

The Revolution of the lamination world arrives to France with EMAVER MIRROITERIE MARTIN

EMAVER MIRROITERIE MARTIN is the first French company to implant a new automatic assembly line 'PUJOL 100 Fast Curing' for laminated glass fabrication with EVALAM VISUAL. Hornos Pujol, has up to now 17 lines installed throughout the world.

EMAVER MIRROITERIE MARTIN, former Saint Gobain branch, was acquired 27 years ago by Joël Potier and 3 years ago passed to his daughter Emilie POTIER. During almost 30 years, Emaver hasn't stopped evolving, achieving significant advances, like being the only independent company of France, from the Saint Gobain school, that works with two licenses from SAINT GOBAIN GLASS: CLIMALIT® license for double glazing, and SECURIT® license for tempered security glasses.



EMAVER harvests today a new success, which reaffirms its leadership in glass transformation in the South East of France. Through its innovations EMAVER proves again its seriousness, professionalism, quality, and its achievement defines in only one word: excellence.

After the contract of October the 1st, between EMAVER and PUJOL, Emaver will be able to produce, daily, up to 500 m² of laminated glass of top quality, in contrast to classic PVB laminated, of frequent use in France.

Laminated glass fights to adapt to the new requirements of the market, Hornos Pujol thanks to continuous investigation, has been able to bring down the main barriers with its product EVALAMVISUAL. The properties of the EVA place it as the legitimate substitute of the PVB, consumers and international forums endorse its prestige, making it a product of increasing prescription by architects.

Emaver's clients, thanks to its new automated installation 'PUJOL 100 Fast Curing' for laminated glass fabrication with EVALAM VISUAL, will count on a product with the warranties of being made in Europe and with superior technical advantages to PVB.

They will also obtain a reduction in the delivery time and a more competitive cost than producing in an autoclave, due to its characteristics.



PVB versus EVA

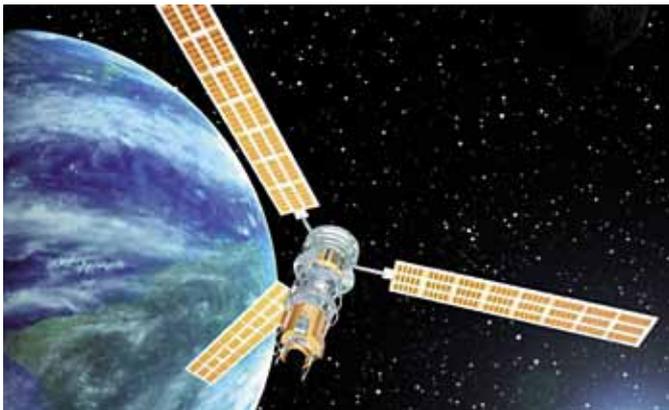
During the past years PVB hasn't improved, nor its properties as a product, nor its productive processes, so it can be said that the material has reached its ceiling in terms of quality.

However, EVA's properties evolve year after year improving productive processes, what predicts a constant growth in the development of the product and its applications.

Although EVA was known as a more expensive material with better quality in terms of moisture resistance, it's also true that to start a revolution in the lamination market, two characteristics had to be developed simultaneously to achieve the actual success.

To achieve a material with technological advantages to PVB, in terms of transparency, acoustic isolation, delamination, durability and resistance, at the same price than PVB. EVALAMVISUAL achieved it.

To overcome the productive capacity of the autoclave, achieve a significant cut in the productive and maintenance costs, at a lower investment cost. The EVA automatic assembly line 'PUJOL 100 Fast Curing', with an investment of a third, produces at a lower cost per unit of laminated glass.



Ethyl Vinyl Acetate better known as EVA was a product developed by NASA for the aero-spatial race.

PVB, known as Poly Vinyl Butyral was developed by DuPont in 1938 for the car industry.



The revolution and EMAVER's contribution is being the first in France in having a different price than traditional laminated glass but with superior technical properties than PVB.

Emaver invests in the world of lamination

Laminated glass has established its leadership, nowadays nobody questions its continuous growth, but more than 35 years ago Mr. Potier (father of the actual executive director of EMAVER) conscious of the advantages in quality and price of the EVA versus PVB, started his adventure laminating EVA in a small vacuum oven.

Following his father's line, Emilie Potier, always aware of new tendencies of the market, examined the different lamination lines, to finally choose 'Pujol 100 Fast Curing'. Her objective was to respond to her client's demands for a better quality product, with no delays in delivery, and at an attractive price.

