



**Prudential** ENGINEERING SDN. BHD.

Licensed Manufacturer

# FIRE RESISTING DUCTWORK





# Leaders in Fire Resisting Ductwork

Firesafe Fire Rated Ductwork Limited are specialists in fire rated ductwork systems.



The product **CASWELL FIRESAFE®** was developed in the early 2000's. It was tested and assessed in accordance with the British Standard 476 Pt 24: 1987 by Warrington Fire.

As an official licensed partner of **Firesafe Fire Rated Ductwork Limited**, we manufacture, supply and install **CASWELL FIRESAFE®** in the region. **CASWELL FIRESAFE®** has been successfully installed in many commercial properties worldwide including – United Kingdom, Eire, United Arab Emirates, Hong Kong, Macau, Qatar and Oman.

Research and development of the product is a constant process, which is critical to the future success of the business. **Firesafe Fire Rated Ductwork Limited** continues to support its existing Partners where there are demands for high quality British designed and developed products.

## Applications

BS 9999:2017 Code of Practice for Fire Safety in the Design Management and use of Buildings details the four principle methods of protection as follows:

- Method 1** - Protection using Fire Dampers (thermally actuated)
- Method 2** - Protection using Fire Resisting Enclosures
- Method 3** - Protection using Fire Resisting Ductwork
- Method 4** - Protection using Fire and Smoke Dampers (automatically actuated via smoke detectors)

Good practice dictates that fire dampers should not be installed in the following systems and therefore Fire Resisting Ductwork is used.

- **Smoke extraction systems**
- **Dual ventilation/smoke extraction systems**
- **Car park extraction systems**
- **Kitchen extraction systems**
- **Pressurisation systems**

\*Motorised fire/smoke dampers may be used in conjunction with fire resisting ductwork but not in kitchen extract systems.

Fire resisting ductwork may prove to be a cost effective alternative to fire dampers in general ductwork systems (particularly over the lifetime of a building).

No capital or installation cost of fire/smoke dampers and associated access doors.  
No reliance on mechanical fire dampers which may fail in time.  
No regular testing regime.  
No electrical wiring and control system associated with smoke dampers.





# Performance Criteria

The Building Regulations Approved Document B (volume 2) gives detailed guidance on fire safety. This document sets out time periods for stability, integrity and insulation for various compartment walls and floors in a building.

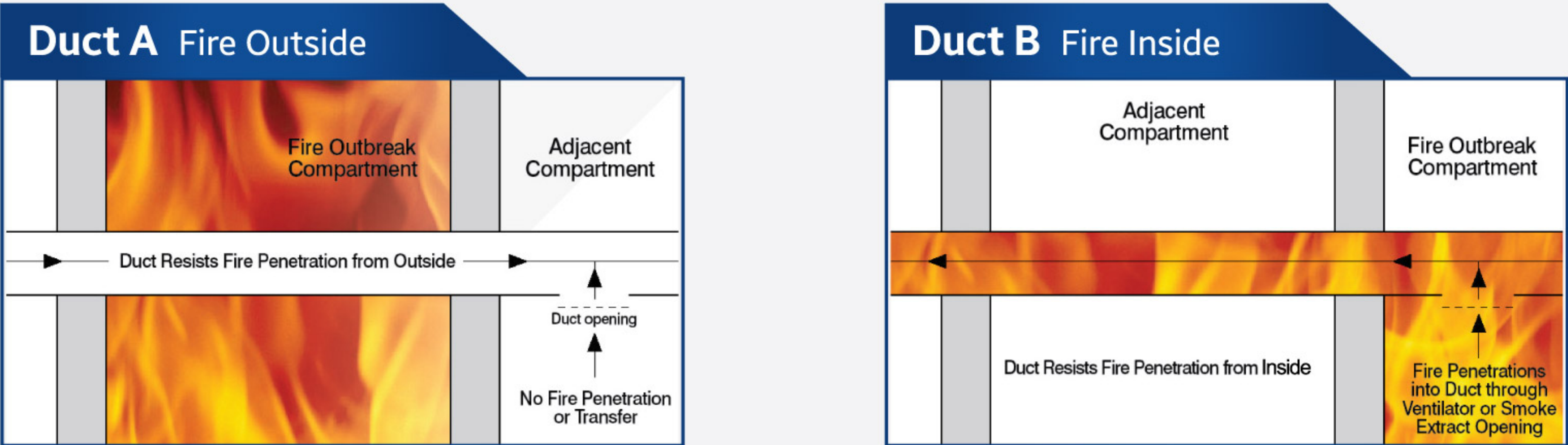
Ducts which penetrate compartment walls and floors must achieve the same fire resistance as the compartments through which they pass.

