



**SAFETY
DESIGN
IN
BUILDINGS**

Reducing Liability By Correctly Establishing Conformity Of Fire Safety Products

Presented By:
Abhishek Chhabra

Abu Dhabi Conference, Dusit Thani, 12th December 2019

Course Description

Establishing conformity for building materials being purchased on projects, specifically bespoke materials and designed systems.

Presenter



Abhishek Chhabra; Market Development Manager with

Thomas Bell-Wright International Consultants

An engineer with a post-graduate diploma in finance, he has been advocating the need for compliance to standards for improved safety and quality across industries for most of the last 17 years. He has a vast experience of how conformity is realized across supply chains of several industries including Consumer Electronics, Industrial, Renewable and Building Products. Along with helping certification bodies expand their horizons of business for over a decade, he has been writing articles and presenting at various forums about mandatory and voluntary quality and safety compliance activities. He also owns and drives a blog called Gurus of Testing, Inspection and Certification (www.tic.guru) aimed at expanding the understanding of conformity across the world.

Learning Objectives

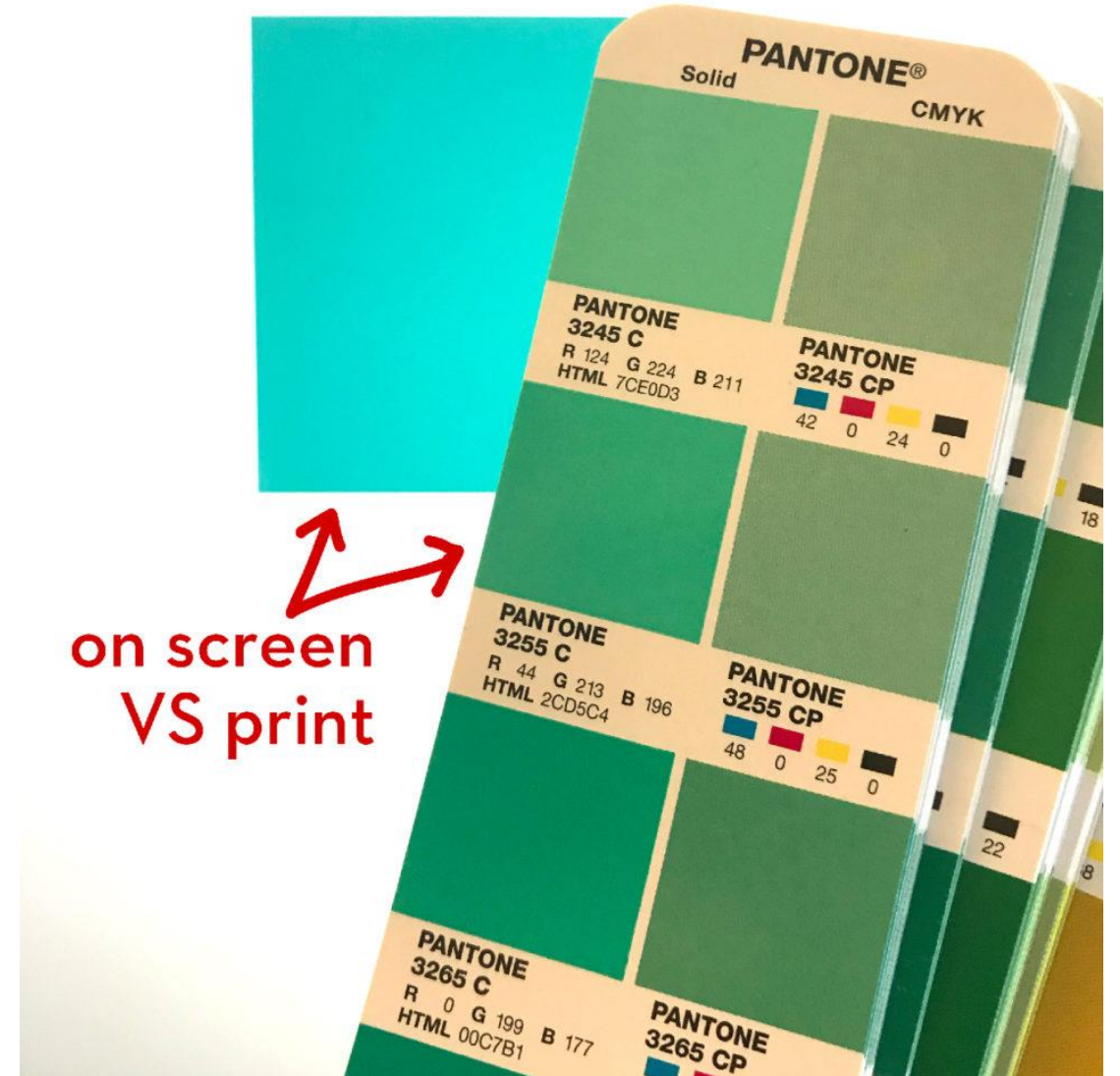
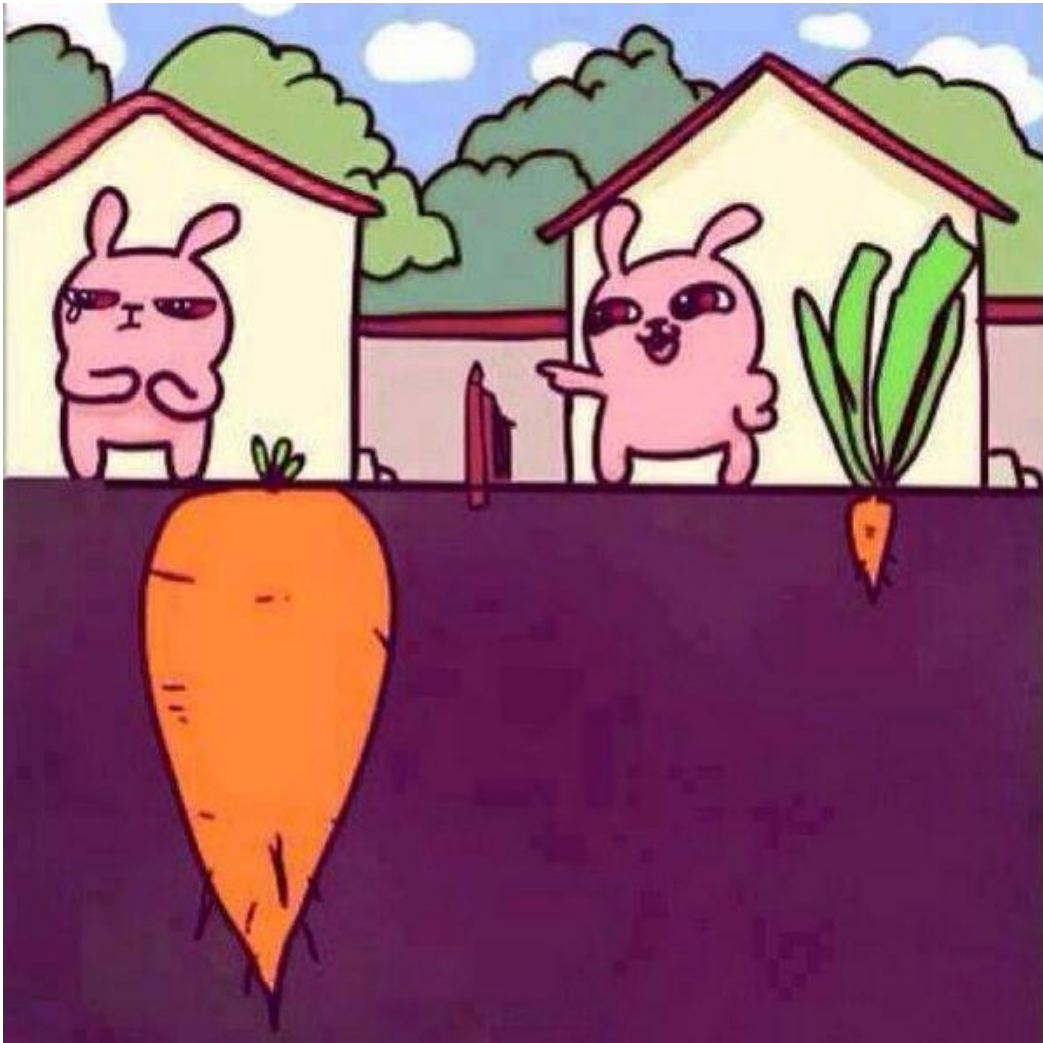
1. Understanding the supply chain of materials
2. Correctly using tools that establish conformity
3. Approaching bespoke materials where several suppliers are involved

