

Sustainability in fire safety



The importance of sustainability in fire safety has been gaining increasing attention. As the construction industry significantly contributes to climate change, it is crucial to consider sustainability in fire protection. Life safety and sustainability do not have to be opposing goals, and implementing fire-safe measures in buildings can benefit both aspects.

By reducing the number of severe fires, we can also reduce the amount of wasted material, pollution, and socio-economic losses. During a fire, a significant amount of pollution is released into the environment through air and water, and properties are lost. After a fire, sanitization and reconstruction are necessary.

The building industry is responsible for a considerable percentage of global carbon emissions, water consumption, and waste generation. Fire incidents worsen the environmental sustainability of buildings over their lifespan, which is a major concern for future generations.

Stopping buildings from burning is important in terms of sustainability.



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The global population is expected to increase to 9.8 billion by 2050, and global building floor area is expected to double by 2060, which will lead to an exponential increase in the environmental impact associated with the built environment. Therefore, sustainable built environments are a critical solution to reduce climate change.



Eco-friendly materials and green buildings

Using eco-friendly materials and practices is a crucial part of sustainability in buildings. Adopting eco-friendly technologies, materials and practices will reduce the emission of greenhouse gases and improve the overall quality of life.

Green buildings are designed to be sustainable and environmentally friendly. While these buildings offer many benefits, they also present unique challenges in fire safety, particularly with facade design.

The goal is to achieve buildings that are both resilient in terms of fire safety and environmentally friendly.



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There are several definitions of so called “green buildings”. In this article we use the World Green Building Council (WBGC) definition:

“A green building is a building that, in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment. Green buildings preserve precious natural resources and improve our quality of life.”

Sustainable and fire resilient buildings are becoming increasingly important in the construction industry. These buildings are designed to be both environmentally friendly and resistant to fire.

Sustainable and fire resilient buildings are important for several reasons. First, they promote environmental sustainability by reducing energy consumption and minimizing waste. They are designed to be highly efficient and use renewable energy sources, such as solar panels. This reduces the carbon footprint of the building and helps to combat climate change.

Second, fire resilient buildings are designed to be safer for occupants and firefighters. These buildings incorporate fire-resistant materials, advanced fire suppression systems, and other safety features that help to prevent fires and reduce the risk of injuries and fatalities in the event of a fire.

At the intersection between fire safety and sustainable buildings, one can face challenges when using new types of construction materials.

Choice of materials like photovoltaic panels (for both roof and wall), combustible insulation, lightweight materials, and wood (for high-rise construction), can be challenging for fire safety of façades.

Fire hazards of photovoltaic (PV) systems

The rapid expansion of solar cell technology worldwide is driven by the rising demand for renewable energy sources and the changing climate. However, photovoltaic (PV) systems pose fire hazards, particularly those utilizing PV panels for cladding and roofing, which rely on a cavity for technical installations and air cooling. This gap between the wall/roof and the installation can create flue-like conditions that can accelerate the spread of flames.

Fortunately, Securo offers various products and methods to safeguard this air gap behind the panels and mitigate the rapid spread of fire. More information on this topic will be provided later in the article.



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Wood construction and cladding

While timber use in construction remains relatively small compared to more carbon-intensive materials, it is quickly gaining momentum.

The European market for cross-laminated timber, one of the most popular wood-based construction materials, has grown significantly, and according to market research group IMARC, this is expected to reach 2.6 million cubic meters by 2027.

Sustainability is a primary driver of this growth, as timber has impressive green credentials. Additionally, it is cost-effective, flexible, and aesthetically pleasing, and can speed up the construction process.

Wooden cladding has also become a popular choice for building exteriors due to its natural beauty and versatility. However, there has been some concern regarding the safety of wooden cladding in the event of a fire.

Wooden cladding, like any combustible material, can pose a fire risk if not properly treated or installed. However, with proper fire-retardant treatments and installation techniques, wooden cladding can be made safe for use in fires. To avoid fire spreading, and two-sided fire exposure to the cladding, it is essential to protect the air gap between the insulated wall and the cladding.