Stability	The ability of a duct and the support system to remain intact and fulfill their intended function for a specified period of time.
Integrity	The ability of a duct to remain free from cracks, holes or openings outside the compartment in which the fire is present for a specified period of time.
Insulation	<p>The ability of a duct to maintain its separate function without developing temperature on its external surface, outside the compartment in which the fire is present, which exceed.</p> <p>i) 140°C as an average above ambient and/or</p> <p>ii) 180°C as a maximum above ambient at any one point</p> <p>For kitchen extract ductwork (Duct A) these limitations also apply to the internal surface of the duct within the compartment in which the fire is present.</p>

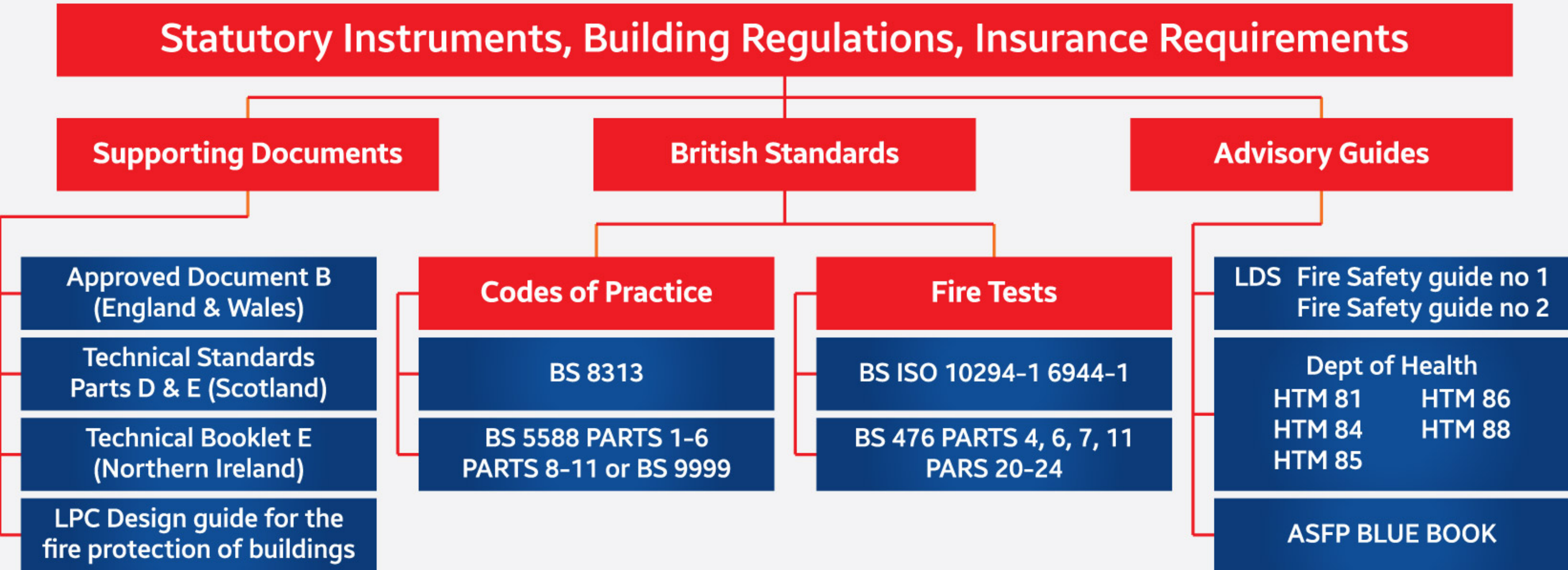
Smoke Extract system must retain at least 75% of its cross sectional area when tested to BS476 Part 24

The design of fire resistant ductwork of all types is described in BS5588 Part 9 & BS9999 (Various Sections)

BS476:Part 24 describes the method for testing ductwork to establish time periods for stability, integrity and insulation. The testing covers the types of fire exposure, Duct A (Fire Outside) and Duct B (Fire Inside).



