Hyper-Hybrid Skin: Multifunctional Hybrid Steel-Timber Unitized Façade System

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Hyper-Hybrid Skin
Multifunctional Hybrid Steel-Timber Unitized Façade System
Typical building structural layout positions of columns next to the façade – **limiting the functional and spatial flexibility of the users.**
Typical façade systems provide modularity and ease of construction but failed to achieve their optimum potential as they either limit design freedom or only support their own load.
Structural Integrity
Minimizing Slab Deflection

By incorporating the load bearing capacity into the façade mullion, floor deflection at the slab edge can be minimized.
Façade Layers
Degree of Adaptability

- **Structural Layer** contributes to the structural integrity of the façade till the building’s End of Life.
- **Physical Layer** incorporates the modular design strategies for ease of maintenance and is resilience to requirement changes.
- Reconfigurable function of the structural layer increases the level of adaptability.
- Modular system allows changes of façade functionalities.
Mullion Structure
Material Configurations

- **Timber Mullion**
  - Timber Structure
  - Add-on façade system

- **Composite Structure**
  - Steel Mullion with Reinforced Concrete Infill
  - Steel Structure
  - Add-on façade system

- **Composite Structure**
  - Steel Mullion with Wooden Cladding
  - Steel Structure
  - Wooden cladding
  - Add-on façade system

- **Composite Structure**
  - Steel Mullion with UHPC Structure
  - UHPC Structure
  - Steel Structure
  - Wooden Cladding
  - Add-on façade system
Hyper Hybrid System offers resiliency in façade transformation through the Plug and Play System. With adjustable mullions, the façade structure can be configured, and individual modules can be exchanged.

The reconfiguration of the façade is done independently without effecting the adjacent panels.
Adjustable Mullions
Application on Different Structures

Concrete Floor
- Adjustable Mullion
- Adjustable Steel Bracket
- Cast-in Steel Channel

Steel Beam
- Adjustable Mullion
- Adjustable Steel Bracket
- Steel Beam

Wooden Beam
- Adjustable Mullion
- Adjustable Steel Bracket
- Timber Beam
Parallel Adaptability
Accommodating Functional Changes

**Adjustable Mullions** allows the façade to coherently adapt to functional changes.
Parallel Adaptability
Accommodating Functional Changes

Adjustable Mullions allows the façade to coherently adapt to functional changes

Due to the parallel adaptability, the façade gridline can be configured to accommodate various panel width
Higher level of flexibility can be achieved as the structural columns can be positioned further from the façade.

As the mullions are positioned at the edge of the slab, it also contributes as a load bearing element.
The adjustable mullions also allow **Perpendicular Adaptability** to the façade.

In combination with lightweight floor structure, further adaptability can be achieved such as **double height room or balcony**.
“We close the loop”

priedemann