The purpose of this presentation is to convey technical knowledge to the conference participants.

The presentation also contains slides with text that summarises the content of the presentation and the main learning objectives.

These may be used to update CPD records for relevant organisations including the Chartered Institute of Building (CIOB).

WHAT YOU SEE IS WHAT YOU GET?



EXPERIENCE

PROFESSIONALISM

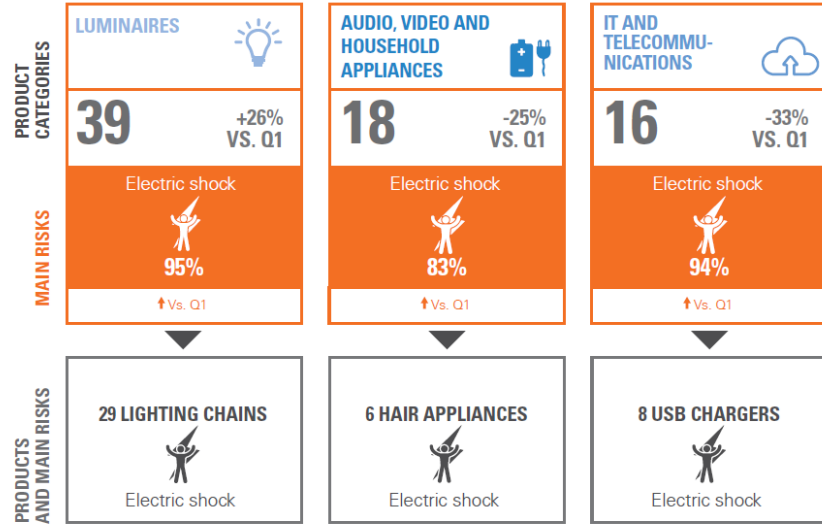
INTEGRITY



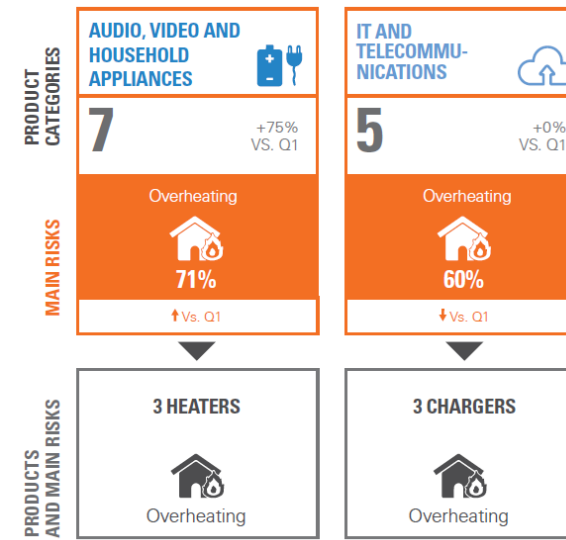
Images from the Internet for representative presentation



EU TOP RECALLS AND RISKS



US TOP RECALLS AND RISKS



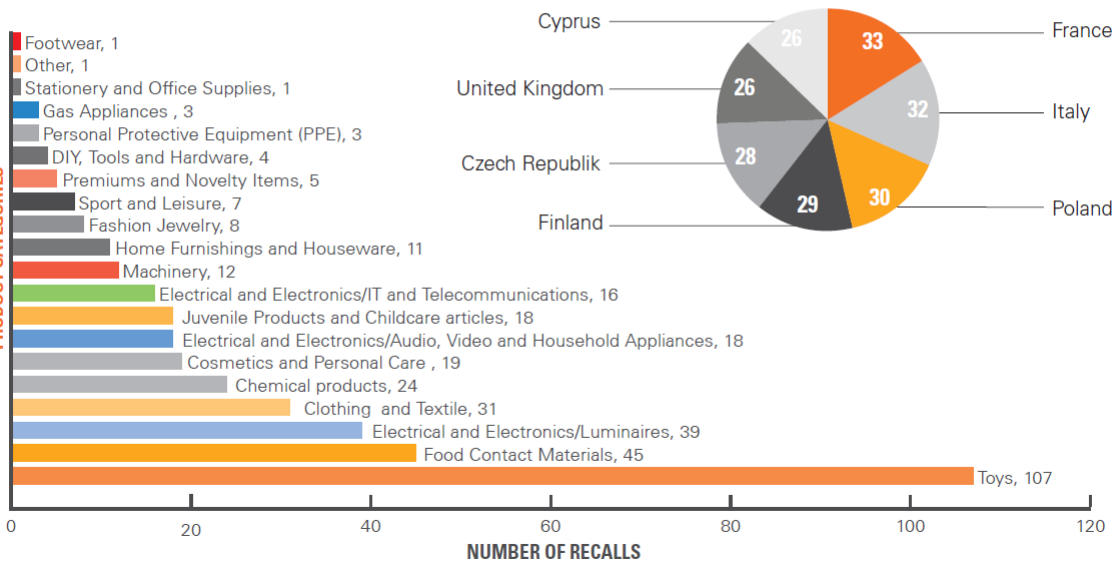
From Reports published by
 ©SGS Group using data from RAPEX; RASFF and CPSC