# Regulation and Codes





Technical Information

CASWELL FIRESAFE® fire rated ductwork is manufactured by Prudent Aire from pre-galvanised sheet steel, mild steel and stainless steel to the exacting standards set by Firesafe Fire Rated Ductwork Limited.

CASWELL FIRESAFE® fire rated ductwork has been tested and assessed by Exova Warrington Fire and satisfies BS476 Part 24:1987, achieving the following fire resistance.

Duct Type A (Fire Outside) & Duct Type B (Fire Inside)

- Stability 240 mins
- Integrity 240 mins
- Insulation 120 mins (60 mins on kitchen extract)

Insulated Systems

Insulation is specified where there is a risk of a fire being ignited due to radiant heat for example:

A fire starts in a compartment which ignites combustible materials inside a duct (i.e. grease/fats in kitchen extract ducts) that could then travel to another compartment.

OR

A fire inside a duct travels down the duct to another compartment where there are combustible materials in close proximity that could be ignited by the radiant heat from the duct surface.

Full range of ancillary products available :

- Supports, access doors, attenuators and volume control dampers to maintain fire resistance throughout the whole system.
- Rectangular and circular ductwork constructions available.
- Bespoke situations can be accommodated (subject to project specific assessments).



Product Features

Non-coated Steel Ductwork Product	Product Characteristics as B&ES DW 144 Ductwork
<div>Quick Turnaround</div> <div>No touch up of intumescent finishes necessary</div> <div>Flexibility – all shapes and sizes and configurations</div> <div>Cost effective</div>	<div>Air flow resistance</div> <div>Air leakages</div> <div>Smooth internal surfaces for cleaning</div> <div>Easy to handle and install</div>

- Manufactured from either galvanized steel, mild steel (welded) or Stainless Steel specifications
- Recyclable/Sustainable product
- Minimal maintenance
- Cost effective alternative to the use of fire/smoke dampers particularly when considering life cycle costs
- More details at [www.firesafeductwork.co.uk](http://www.firesafeductwork.co.uk)



## Standard Specifications

In order to ensure **CASWELL FIRESAFE®** fire rated ductwork is correctly specified several factors should be carefully considered.

1. Define the type of system – Smoke extract, car park extract, kitchen extract, pressurization, general ventilation, dual ventilation/smoke extraction system.
2. State the fire rating to BS476 Part 24: 1987 in minutes for:
  - (i) Stability
  - (ii) Integrity
  - (iii) Insulation
3. Define the operating pressure limits of the ductwork as defined by HVCA specification DW144.

Low (Class A up to 500Pa positive or 500Pa negative)  
Medium (Class B up to 1000Pa positive or 750Pa negative)  
High (Class C up to 2000Pa positive or 750Pa negative)  
High (Class D up to 2000Pa positive or 750Pa negative)

4. Define the requirements for access doors requirement for maintenance and cleaning as defined by HVCA specification DW144 and TR19.

## Pro-Forma Specification

The .....(1)..... ductwork should be **CASWELL FIRESAFE®** as manufactured and installed to comply with BS476 Part 24 (1987) for .....(2)..... mins stability .....(2)..... mins integrity and .....(2)..... mins insulation.

The ductwork should conform to .....(3)..... pressure classification of the current HVCA DW144 specification.

Access doors for maintenance and cleaning should conform to HVCA DW144 table 25 .....(4).....

## Certificate of Conformity

When specifying **CASWELL FIRESAFE®** fire rated ductwork you can be assured that every process from design to installation will be expertly project managed.

It is essential that the whole system is considered including ductwork, fittings, supports, access doors, attenuators etc.

Upon completion of the installation a certificate of conformity can be issued to confirm that the system has been manufactured and installed correctly. This will be issued to the requiring authority.

This document underlines our commitments to provide fully compliant Fire Resisting Ductwork systems.