Photo: Voll Arkitekter AS. Illustrations: VizWork

Lightweight façade materials

Lightweight façade materials enhance energy efficiency by reducing heating and cooling needs, owing to their lower thermal mass and heat conductivity. They also lower a building's environmental impact by minimizing resource requirements for construction and transportation. This, along with improved indoor environments, makes lightweight façade materials an eco-friendly choice for sustainable construction.

Lightweight façade materials pose a fire hazard due to their low fire resistance and propensity to ignite quickly. This can lead to rapid and unpredictable fire spread, compromising the building's structural integrity and endangering occupants and firefighters with toxic fumes.

To counter this risk, building codes mandate specific fire safety standards for lightweight façade materials, including resistance to ignition and limited flame spread.

By securing the air gap behind lightweight cladding materials, the cladding's exposure is reduced to one side, thereby significantly increasing its burn through time.



New insulation products

New insulation products are available to promote sustainability in building construction. Opting for sustainable insulation options can help reduce the environmental impact of buildings and promote a sustainable future.

However, some sustainable insulation products can present a challenge in terms of fire safety. These materials can easily ignite and spread fire quickly, releasing toxic gases and large amounts of heat.

The use of ventilated cavity barriers can significantly decrease the spread of fire by limiting access to the insulation.

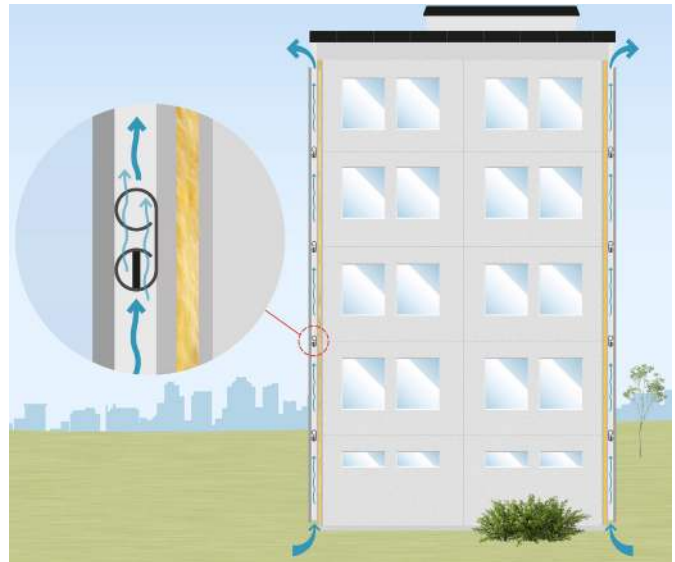


How can Securo products reduce fire spread risk with sustainable building materials?

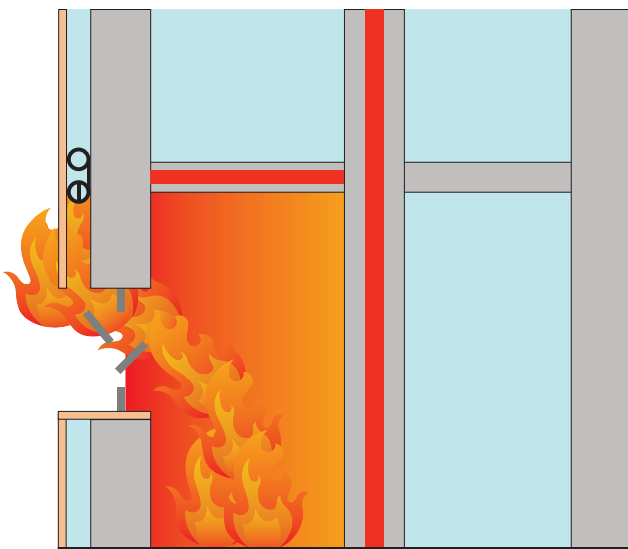
In the pursuit of sustainable building practices, integrating eco-friendly materials poses new challenges in ensuring fire safety. Securo products emerge as pivotal solutions in this context, offering innovative ways to mitigate fire spread risks associated with the use of sustainable materials.

The adoption of combustible cladding materials, such as PV panels and wood, despite their environmental benefits, introduces heightened risks of fire spread, particularly through the façade system. The chimney effect, which occurs in the air gap behind the cladding, can lead to rapid fire escalation. To counteract this, Securo's solutions are engineered to provide an immediate flame and ember stop, ensuring that fire does not breach the protective barriers.