373 TOTAL RECALLS ▶ ELECTRICAL AND ELECTRONICS: 73 RECALLS

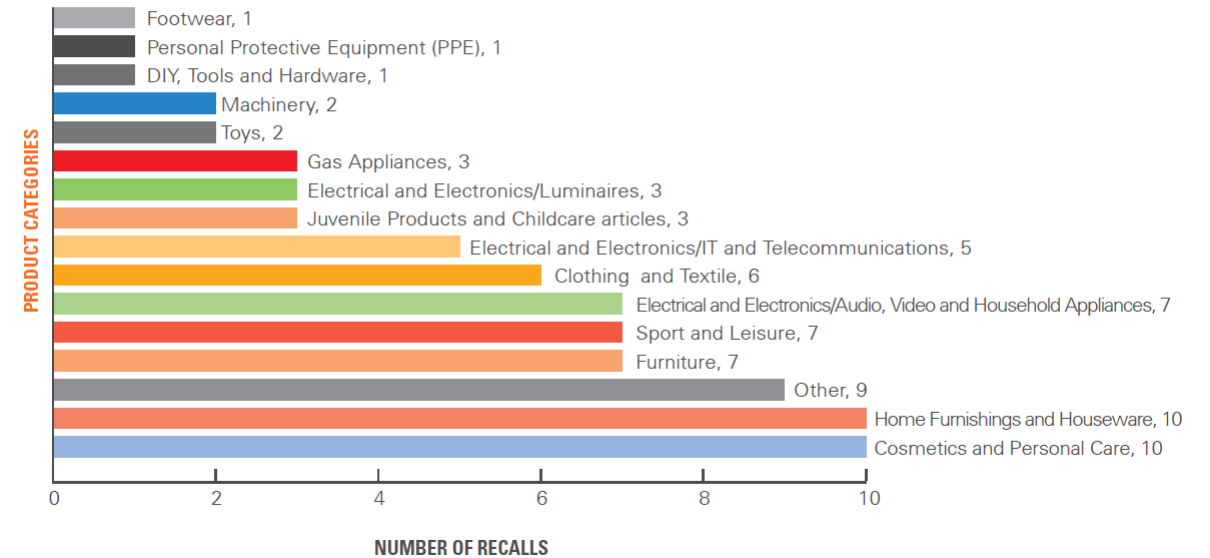
-26% Vs. Q1 -8% Vs. Q1

TOTAL RECALLS - TOP EU NOTIFYING COUNTRIES



77 TOTAL RECALLS ▶ ELECTRICAL AND ELECTRONICS: 15 RECALLS

+38% Vs. Q1 +27% Vs. Q1



EXPERIENCE

PROFESSIONALISM

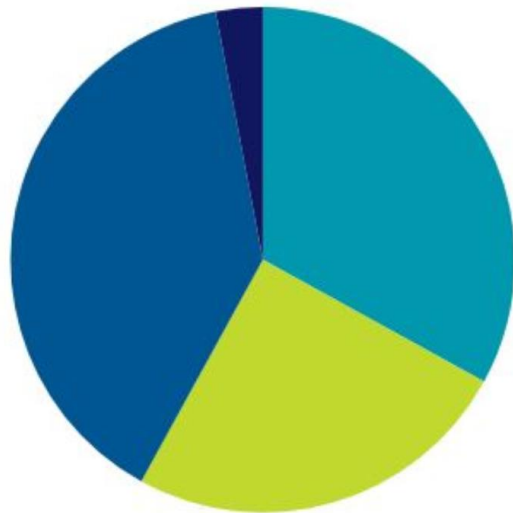
INTEGRITY



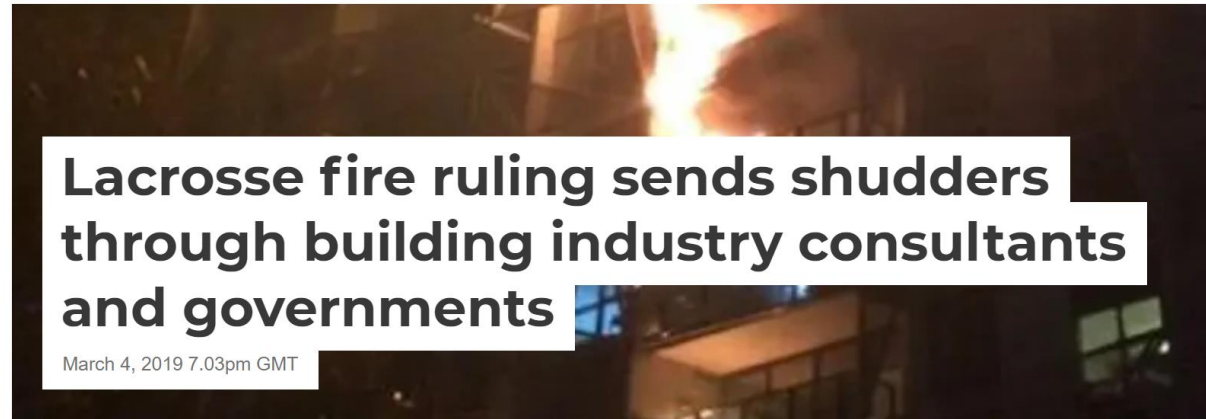
- Order the Builder to pay the Owners 100% of the loss suffered (potentially up to around \$12m); and
- Order the various consultants (as concurrent wrongdoers) to reimburse the Builder based upon the relevant Proportionate Liability legislation.

The Court held that the liability should be apportioned as follows:

Liability



- Building Surveyor - Gardner Group (33%)
- Architect - Elenberg Frazer (25%)
- Fire Engineer - Thomas Nicolas (39%)
- Individual who started fire - Mr Gubitta (3%)
- Occupier of apartment where fire started - Mr Kim (0%)
- Superintendent of Building Contract - PDS (0%)



EXPERIENCE

PROFESSIONALISM

INTEGRITY

ENSURING COMPLIANCE



BUILDING SPECIFICATIONS (Especificaciones de Edificio)

April, 2009

SPECIFICATIONS

SHELL BUILDING

1.00.00 SITE WORK

1.01.00 SITE TRACE AND LEVELING

Description:

- Performed by survey crew, specialists in this field, grading instruments supported by laser equipment. These works include tracing the areas and guiding the earthworks crew in order to meet the project grades for every area considered in the scope of works (Warehouse slabs, guard house, substation pad, sidewalks, power meter booth, dock yard, parking and driveways). This will be in accordance to an approved grading plan.

1.02.00 SITE CLEARING

Description:

- Performed with machinery (bulldozer and grader) over the property in order to remove the organic topsoil. This procedure also considers the natural ground ripping

n No. (50)

No. (24) o
n the Stat



Civil

o Friend

issued

2

ision No.



