

Technical note

Pilkington **Sunplus™** BIPV
Pilkington Benelux, Enschede (Netherlands)



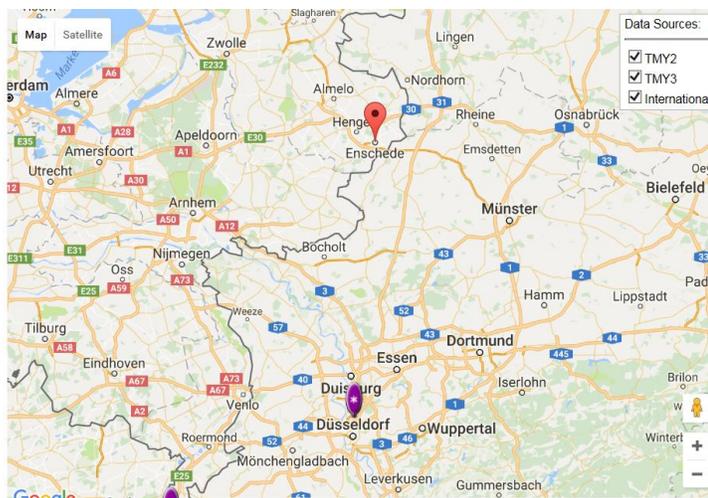
Project Description

Downstream facilities for Pilkington Benelux in Enschede, Netherlands.

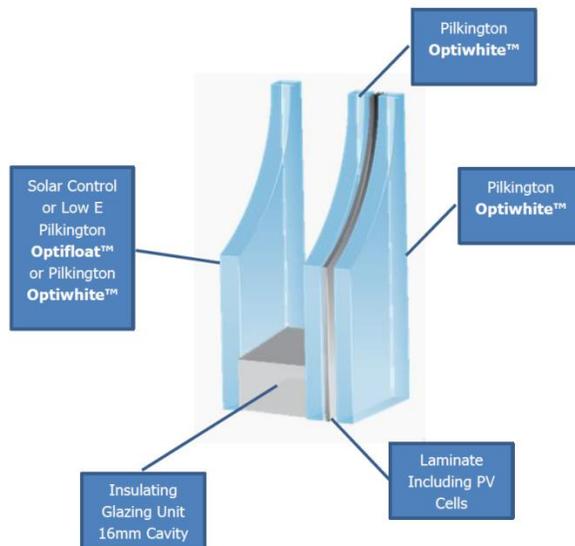


General Information

- **Geographical location:** Enschede, Netherlands.
- **Simulation Tool:** <http://pvwatts.nrel.gov/>
- **Solar Data:** (INTL) Groningen, Netherlands (64 miles)
- **Façade area:** 490 m²
- **Façade orientation:** West (Azimuth = 270°)
- **Tilt:** 90°
- **System losses:** Default



PV Vision	PV Spandrel
P_{max} : 150 Wp	P_{max} : 350 Wp
PV cell density: 43% coverage	PV cell density: 100% coverage
Glass coverage: 100%	Glass coverage: 100%
Module area: 2.3 m ²	Module area: 2.01 m ²
PV vision area: 251.51 m ²	PV spandrel area: 80.73 m ²
Number of modules: 108	Number of modules: 40
DC system size: 16.2 kW	DC system size: 14 kW



Window Performance *

Possibility of combination of coatings surface #5 for optimum Light Transmission (LT) and g-value

IGU	LT	g-value
Standard	0.67	0.5
PV Vision	0.38	0.37

- Energy standard IGU = 1,266,380 kWh/year
- Energy PV Vision = 1,262,347 kWh/year
- Energy saving = 6.14 kWh/year/m²
- Performance saving = 2,618 kWh/year/m²
- Total saving = 17%

*Electricity utility only. Data generated from EQuest

Energy savings due to PV power generation and window performance

Potential BIPV Façade Usage	Total Area (m ²)	Total kWh/year
PV Vision	251.51 m ²	6,757
PV Spandrel	80.73 m ²	5,839
Total Energy Output	332.24	12,596
% Total Saving		83
% of HVAC Peak Load Reduction (Cooling)		4

Summary & Remarks

- The total energy output of a BIPV system depend on factors such as location, PV orientation, PV tilt and system losses.
- The integration of 332.24 m² of BIPV into the west façade of a building located in Enschede, Netherlands, can produce an annual energy output of 12,596 kWh which can be fed into the grid.
- A total energy saving of 17% can be achieved with the replacement of standard IGUs by PV Vision modules.
- The energy saving due to solar power generation and window performance could allow a 4% reduction of the cooling peak load.
- A payback period of less than 10 years is possible depending on factors such as HVAC capital cost reduction, blinds or sun shade savings, BIPV FIT rates supplied by the Government, energy saving due to window performance and energy saving due to solar production.