

PASSIV AND PASSIVE — WHO WOULD HAVE THOUGHT?

By John Rakic

Introduction

I first saw Passivhaus appear on google searches or in my LinkedIn feed several years ago; if my memory serves me correctly it was before COVID.

As I have spent my life in Passive fire Protection, the “Passiv” component caught my eye.

I googled it’s meaning:

What is meant by Passivhaus?

Passivhaus, literally passive house in English, refers to buildings created to rigorous energy efficient design standards so that they maintain an almost constant temperature. 22 July 2022

So, it is about energy efficiency.

Today, we all appreciate the escalating costs of energy and with or without mandated control in the NCC or BCA, I think there is an appetite to save money and have a more energy efficient home, apartment, or commercial building.

So, what does this have to do with Passive Fire Protection, you might be thinking?

It has always bothered me that Australian Construction requirements in the NCC or BCA deal with fire and smoke separately.

A big part of Passive Fire Protection is containment of fire, by separation of larger buildings into fire compartments. If a fire breaks out in one area of a building, we do not want the fire to spread to other part of the building.



PASSIV AND PASSIVE — WHO WOULD HAVE THOUGHT?

By John Rakic

So, let's define fire in the context above. Do we mean the flames, or do we mean the smoke as well?

The NCC and BCA tends to deal with these compartment barriers separately; that is, we have fire walls with an FRL and Smoke Walls with poorly defined and qualitative requirements.

We do not really have a fire and smoke wall, ceiling, shaft, or floor? Should we?

What do you think society at large or the average person thinks?

Do you think when they hear the term fire compartment wall, do they think or expect this barrier is safe for fire spread and smoke spread?

I would argue they do!

So, let's go back to Passivhaus for a minute.....

One component of energy efficiency is to have airtight envelope or barriers between adjoining spaces, such as apartments for example.

Why heat in the winter or cool in the summer, only to have leaks which require the heater or air conditioner to work harder, using more energy to maintain the desired internal temperature. Don't you like me remember you parents saying things like **"Close the door; were you born with a broom in your backside?"**

COVID and what it helped identify.

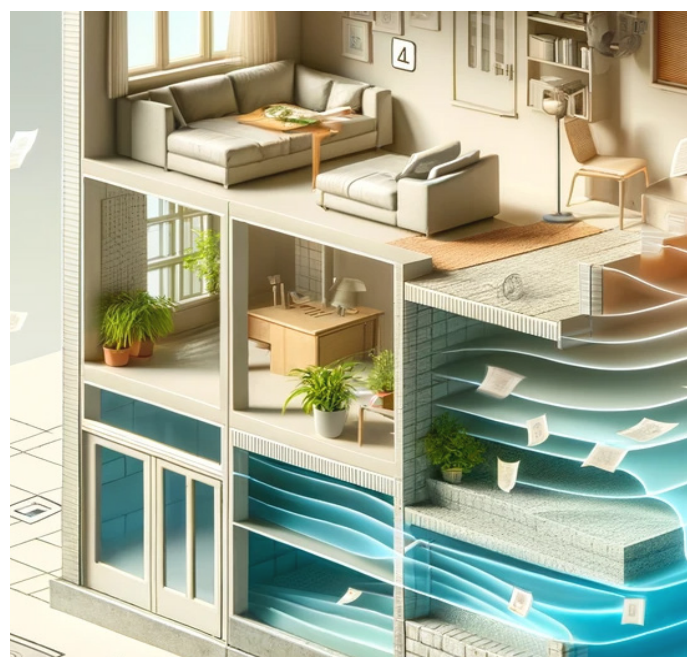
COVID was spreading and we all were worried.

Nursing homes, hotels and hospitals were seeing large number of infections even with some form of isolation of patients or guest why? How was it spreading?

We were washing our hands and keeping apart but infections were on the increase.

BINGO we realised; it is airborne – wear masks.....

How was it spreading within the buildings from room to room or ward to ward?



PASSIV AND PASSIVE — WHO WOULD HAVE THOUGHT?

By John Rakic

The wake up call for us; all the so called fire and smoke walls leaked like sieves.

Passivhaus folk; I can't think of a better term, came to the table and were doing fan pressure testing of spaces. Doors, access panels, openings for services, joints and poor construction were all leaking. In panic nursing homes, hospital and apartments were sealing walls, ceilings, floors and shafts the best they could.