UAE Fire and Life Safety
الإمارات العربية المتحدة



هيئة التأمين
Insurance Authority



TIES OF
S



Employer: Mr Walker
Project Address: 27A High Street South. DH1 7PP
Project name: 27A High Street South

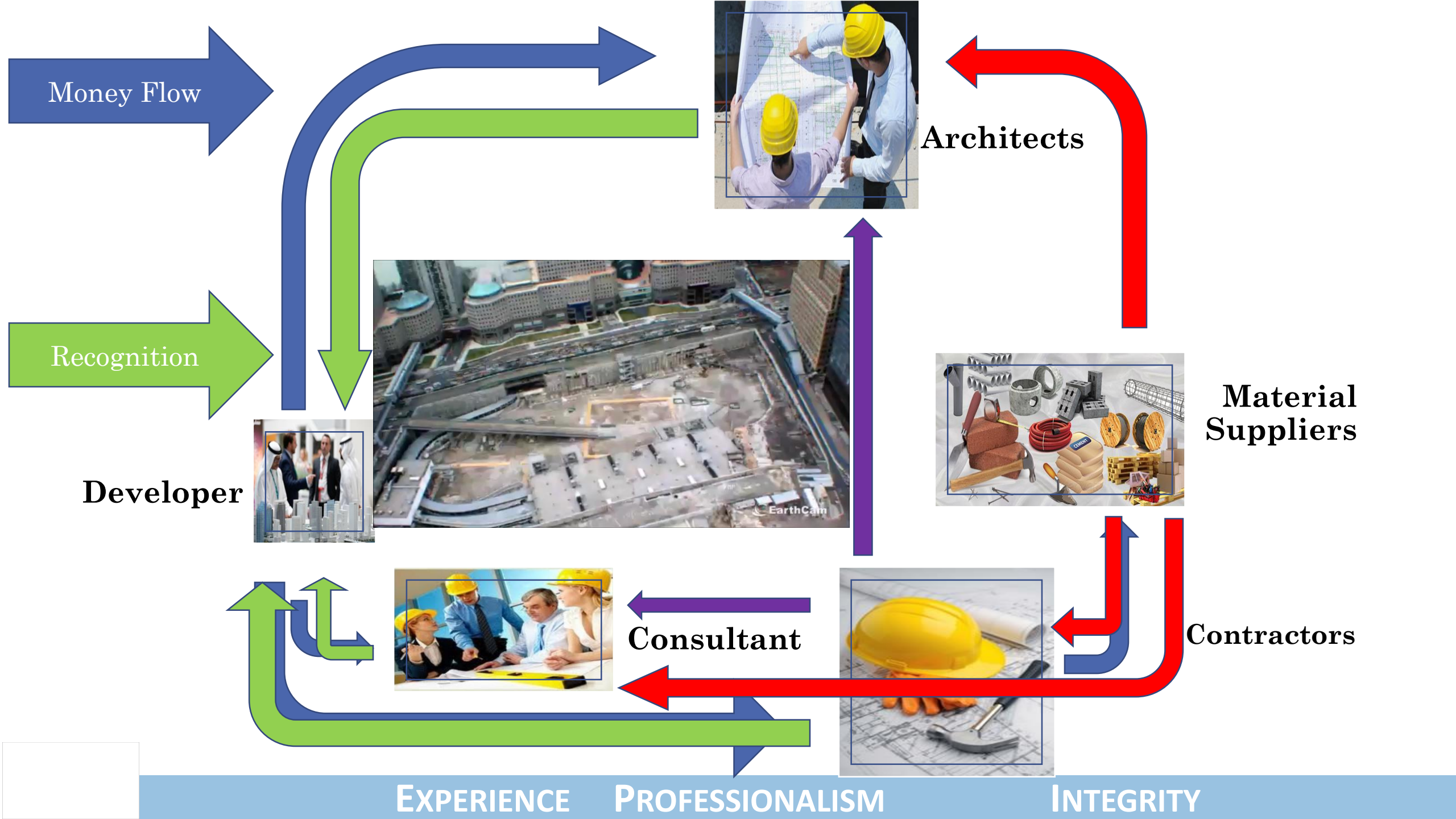


H2 Board and sheet external cladding and soffits

System Outline

102 Wood weatherboarding

- Drawing references: Proj-12345-007 and Proj-12345-007.
- Breather membrane: As clause 336.
- Battens and counterbattens:
 - Counterbattens:
 - Timber: Regularized softwood free from decay and insect attack and with