Certificate of Sijil Pemasangan Keselamatan Kebakaran



# CASWELL FIRESAFE® International Projects



**Arndale Centre, Manchester**  
United Kingdom



**Eircom HQ, Dublin**  
Eire



**Abu Dhabi Airport**  
UAE



**U Bora Tower, Dubai**  
UAE



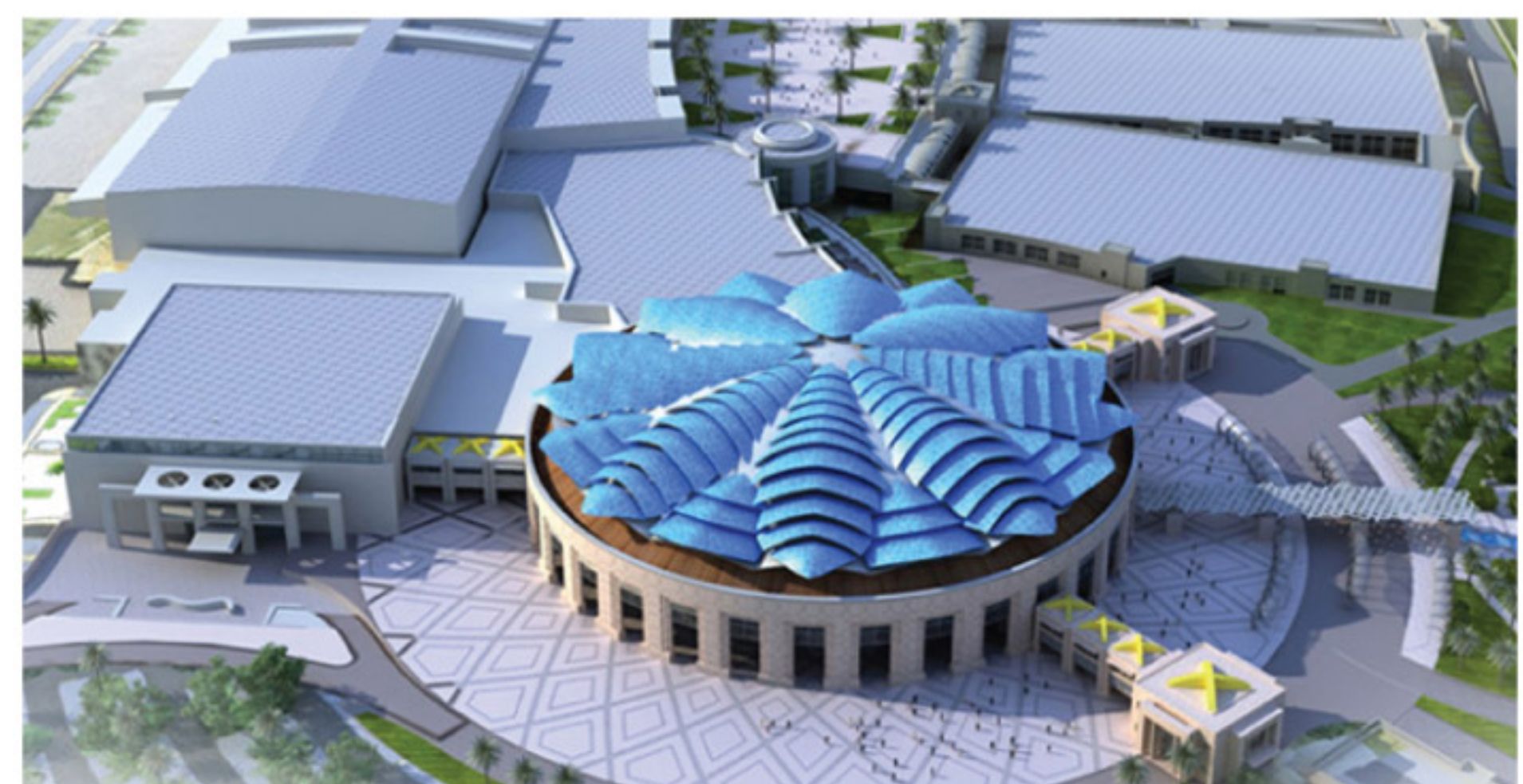
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