Hornos Pujol under the requirements of EMAVER has understood our needs by fabricating an automatic laminated glass production line, that allows obtaining a product of better quality at a lower cost in many cases than those obtained by PVB and the autoclave. Hornos Pujol founded in 1911, is a global player in the glass sector based in Barcelona (Spain), which offers solutions of design and technology to the laminated glass needs of clients throughout the world.

“We are very excited to associate in a deeper way with Emaver” declared Jorge Pujol, president of Hornos Pujol.

While the commercial director of Emaver, Jérôme Patoir, pointed out the interest of the partnership with Pujol, that completes innovative and functional solutions, that reaffirm us as market leaders in the world of lamination thanks to its revolutionary product 'Evalam Visual'.

Glasses for roofs and façades

When choosing glass, various factors need to be taken into account, among them the façade's temperature, the resistance, the durability, the luminous transference, the acoustic isolation, the safety, and the aesthetics. In Emaver we had it clear from the beginning, Evalam Visual® by Pujol outstands in these aspects. Following are the advantages:

Façade's Temperatures

It is proven that EVALAM VISUAL has better adhesion than PVB at ambient temperature.

Evalam Visual has a Tg of -18°C and PVB of +39°C. Tg: Is the temperature of transition (solid-solid) at which a strong change in the physical and mechanical properties of the material is produced, due to a molecular change which affects stiffness of the carbon chains of the polymer. When the polymer is cooled below this temperature it becomes stiff and rigid. While above it, it's soft and rubberish. As a result, all the tests and certifications done with Visual, because of being always above its Tg (-18°C) are correct and will not affect the general properties of the interlayer. On the contrary, PVB, above 39°C turns soft and rubberish, losing its initial properties like adhesion to glass, property which is not lost in Visual also thanks to its crosslink, what makes it thermoset. This fact is easy to test with a sample subject to 40°C by two hours.

Did you know that the average temperature of a Façade in summer, in many countries, is around 40-50°C, and PVB completely loses its adhesion?

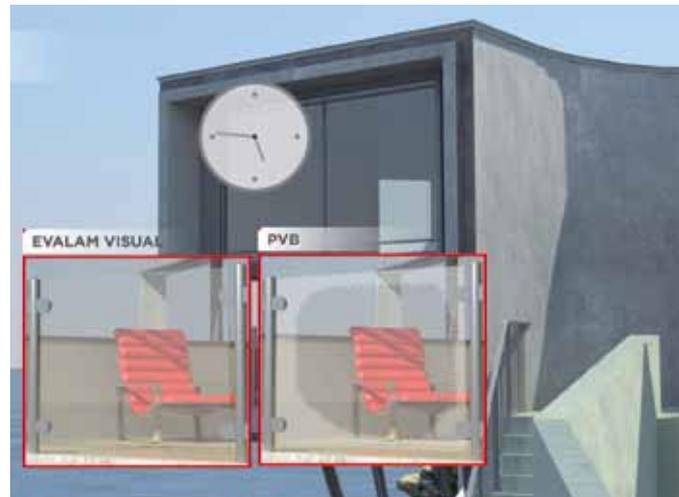
GLASS TEMPERATURE ON A FAÇADE		
	VISUAL	PVB
ADHESION at 20°C	140N	60N
ADHESION at 30°C	140N	60N
ADHESION at 40°C	140N	No adhesion.
ADHESION at 50°C	120N	No adhesion

Better than PVB for railing and laminated glasses with open edge

Although it is true that the market knows that EVA in general is more resistant than PVB against moisture when the laminated glass is exposed in open edge, it is still to be determined in which way this affects each EVA or laminated glass.

Evalam visual has been developed to have a strong resistance to moisture. Avoiding the feared delaminations produced when the glasses are installed in open edge in adverse weather conditions, through time.

This fact is easily proven if we put Evalam Visual and PVB to a destructive moisture test, where after eight hours PVB starts to suffer defects beyond 2.5mm from the edge, while Evalam Visual after 20 hours is still in perfect shape.



Better for tempered glasses which suffer mechanical efforts and fatigue

Evalam Visual has an adhesion almost three times greater than what is achieved by PVB, what makes it a material specially suited for those glasses that suffer mechanical efforts, like doors, stairs, façades and all kind of glasses with mechanical memory which tend to return to its original position.

Greater durability through time of laminated glass

PVB is a thermoplastic material, and like every thermoplastic after 10 years they start to degrade: they yellow and delaminate. This fact was well proven by NASA when developing the PV plaques for space.

Evalam Visual thanks to a crosslink superior than 87% is a mechanical and thermally stable material which avoids delamination through time, once it has been correctly cured.