Money Flow

Recognition

Developer

Architects

Material Suppliers

Consultant

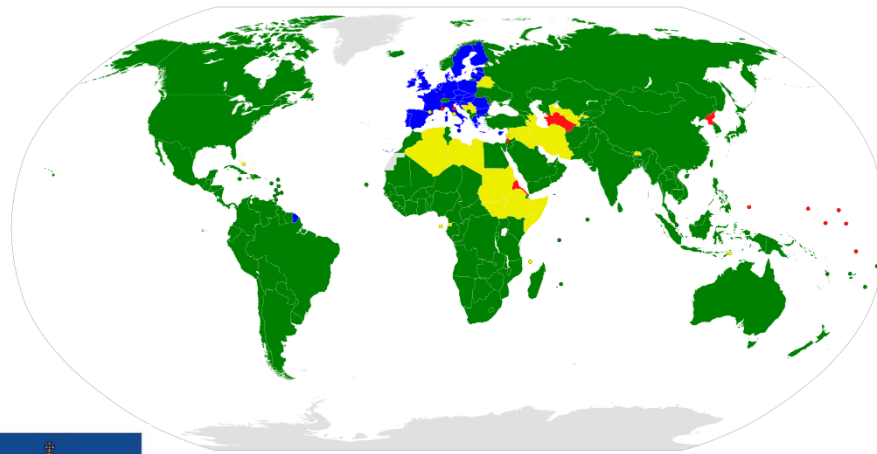
Contractors

EXPERIENCE

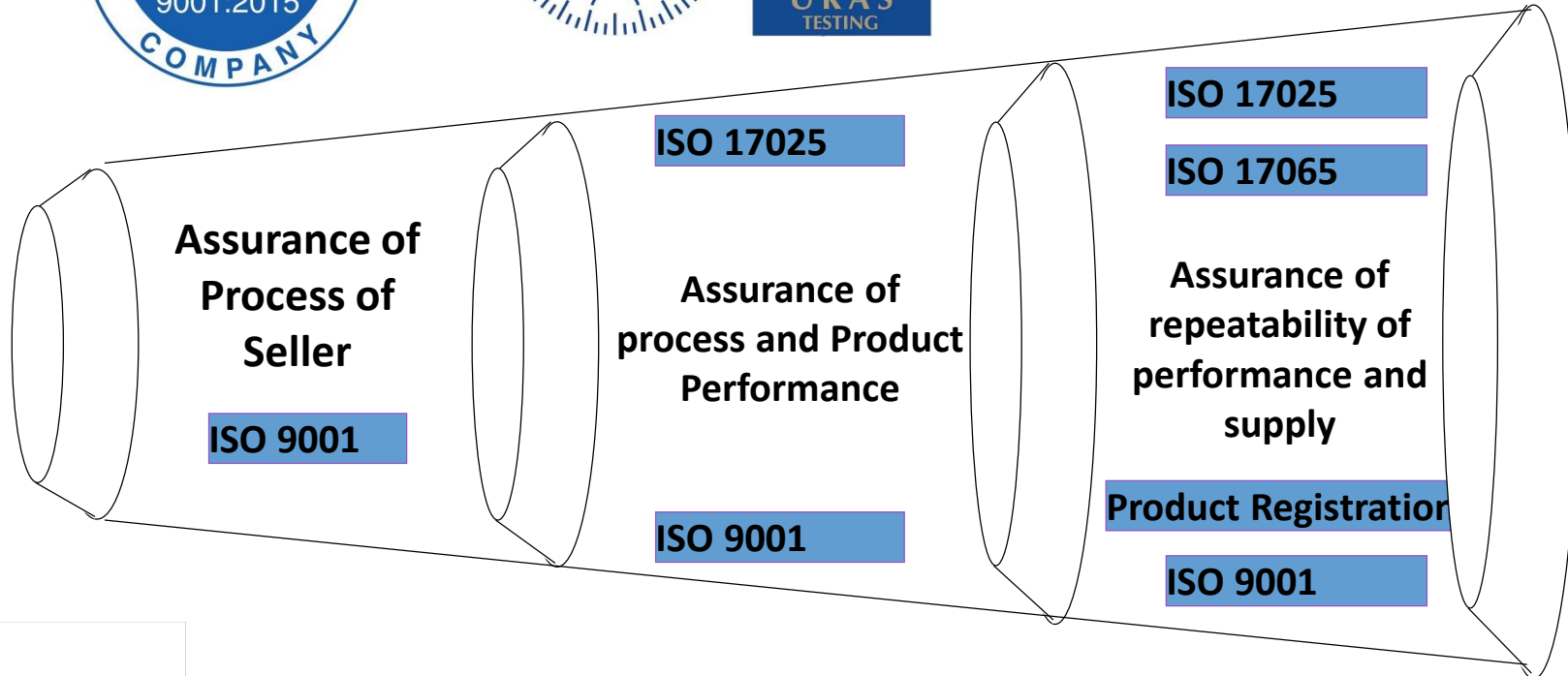
PROFESSIONALISM

INTEGRITY

WORLD TRADE ORGANIZATION



99.98 % of world GDP
99.35 % of world population



EXPERIENCE PROFESSIONALISM

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Fire Safe Cladding System

Risk Assessment
Fire Consultant | Façade Specialist | Contractor





Inspection



Assembly test or tests

Material Reaction to Fire Tests

Certification & Listing

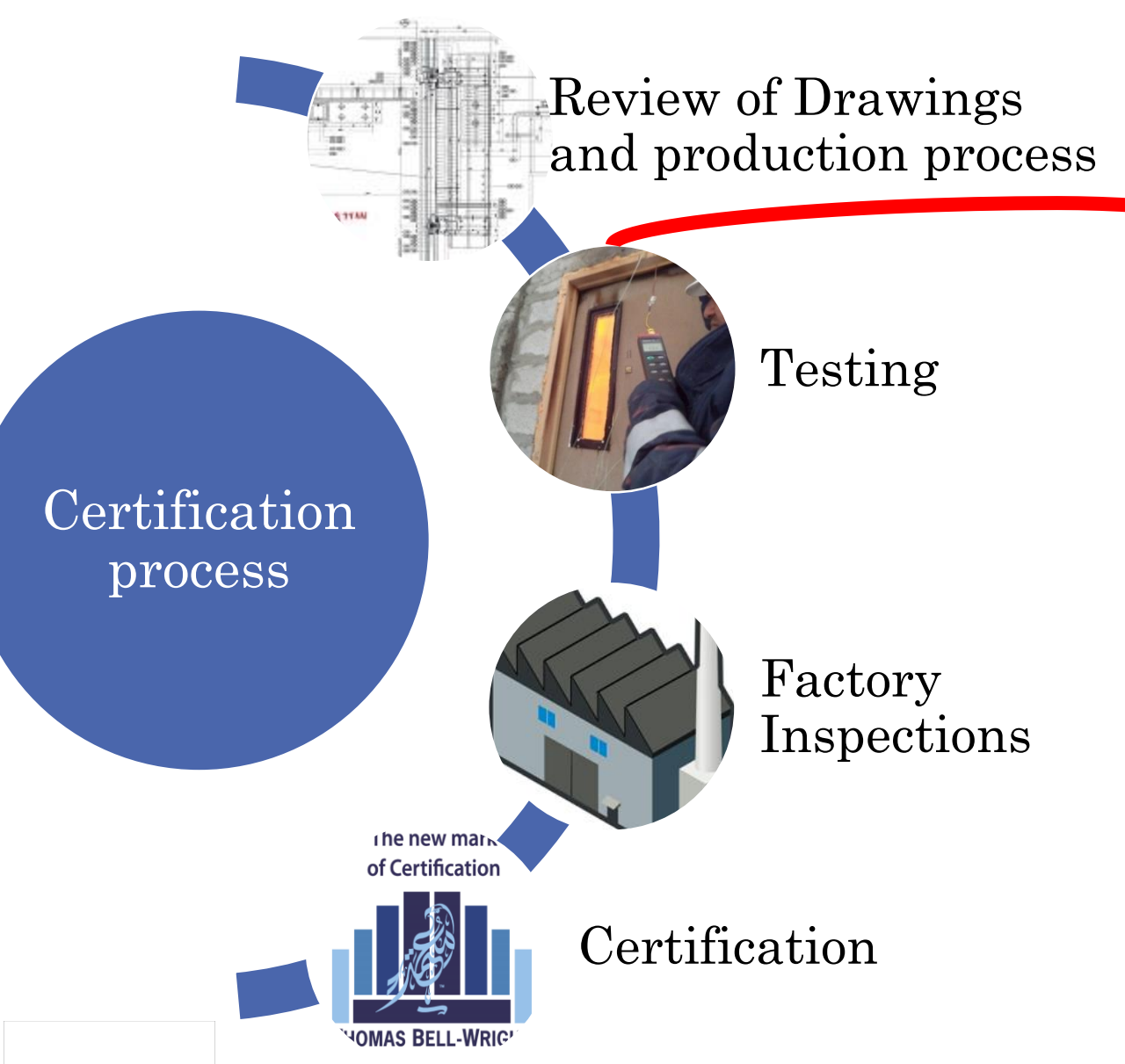
-  Ignitability
-  Combustibility
-  Calorific Value
-  Flame Spread, Smoke

Assembly



Material Reaction to Fire Tests

The Answer lies in Certification and Listing




TEST REPORT FOR FIRE PROPOGATION CHARACTERISTICS OF EXTERIOR NON-LOAD BEARING WALL ASSEMBLIES

Test Sponsor:
Eurocon Building Industries FZE
A subsidiary of Mulk holdings Group FZC, sharjah
P.O. Box: 42642, Hamriya Free Zone
Sharjah, U.A.E.
T: +971 6 52 62 202, F: +971 6 52 62 203
Website: www.mulkholdings.com

Test Assembly:
Non-loadbearing 6mm Alubond USA FR-B1 Aluminium Composite Panel (ACP) Cladding Assembly

Test Standard:
NFPA 285: Standard Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Loadbearing Wall Assemblies Containing Combustible Components, 2012 Edition



