Q What is a curtain wall
Curtain Wall is a form of a vertical building enclosure which supports no load other than its own weight and the environmental forces which act upon it.

Types of Curtain Wall

Conventional Stick System (Capped System)
Structural silicone glazing (SSG)

- Semi unitized system
- Unitised System

Q What is Conventional Stick System?
In this system the vertical mullions and horizontal transoms are installed on MS/SS/Aluminium brackets which are anchored to the columns/slabs. Cut to size glass is fixed on the grid work with pressure plates.(The glass is held Mechanically) Cover cap is snap fit on the pressure plates for aesthetic look.

In the above system 90% of the work can be done at site.

Notes: This system is the cheapest system wherein you will see aluminium members from outside. In this system the glass is held mechanically to the main frame. For the installation of this system you need to have scaffolding from outside for installation.
Q What is Semi Unitised System?

In this system the vertical mullions and horizontal transoms are installed on MS/SS/Aluminium brackets which are anchored to the columns/slabs. Cut to size glass is structurally glazed to the Aluminium sub frame by structural sealant. The sub frame with the glass is installed on the Grid work.

In the above system 50% of the work is done at site.

Notes: In this system there will not be any aluminium member visible from outside. You will see a groove running horizontally & vertically. In this system the glass is held with the help of structural sealant. The application of structural sealant is the critical operation as this is the sealant which holds the glass to the frame for life. For the installation of this system you need to have scaffolding from outside for installation.

Q What is Unitised System?

In this system MS/SS/Aluminium brackets are anchored to the columns/slabs after detailed site survey. The complete unit spanning floor height fully fabricated at the factory is installed on the brackets.

In the above system 10% of the work is done at site.

Notes: In this system there will not be any aluminium member visible from outside. You will see a groove running horizontally & vertically. In this system the glass is held with the help of structural sealant. The application of structural sealant is the critical operation as this is the sealant which holds the glass to the frame for life.

This system is most suitable for high rise buildings with huge quantity of glazing. In this system you do not need scaffolding for installation & the installation of the panels are done using a cradle/hoist/crane.

Q Difference between semi unitized & unitized system?

<table>
<thead>
<tr>
<th>Unitized Curtain Walling System</th>
<th>Semi Unitized Curtain Walling System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better Quality Control as the entire façade is manufactured under factory conditions.</td>
<td>Quality dependent on site assembly work, which is critical and needs to be controlled.</td>
</tr>
<tr>
<td>Faster installation.</td>
<td>More time required for installation than for fully unitized system.</td>
</tr>
<tr>
<td>Span up to a storey height in most cases.</td>
<td>Span up to two storey height.</td>
</tr>
<tr>
<td>Large, medium and smaller size unit/elements can be factory made and transported to site.</td>
<td>Mullion/transom to be installed piece by piece and small pre-glazed frames can be installed.</td>
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<td></td>
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<td>----------------------</td>
<td>-----------------------------------------------------------------</td>
</tr>
<tr>
<td>Large units can be</td>
<td>transfer the curtain walling load to columns if required.</td>
</tr>
<tr>
<td>Units/Elements</td>
<td>can be lifted straight from containers into position, reducing</td>
</tr>
<tr>
<td></td>
<td>site damage.</td>
</tr>
<tr>
<td>Crane time required</td>
<td>to erect large units and to off-load units.</td>
</tr>
<tr>
<td></td>
<td>Can be installed without the use of a crane.</td>
</tr>
<tr>
<td>Greater transportation</td>
<td>compared to semi unitized system.</td>
</tr>
<tr>
<td></td>
<td>Less expensive to transport the material and pre-glazed sub-</td>
</tr>
<tr>
<td></td>
<td>frame.</td>
</tr>
<tr>
<td>Factory must be</td>
<td>large with overhead crane and elaborate equipment.</td>
</tr>
<tr>
<td></td>
<td>Factory equipment can be relatively simple to manufacture this</td>
</tr>
<tr>
<td></td>
<td>curtain walling system.</td>
</tr>
<tr>
<td>No loose components</td>
<td>other than anchors and brackets to be stored on site.</td>
</tr>
<tr>
<td></td>
<td>Loose material stored on site awaiting installation can be</td>
</tr>
<tr>
<td></td>
<td>damaged or missing.</td>
</tr>
<tr>
<td>Extreme care to be</td>
<td>transported and handled easily.</td>
</tr>
<tr>
<td>taken in transporting</td>
<td></td>
</tr>
<tr>
<td>and handling finished</td>
<td></td>
</tr>
<tr>
<td>elements to avoid</td>
<td>damage.</td>
</tr>
</tbody>
</table>