One of the key strategies involves the installation of Firebreather cavity barriers within façade systems. These barriers are designed to restrict fire access to the air gap behind the cladding, thereby protecting any combustible materials present. By effectively limiting the exposure of the cladding to fire on one side, the burn-through time is significantly extended, enhancing overall fire resistance.



Firebreather® cavity barriers strategically installed at floor level to ensure optimal compartmentation of the facade, enhancing fire safety by preventing the spread of fire between floors.

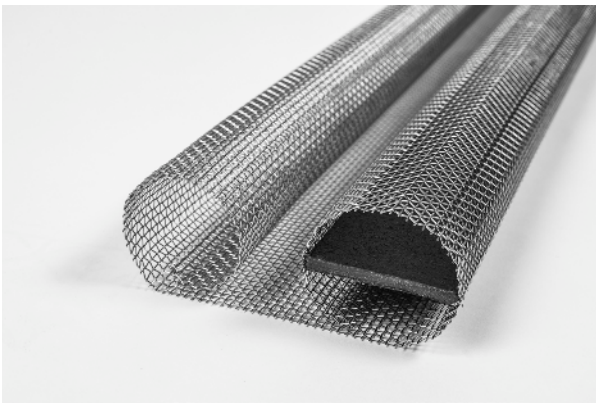


Critically, the effectiveness of fire safety measures hinges on their response time. Products that take minutes to activate may be too slow to prevent fire from spreading to vulnerable areas. This is where Securo's Firebreather cavity barriers stand out, offering immediate activation to seal off critical areas from fire penetration. Moreover, even more flammable insulation products become safer by limiting fire's access to them through these advanced barriers.

How can Securo products reduce fire spread risk with sustainable building materials?

Incorporating Securo products into sustainable building projects is not merely about meeting fire safety standards but about redefining what is possible in eco-friendly construction. By ensuring that fire safety measures keep pace with the innovative use of sustainable materials, buildings can achieve a harmonious balance between environmental responsibility and occupant safety.

As we continue to embrace sustainable building materials, the role of advanced fire safety solutions like those offered by Securo cannot be overstated. Their integration is essential for the development of safer, more sustainable buildings that do not compromise on fire safety. Embracing these technologies is a step forward in our journey towards a more sustainable and secure built environment.



The Firebreather® technology is a patented concept for the development of passive ventilation grilles and cavity barriers with the unique feature of blocking the spread of flames, heat and embers instantly in case of fire.



Firebreather® Cavity barriers offer several advantages over other open state cavity barriers:

- Block flames in the open state, unlike other open-state cavity barriers that allow flames to pass for up to 5 minutes.
- Limit fire spread on the façade and increase burn through time of the cladding.
- Stops burning droplets that can spread fire downwards in the construction.
- Do not disintegrate during fire and movement, as the mesh holds the intumescent in place.
- Are the only cavity barrier that can block ember attacks.
- Block birds, rodents, and insects larger than 2 mm.
- Very fast and easy to install.
- Thoroughly tested and documented.
- Third party control of product, production, and quality system.



“**Protect what matters**” is more than just a slogan for us in Securo, it is something we strive to achieve in our everyday life by having the most secure products on the market and by continuously working for safer regulations both nationally and internationally.

It is satisfying for everyone working here to know that the results of our work are both socially beneficial and give people better security.

The internationally patented **Firebreather®** technology gives us the only comparable products in the market with continuous fire resistance while still open for ventilation.

We are located in Verdal in the mid of Norway where we have offices, warehouse and production. We are also established with sales partners in several countries and work actively with establishing in several more.

Since 2020, we are part of the **svt Group of companies**, which is the largest group within passive fire safety in Europe and have sales network in more than 50 countries.

We are actively participating in several international fora, including those that develop new test standards for fire protection products in Europe and the United States. In the US, we were the main player for the development of a new test standard for passive air transfer grilles that was launched in 2017. In addition, we have been actively involved in developing national standards in several countries.

Our overall goal is to be the leading manufacturer in our field and to provide the best possible service so that all our customers feel safe and satisfied.



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