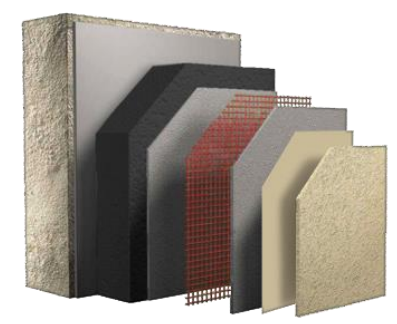
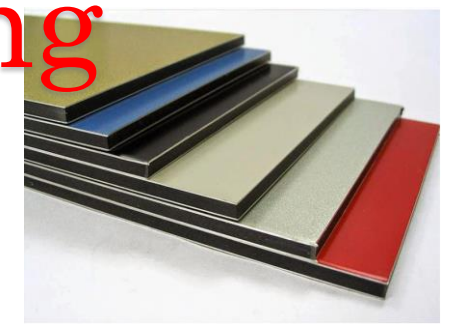
THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

Test Date: 24-Aug-16
Issue Date: 28-Sep-16
Test Report Reference No.: QH003

PO BOX 26385, DUBAI UAE T +971 (0)4 333 2092 admin@bell-wright.com www.bell-wright.com

DUBAI ABU DHABI DOHA

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www.tbwcert.com

has over 100 cladding

designs complying

with Large Scale Fire

Propagation tests

Like NFPA 285

Search results for your query:

Certificate Number	Company	Description	Test
TBW0300119.1	Interplast Company Limited	Alupec FR Aluminium Composite Panel Non-loadbearing Exterior Wall Cladding System	NFPA 285
TBW0300120.1	Elvan Colour SA	Alubond® FR 4.0 mm thick Aluminium Composite Panel Non-Loadbearing Exterior Wall Cladding System	NFPA 285
TBW0300119.2	Eurocon Building Industries (ZEP) subsidiary	Alubond U.S.A. FR Euroclass B2 s3 m3 4.0 mm thick Aluminium Composite Panel Non-loadbearing Exterior Wall Cladding System	NFPA 285
TBW0300137.1	Alubond Turkey Alüminyum Kompozit Panel San.	Alubond U.S.A. FR-A2® 4.0 mm thick Aluminium Composite Material Non Load-Bearing Exterior Wall Cladding Assembly	NFPA 285

- 1 Fire Doors and Hardware
- 2 Fire Rated Separating Constructions
- 3 Exterior Wall Assemblies, Claddings, Curtain Walls, Building Materials, Products & Assemblies
- 4 Wood Fire Doors Constructed by Core Suppliers' Licensees



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Certification directories lists details helping you track all compliance

information of the products carrying certification marks



Figure 3. "Alupec FR" non-load-bearing exterior wall cladding horizontal section details



Figure 4. "Alupec FR" non-load-bearing exterior wall cladding window side flashing details

Certificate number: TBW0300119.1
Page 5 of 9

Certification Manager
Nick Purcell

Seal number: 100166

EXPERIENCE PROFESSIONALISM

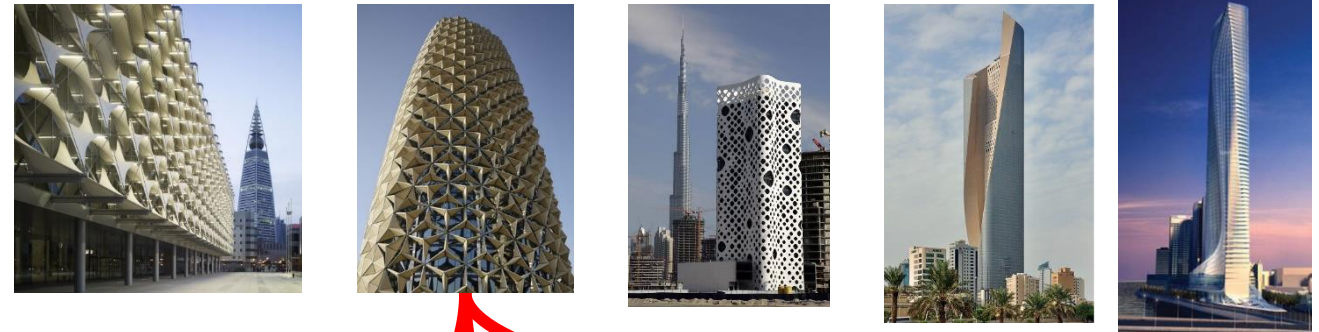
INTEGRITY

Certification & Listing

Assured Quality of Every Project

Building claddings often have scores of designs with several details and features.

Review of Drawings
Risk Assessment
Planning Tests



Customized testing & Inspections

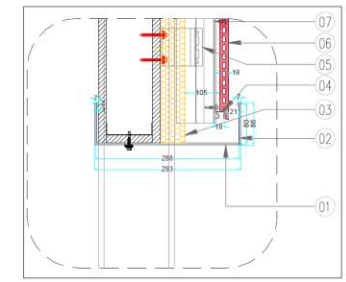
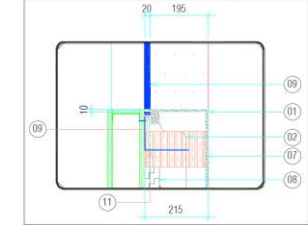
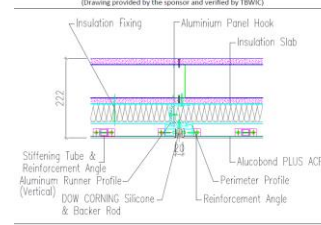
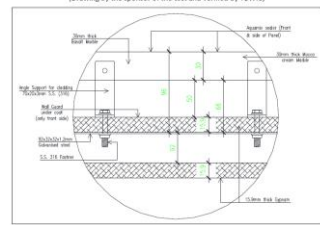
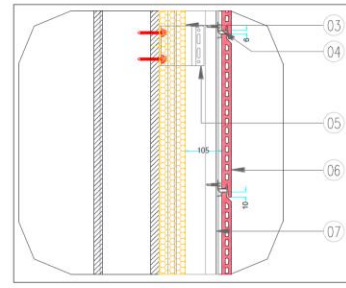
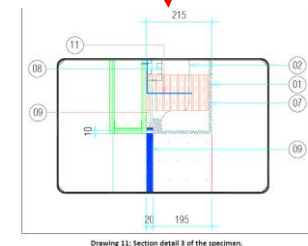
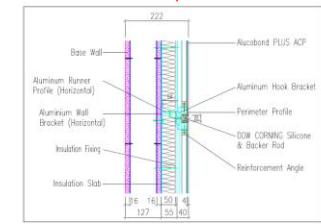
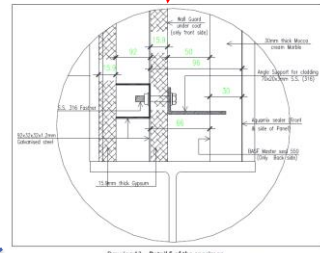
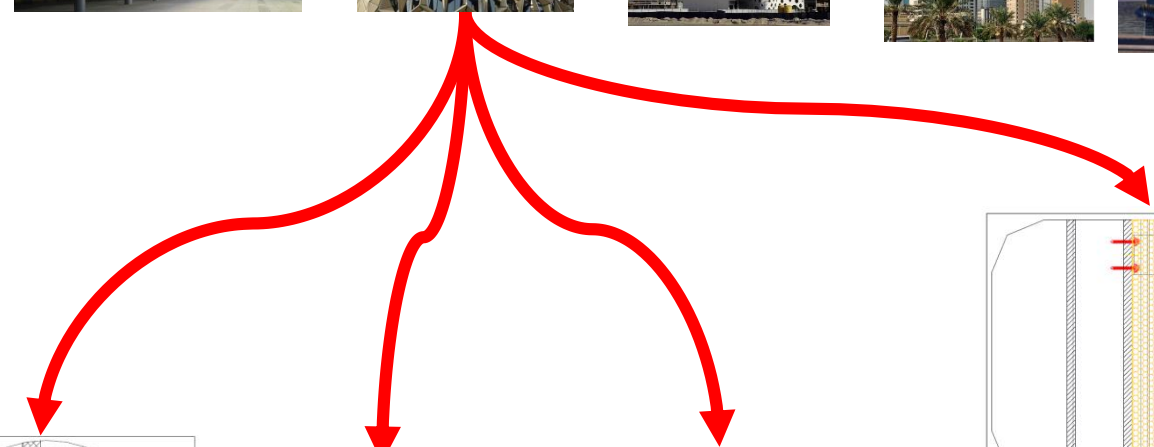
Consultants often choose one or more designs to be tested for fire safety using a mock-up test