**Q The factors that play an important role in glass façade design are:**

- Height of the building
- Distance between slabs
- Location of the building
- Span of each panel

**Q Factors affecting the price of the glazing**

- Curtain wall system
- Glass
- Location & Height of the building
- Finish on the aluminum profiles
- Accessories

**Q Important factors for glazing**

- System Design – pressure equalized system
- Barrier against water & air leakages – 3 barrier –
- Minimum Thermally efficient system for better performance of the building, as no heat will be transmitted inside by the aluminum

**Q What a glazing enquiry should contain?**

- All elevations
- Sectional drawings
- Floor plans
- Perspective of building/ 3D views
- Model photograph
- Details of junction
### Types of Cladding.

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>4 MM THK ALUMINIUM COMPOSITE PANEL CLADDING</th>
<th>2.5 MM THK. SOLID ALUMINIUM SHEET CLADDING WITH PVDF FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Finish &amp; Aesthetics</td>
<td>Excellent the finish is a very superior fluorocarbon coating.</td>
<td>Excellent. Same matchable PVDF coating can be provided because of in house PVDF coatings plant of international standards.</td>
</tr>
<tr>
<td>A. Paint Consistency</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>B. Paint Microns</td>
<td>Even</td>
<td>Even</td>
</tr>
<tr>
<td>C. Surface Flatness</td>
<td>Even</td>
<td>Even</td>
</tr>
<tr>
<td>2. Workability &amp; Performance</td>
<td>Are Excellent. It is a very highly workable material.</td>
<td>Are Excellent. High workability is achieved by state of the art fabrication plant plus it has the added advantage in terms of better strength.</td>
</tr>
<tr>
<td>A. Fabrication</td>
<td>Easy</td>
<td>Easy</td>
</tr>
<tr>
<td>B. Weather Resistance</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>C. Fire Resistance</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>D. Strength</td>
<td>Good</td>
<td>Excellent. The strength at the corners are better than ACP as in the corners the thickness of the panel is 2.5 mm as compared to 0.5mm in ACP.</td>
</tr>
<tr>
<td>E. Maintenance</td>
<td>Easy</td>
<td>Easy</td>
</tr>
<tr>
<td>3. Availability</td>
<td>Standard shades available with some lead time.</td>
<td>Any shade possible with very little or no lead time.</td>
</tr>
</tbody>
</table>

### Types of glass

- Clear Glass
- Tinted Glass
- Reflective glass

Reflective glasses are the most widely used glass for structural glazing and curtain walling for reasons such as better light transmission, reduced heat transfer etc.

#### Types of reflective glass

- Hard coated glass or pyrolytic coated glass
- Soft coated glass or vaccum sputtered coated glass
Hard coated glass

- Better photometric properties than the tinted glass and are low-performance
- Imported in sheet sizes and various processes like tempering / DGU can be done
- This is cheaper glass as the processes can be done locally saving customs duty
- This glass can be used as single glass in vision as well as spandrel glass.

Soft coated glass: Medium performance glass

- Superior glass than the hard coated glass in terms of photometric properties.
- Heat strengthening will have to be done at the source of supply (abroad) and be made locally.
- This glass can be used as single glass in vision as well as spandrel glass.

Note: these glasses are costlier than the hard coated glass, but the initial investments can be recovered by lower AC loads & lower operating costs.

High Performance glass

- Most superior type of glass in terms of photometric properties.
- Can never be used as single glass and the whole unit with DGU has to be imported from abroad.

Note: These glasses are costlier than the hard coated glass, but the initial investments can be recovered by lower AC loads & lower operating costs.