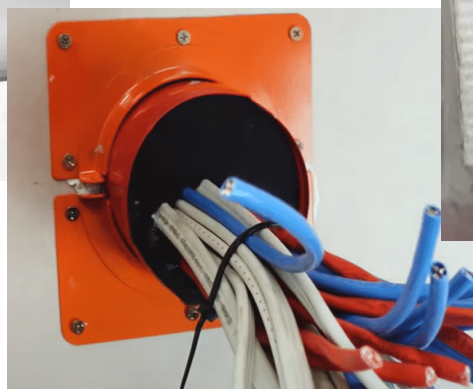
The issue with fire rater barrier was do we effect the FRL and certification by adding materials to seal gaps or openings?

If only we had fire and smoke walls all this time in the NCC; they would be airtight too, as smoke is just incomplete combustion particulate in air; yes it may be warmer than ambient, but my experience is that medium temperature smoke leakage testing does not offer much cost benefit analyses; ambient leakage results correlate quite well when medium temperature air (called smoke) test data is corrected to STP or ambient conditions for many building elements I have tested over the years. For the record my major thesis for my Masters in Fire engineering was related to smoke leakage through fire barriers and opening in fire barriers.

Trafalgar's pre COVID products and systems

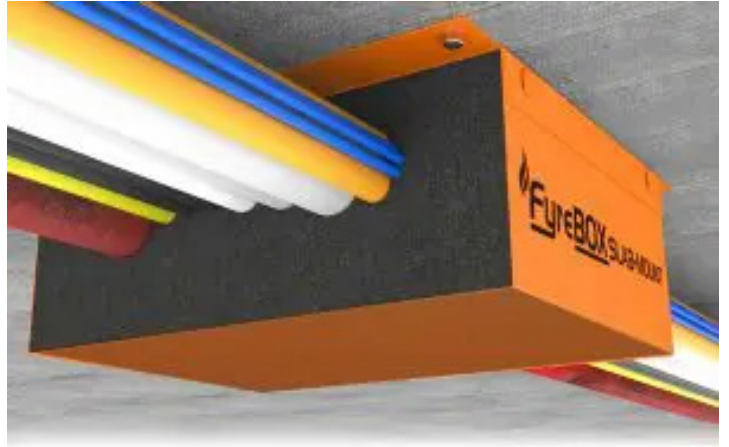
As the owner of Trafalgar, I have always promoted both acoustic (sound containment) & smoke containment as an important design attribute fire stopping.

Many of our products and systems are sealed well to have to pass a fire resistance test.



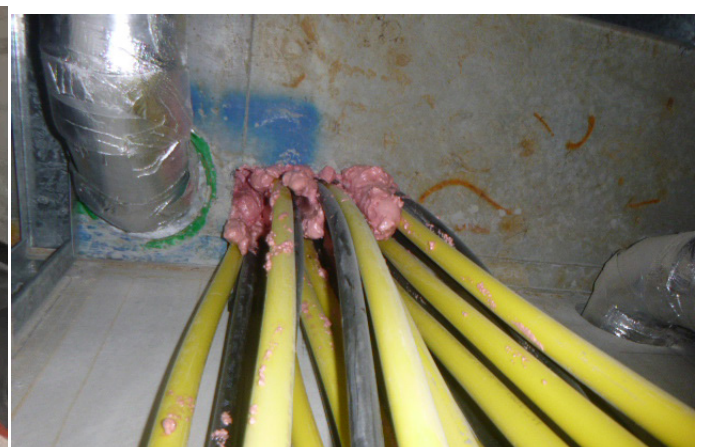
PASSIV AND PASSIVE — WHO WOULD HAVE THOUGHT?

By John Rakic



The problem systems are those that use intumescent to close an opening in fire conditions. If there is no fully developed fire and high temperature many of these are open allowing incipient smoke and of course air leakage. The same applies to acoustics; openings allow noise to travel to the other side of the barrier, just like smoke and air.

Acoustic complaints, drafts, smells, light transmission into dark spaces were common complaints or improvement suggestion in existing buildings, like the images below.



Trafalgar's post COVID product and system offering embellishments.

In part, the many of our product attributes, which may have seen us a little bit more expensive than our competitors, saw a bigger take up of our existing products.

However, we did listen to the market and where problems exist, opportunities for innovations and new products and systems are available.