Mock up Tests



Site Inspection



Assembly test or tests

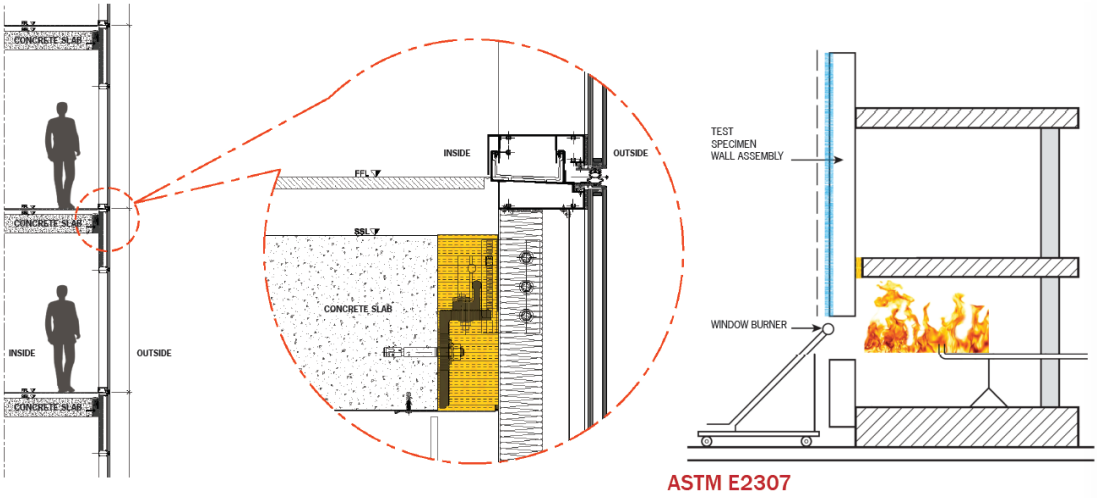
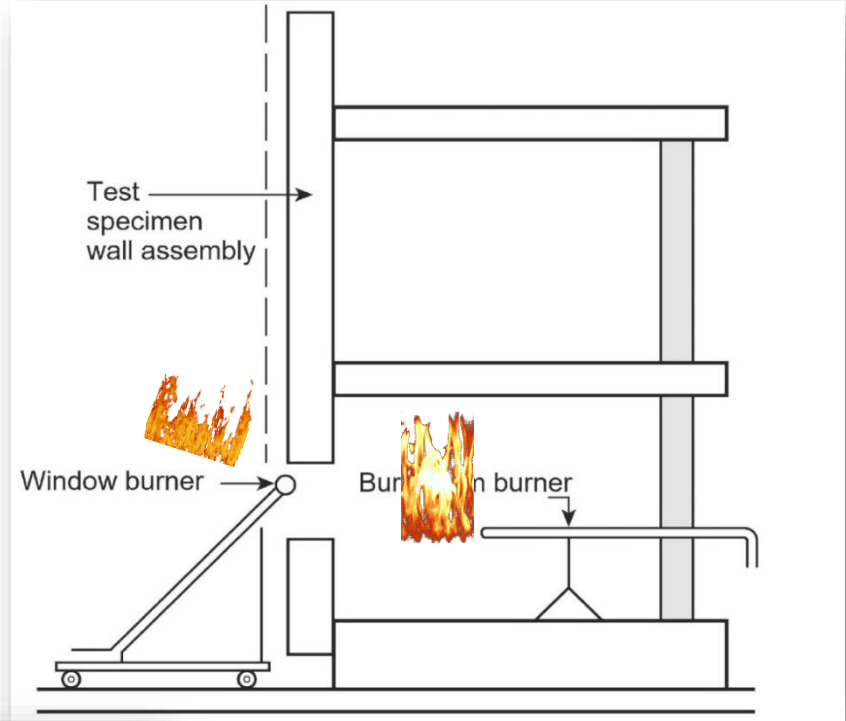
EXPERIENCE

PROFESSIONALISM

INTEGRITY



NFPA 285 for Cladding Systems

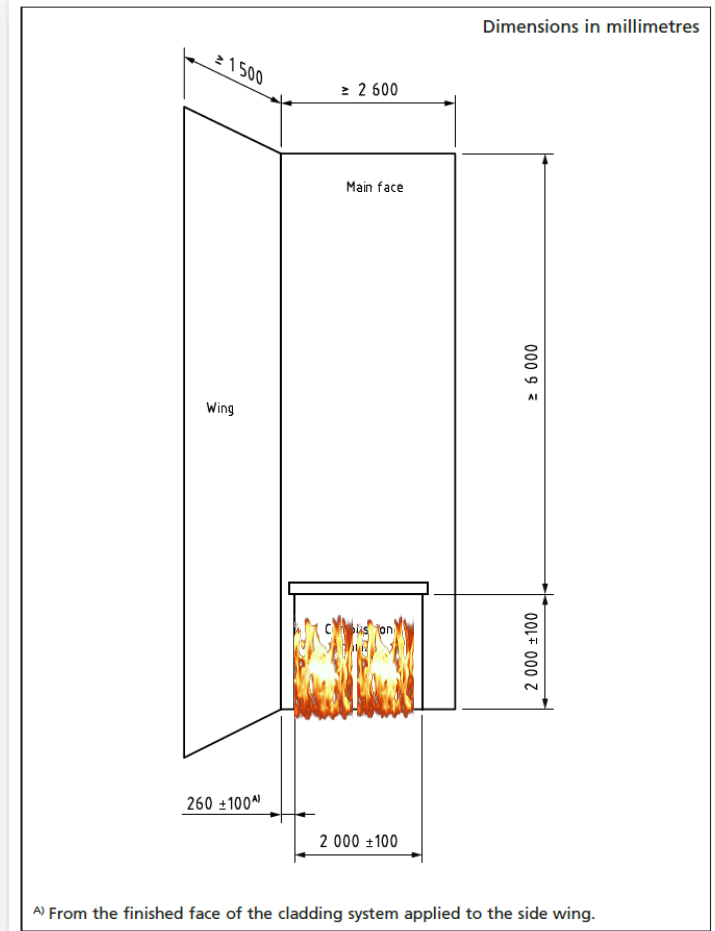


ASTM E2307 for Perimeter Fire Stops

Assembly
test or tests



Schematic of test apparatus



Similar to the NFPA 285 test used in USA, the BS 8414 is used in UK to validate the designs of cladding systems

