The construction of high-performance building envelopes is a multi-step process, starting with raw materials such as aluminum billets and glass silica, and results in prefabricated curtainwall unit assemblies that are hung from the building structure, most often the floor slabs. This process requires a network of material vendors, processors, fabricators and installers to coordinate diligently.

In the five-part video series From Billet to Building, the Advanced Technology Studio of Enclos animates each step, culminating in several installation strategies.

Part 1:  Part Manufacture and Fabrication
Part 2:  Float Glass
Part 3:  Insulated Glass Unit
Part 4:  Curtainwall Assembly
Part 5:  Curtainwall Installation

To view the animations, please visit https://vimeo.com/enclos.
Part 1:  
**Part Manufacture and Fabrication**

- Aluminum billet to extrusion
- Extrusion stretching
- Paint treatment
- Anodizing treatment
- Part fabrication and machining

- Aluminum billet is heated
- Billet is extruded through custom die
- Extrusion is subjected to a controlled stretch
- Extrusions are cut
- Extrusion is formed

- Painting line
- Anodizing process
- Extrusions receive post-processing

- Automated part fabrication
- CNC machinery for part fabrication
- Manual part fabrication

Part 2:  
**Float Glass**

- Raw materials heated to a molten state
- Molten glass floats atop a bath of molten tin before proceeding down the float line

- Molten glass floats atop molten tin
- Glass exits furnace in a continuous ribbon
- Glass is cut into sheet dimensions

Part 3:  
**Insulated Glass Unit**

- Aluminum spacer is bent into shape
- Spacer is filled with desiccant
- Primary seal is applied to the spacer
- Spacer is placed between two panes of glass
- Unit is then sealed along the edges

- Aluminum spacer is bent into shape
- Spacer is filled with desiccant
Part 4: Curtainwall Assembly

- Insulated glass unit (IGU) installed into aluminum unit frame
- Sealant quality is carefully documented for Quality Assurance
- IGUs are sealed to the aluminum frame
- Final details attached to unit frame
- Completed units are bunked for storage while awaiting shipment to project site

Insulated glass unit placed onto aluminum frame

Sealant quality is carefully documented for Quality Assurance

Extrusions fastened into aluminum unit frame

Units travel between stations on rolling tables

Unit is sealed along the edges

Part 5: Curtainwall Installation

- Unloading of materials on site, lifting or moving to their designated floors
- Sequence: survey & layout, anchor installation and unit installation
- Unpack and prepare units for installation
- Attachment of exterior components such as sunshades

Finishing details are attached to assembly

Units are moved from assembly to bunking

Protected units are placed on flanged racks

The units are transported from shop to project site

Bunks are delivered to the site, offloaded to hoist

Unit bunks are lifted to their designated floors

Bunks built around unit groups

Protected bunks are placed on flatbed truck

Units are transported from shop to project site

IGU is sealed into frame

Units unpacked and prepared for install

Additional components may be attached in the field

Unit installation: floor crane method (pictured)