

What are Facade Systems and Materials?

Worksheet

Facade systems are the technical assemblies (curtain wall, rainscreen/ventilated cladding, precast panel, masonry veneer) that clad a building's structure, chosen for their weatherproofing, thermal performance, aesthetics and how they attach to the frame.

Questions

1. A facade has 150 m glazing on 300 m total area. What is the WWR?
 - A) 50%
 - B) 150%
 - C) 2%
 - D) 30%
2. What is a defining feature of a curtain wall system?
 - A) It's load-bearing for the whole building
 - B) It hangs off the structural frame, carrying only its own weight
 - C) It's always made of brick
 - D) It has no glazing at all
3. What is the main advantage of a rainscreen (ventilated) facade?
 - A) It eliminates the need for insulation
 - B) Its cavity drains water and ventilates moisture, improving weatherproofing
 - C) It's always cheaper than curtain wall
 - D) It requires no backup wall
4. A very high WWR (e.g., 90%) generally increases
 - A) Structural weight only
 - B) Solar heat gain and glare risk, requiring good glazing/shading
 - C) Nothing significant
 - D) Only construction speed
5. A facade has 200 m of glazing on a total facade area of 500 m. Find the window-to-wall ratio (WWR).
6. An office tower has 900 m glazing on 1200 m total facade. Is this a high-WWR (glassy) or low-WWR facade?
7. A masonry building has $WWR = 20\%$ and total facade area of 800 m. Find the glazing area.
8. Define: What is a facade system?
9. Define: What is a curtain wall?
10. Define: What is a rainscreen facade?

Answer Key

1. A) $50\% - WWR = (150/300)100 = 50\%$.
2. B) It hangs off the structural frame, carrying only its own weight - Curtain walls are non-structural cladding attached to (not part of) the primary frame.
3. B) Its cavity drains water and ventilates moisture, improving weatherproofing - The ventilated cavity equalizes pressure and lets moisture drain/evaporate instead of penetrating the building.
4. B) Solar heat gain and glare risk, requiring good glazing/shading - More glazing means more solar heat gain and daylight, but also more glare and cooling load unless controlled.
5. $WWR = (A_g/A_w) 100 = (200/500) 100 = 40\%$.
6. $WWR = (900/1200) 100 = 75\%$ 75% is a high-WWR (heavily glazed) curtain wall facade.
7. $WWR = (A_g/A_w) 100$ $A_g = (WWR/100) A_w$ $A_g = 0.20 800 = 160$ m of glazing.
8. The engineered outer skin (structure + cladding + insulation + waterproofing) that separates a building's interior from the exterior environment.
9. A lightweight, non-structural glass-and-metal facade hung off the building frame, carrying only its own weight and wind loads.
10. A cladding system with an outer layer, a ventilated air cavity, insulation and a backup wall - rain drains and evaporates instead of penetrating.

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