Q Various processes on glass

Heat strengthening

- To increase capacity to withstand thermal stress and structural load on the glass.
- The strength increases by 2 times to the normal annealed glass.
- This is not a safety Glass.

Tempering or Toughening

To increase capacity to withstand thermal stress and structural load on the glass.

The Structural strength of the glass increases by 4 times to the normal annealed glass.

This is a safety glass, in case of breakage the glass will fall down in the form of small pieces.

Note: Heat strengthening & tempering imparts distortion in the glass, hence in case of Structural glazing using reflective glass always heat strengthened glass is used as the distortion as less compared to Tempered glass.

Heat strengthening or tempering should done horizontally so that the distortions are horizontal to your eyes & hence the person from inside does not see a distorted images.

Laminating Glass

- In this process two glasses are sandwiched with the help of a PVB film.
- This is a safety glass, in case of breakage the glass will remain intact and will not fall down.
- Gives better sound insulation.
- Also used for anti-burglary applications.
**Insulating glass unit/Double Glass unit**

This is otherwise called double glazing unit. In this process two single layers of glass are joint with the help of silicone sealant and an aluminium spacer in between them. This is used for better acoustic and energy saving properties.

**Q Types of finish on Aluminium profiles?**

- Anodising
- Powder coatings
- PVDF (Polyvinylidene Fluoride)

**Q What is PVDF COATING?**

PVDF stands for "Polyvinylidene Fluoride" coating (also referred as PVF2 coatings)

A Long lasting and a high performance Fluropolymer liquid coating, factory applied on architectural aluminium metal substrates.

Is based on a minimum of 70% Kynar 500 or Hylar 5000 resin.

Contains inert Ceramic Pigmentation.

Is a Thermoplastic, 2-coat or a 3-coat electrostatic spray application system.

Offers a wide range of Solid colours, Pearlescent & Metallic colours

The only Architectural coating complying to the superior AAMA 2605 specification

**Q Why PVDF Coating?**

Chemistry is based on Carbon - Fluorine Bond, the strongest in the Universe.

Outstanding durability i.e. excellent resistance to Fading and Chalking (because of inert ceramic pigmentation and the resin does not absorb the damaging Ultraviolet radiation)

Outstanding resistance to harsh environmental pollutants

Excellent resistance to acids, alkalis and salts

Low maintenance due to low dirt pick up and non staining surface

Low mildew and bacterial staining

Very good abrasion and impact resistance, with very low erosion

Excellent corrosion resistance

The only coating fully tested in South Florida for a 10 year period & exhibiting outstanding weathering performance, which meets or exceeds AAMA 2605 requirements
Q Advantages of PVDF coating versus ANODISING

Provides a wide colour range in solid & metallic colours, versus the limited range available in Anodizing, Custom colours can also be matched.

Superior colour uniformity versus colour inconsistency in Anodizing

Excellent resistance to Mortar and Salt corrosion, which attack Anodizing

Chemically inert

Outstanding resistance to chalking, fading & ultraviolet degradation

Low dirt pick up and non staining surface

Very low maintenance

Scratches can easily be repaired with Air-Dry PVDF paint with no colour difference whereas any scratches on Anodizing can not be repaired.

Excellent resistance to pitting, Pilliform corrosion and tarnishing, which is a common problem with Anodizing after some years depending on location.

Meets all the stringent requirements of AAMA 2605 specifications.

Offers a service life in excess of 50 years, versus a service life of 20 to 25 years of Anodizing.

Q What is glass Façade testing?

Glass façade testing is a process wherein the façade is tested for its designed performance for Structural stability & leakage's against air & water infiltration.

Q Why Testing?

To identify & rectify:

- Improper design
- Improper fabrication
- Improper installation

Q Advantages of testing:

Assurances of performance of the glass façade as per design requirement

Peace of mind on the functionality of the system

Saving in time & money as few rectification on site after installation

Leak proof building

Increased life of the building
Q Importance of testing

These tests are a must & should be performed on every project as no two projects are similar & this helps the Project Manager to act proactively, thus save Valuable material in the form of modification, Valuable time & Valuable Money.