So here is some of the newer systems we have put together to date; we had to cater for different building type & contractor budgets so there is some deliberate overlap.

Mixed services fire, smoke & air leakage Collar

We went back and did more fire testing to include our FyreFLEX sealant inside of FyreCOLLARS.

The 60mm height and high-performance nature of our intumescent materials and the intumescent properties of FyreFLEX saw our fire test results improve; not reduce.

We are the first ones to verify and allow our retrofit fire collars to be installed on HVAC&R services and bundles of conduits providing fire, acoustics, smoke and air leakage performance characteristics.



SuperSTOPPER® Circular

For bundles of cables and conduits, we offer a round cable transit or what we call our SUPERSTOPPER circular.

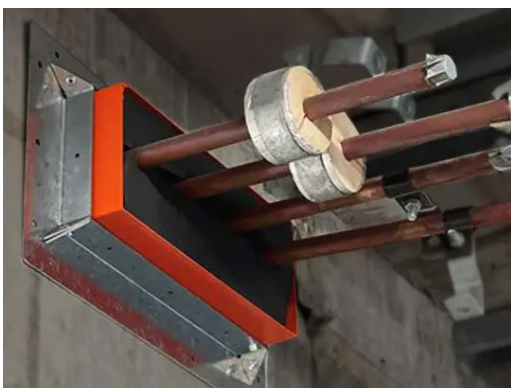
Graphite impregnated foam plugs and airtight; offering excellent acoustic properties and helping provide an FRL with empty or low service fill ratios



Larger openings with mixed services

Most readers would have heard of our pioneering and innovation with our FyreBOX multi-services systems.

Small, medium and large options; for different stages of construction or for upgrading existing building construction (for fire resistance, acoustics, smoke and air leakage again).



PASSIV AND PASSIVE — WHO WOULD HAVE THOUGHT?

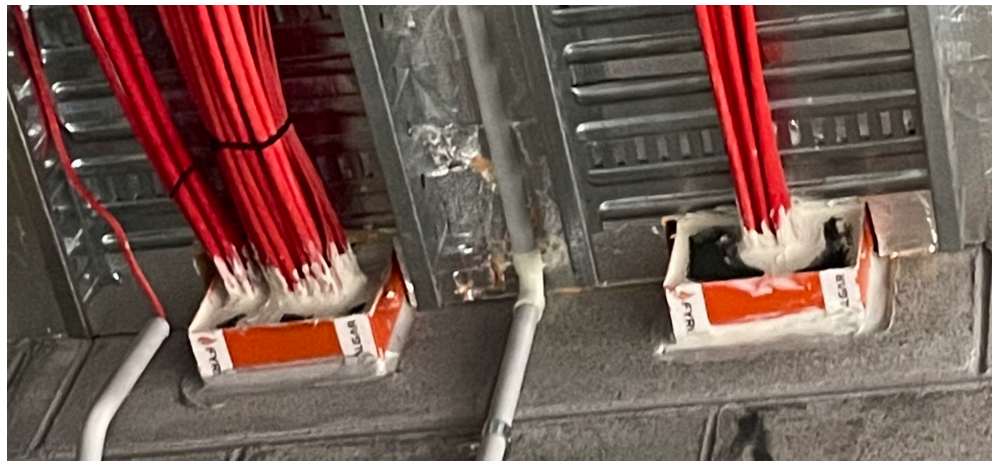
By John Rakic

Why do we have to fit the foam?

Why can't we have an integrated brush?

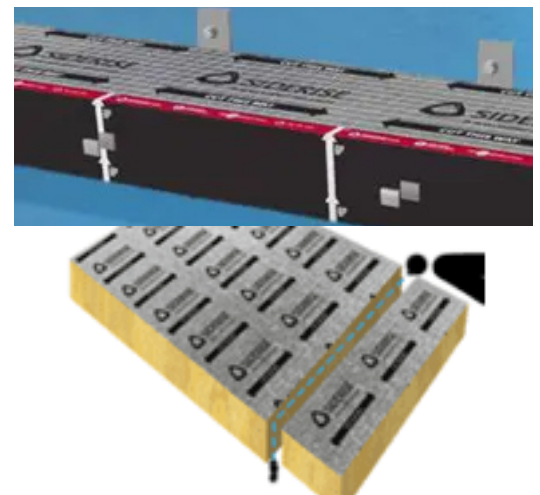
You answer this yourself-

If air passes through a brush in large volume with a small pressure differential, so does smoke, sound and incipient hot gases and I would say fire too.



