Disabilities
- The formulation of Disability Action Upgrade Plans to accommodate varying functional needs, and identifying any work required to be undertaken to meet compliance