Fire Performance Of External Cladding Systems as per BS 8414

EXPERIENCE PROFESSIONALISM

INTEGRITY

Assembly test or tests



Fire Safe Cladding System

Risk Assessment
Fire Consultant | Façade Specialist | Contractor





Inspection



Assembly test or tests

Material Reaction to Fire Tests

Certification & Listing

-  Ignitability
-  Combustibility
-  Calorific Value
-  Flame Spread, Smoke

Assembly



How do you **ensure**
that certified
material is being
installed as per
tested and **proven**
designs?



EXPERIENCE

PROFESSIONALISM

INTEGRITY

Inspection

Fire Doors



Manufacturer

Review of Drawings and production process

Certification and listing

Assessment for changes

Testing

Factory Inspections

Supply Fit



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Product Certification Listing Portal

Enter one or more search criteria to find a specific listing or a group of listings are limited, have qualifications and may be withdrawn. When looking at specific Certification documents (via the link in the product listing) to confirm that the p Certification.

Certificate Number

Just the digits after TBW

Company Name

Or spacebar to see all

Scheme

Enter the Scheme Number

[Search Listings](#) [Reset Form](#)

Current Certification Schemes

Scheme	Description
1	Fire Doors and Hardware
2	Fire Rated Separating Constructions
3	Exterior Wall Assemblies, Claddings, Curtain Walls, Building Materials, Products & Assemblies
4	Wood Fire Doors Constructed by Core Suppliers' Licensees

All Certifications i Certification Mark



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EXPERIENCE

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INTEGRITY

Door
Schedule

Assessment
for changes



Fire and Life Safety Plan includes **rating in hours of compartments**

Architect/
Designer/
Consultant



Releases a **Door Schedule** listing which doors to have what **rating**

Contractor



Ensure via Engineering Evaluation or Retesting **if Door Schedule is covered in their listing**

Material Suppliers



EXPERIENCE

PROFESSIONALISM

INTEGRITY

Fire Doors



Manufacturer

Review of Drawings and production process

Certification and listing

Assessment for changes

Testing

Factory Inspect

Supply Fit

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EXPERIENCE

PROFESSIONALISM

INTEGRITY

How do you **ensure**
that certified
material is being
installed as per
tested and **proven**
designs?



Inspection



EXPERIENCE

PROFESSIONALISM

INTEGRITY

Fire Doors



Manufacturer

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EXPERIENCE

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What about the performance of **bespoke** material and systems



**VALIDATING
BESPOKE
SUPPLIES**



Images from the Internet for representative presentation

EXPERIENCE

PROFESSIONALISM

INTEGRITY

Assurance of Bespoke Supplies

Manufacturer

(Fire) Consultant
(Fire Strategy Of Building)

Contractor

UAE Fire and Life Safety
Code of Practice

Writing Specifications

Implementing
Specifications

Chapter 18
RESPONSIBILITIES OF
STAKEHOLDERS



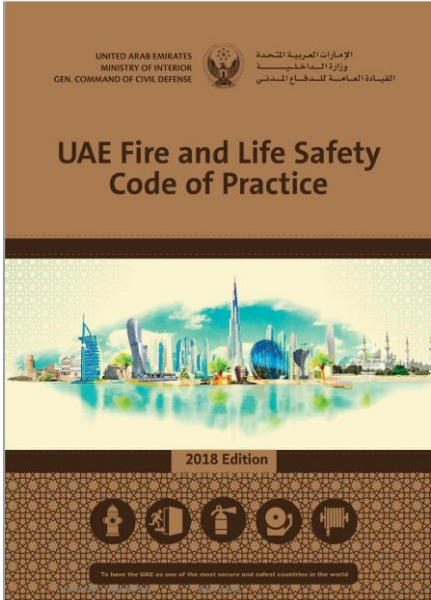
Accredited Inspection

Accredited Testing Lab

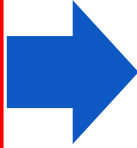
EXPERIENCE

PROFESSIONALISM

INTEGRITY



Sample Selection from Site



Testing in Accredited Lab



Inspection at site to ensure supply



Testing and inspection report submitted



Defines the **Compliance requirements** as per Fire and Life code



Takes ownership of establishing the **compliance of materials** supplied



Selects Samples from site to **establish traceability** and uses an **accredited test labs** report and **site inspection** and **submits** to authorities (**AHJ**)

Architect / Consultant



Contractor



Fire Consultant / Lead Consultant



EXPERIENCE

PROFESSIONALISM

INTEGRITY

Assurance of Bespoke Supplies

Manufacturer

(Fire) Consultant
(Fire Strategy Of Building)

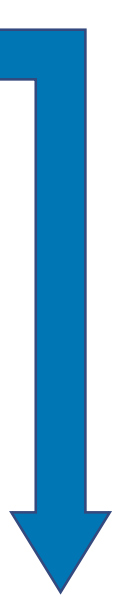
Contractor

UAE Fire and Life Safety
Code of Practice

Writing Specifications

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Specifications

Chapter 18
RESPONSIBILITIES OF
STAKEHOLDERS



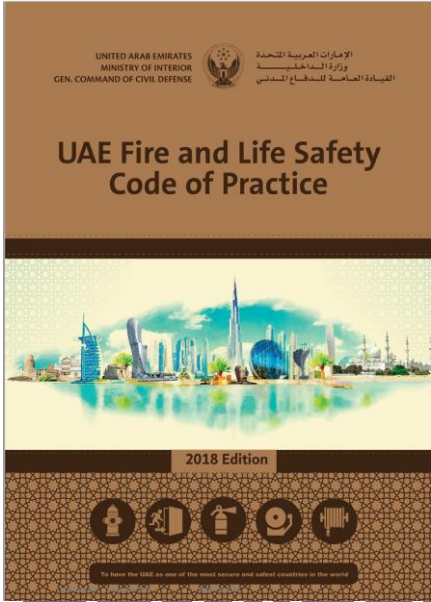
Accredited Inspection

Accredited Testing Lab

EXPERIENCE

PROFESSIONALISM

INTEGRITY



Mock Up Tests

Inspections

Establish Traceability of Sample from Site

Risk Assessment

Drawing Review



Review Production Process

Testing with Traceability

Factory Audits

Certification and Listing

EXPERIENCE

PROFESSIONALISM

INTEGRITY



**SAFETY
DESIGN
IN
BUILDINGS**

Thank you