Siderise Slab Edge Fire Stop

We have introduced a curtain wall slab edge fire stopping system which caters to stop vertical fire, smoke, sound and air leakage in high rise buildings.



PASSIV AND PASSIVE — WHO WOULD HAVE THOUGHT?

By John Rakic

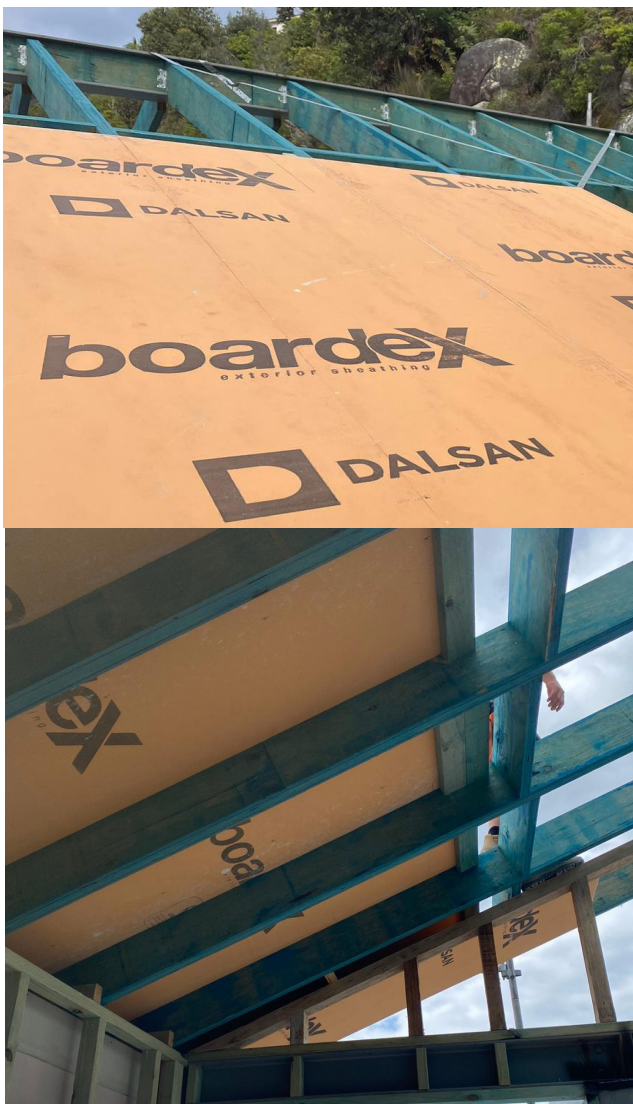
Boardex FyreBOARD

My favourite is our glass reinforced, gypsum board technologies.

These are effectively a class 4 rigid vapour permeable sarking; which do not go mouldy, are impact resistant and do not sustain the grow of mould. Some may call these a rigid air barrier.

The added bonus with Boardex is it is easy to cut, lighter than fibre cement and contains no crystalline silica. I am sure you will see orange Boardex being used on your construction sites soon if you already have not.

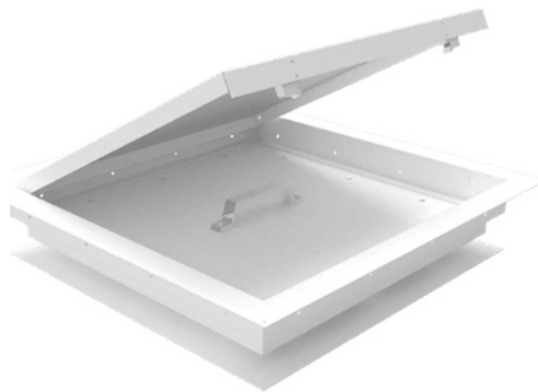
It is fire tested in BAL FZ roof assemblies and wall assemblies also.



Airtight Access Panels

We developed some new locally manufactured access panels with quantified and very low or negligible air leakage rates; air tightness if you like.

These have been very popular and are keeping our factory very busy; confirming that there is a demand.



Airtight Access Panel

Perfect for:

- ⊕ Healthcare Centres
- 🏥 Operating theatres
- 📄 Data centres
- 🌀 Cleanrooms
- 🌱 High-efficiency construction
- 🧪 Laboratories



TRAFALGAR