It's easy to put two broken samples of PVB and Visual to a test of moisture, its degradation is reflected when Visual stays in one piece, while PVB fragments and separated completely.

	EVALAM VISUAL	PVB
Crosslink	>87%	0



Same optics than PVB

In laminated glass a better optic or transparency is determined mainly by a parameter called Haze. Haze is known as the amount of light that hits the glass and then is transmitted in diffuse way. Evalam Visual is the only product in the market with Haze values better than PVB's.

	VISUAL	PVB	OTHERS
HAZE 0.38mm	0.05%	0.13%	> 0.4%
HAZE 0.76mm	0.14%	0.13%	> 0.4%

Same Resistance for persons and goods safety

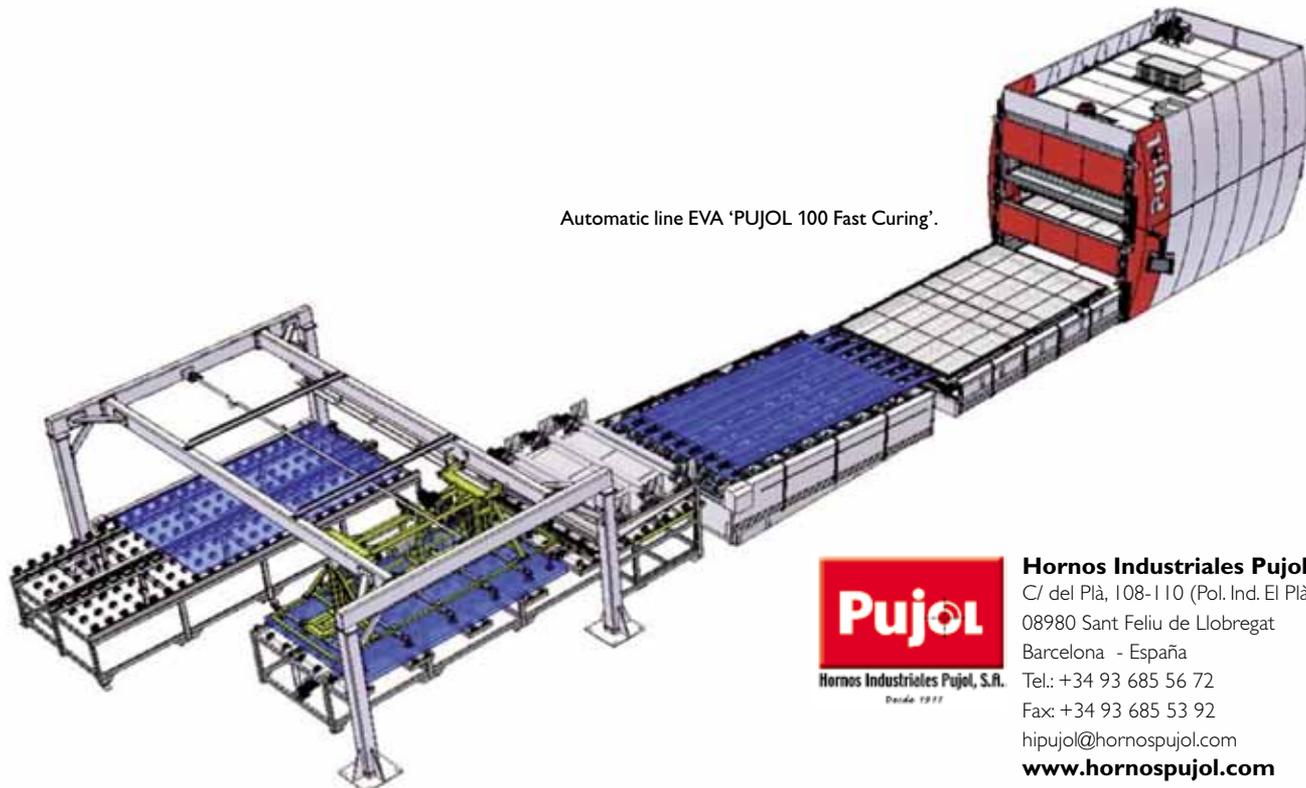
According to standard UNE-EN 12600 2003 of pendulum and ball drop tests, Evalam Visual obtains the same certification than PVB in tempered laminated glasses with half the interlayer, what translates into a reduction of final price to Emaver's clients.

Conclusion

As a conclusion, we can say that Emaver, always up to date to the market's evolutions and in constant search for quality and service to its clients, with this new process offers an excellent service to its clients, with what we think it's the best product of the market of laminated glass. ■

Dir. Emilie Potier

Automatic line EVA 'PUJOL 100 Fast Curing'.



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