



fibra[®]

THINK COMPOSITE
by SAIMEX

SAIMEX
COMPOSITES

DEICHMAN LIBRARY

FRP: AN INNOVATION MATERIAL FOR ARCHITECTURE

THERMAL INSULATION, MECHANICAL STRENGTH, MAINTENANCE FREE

The success of OSLO Project



FRP PROPERTIES – COMPARISON TABLE

DATA COMPARISON

EN 13706 NORM

PRATO BRIDGE, FLORENCE

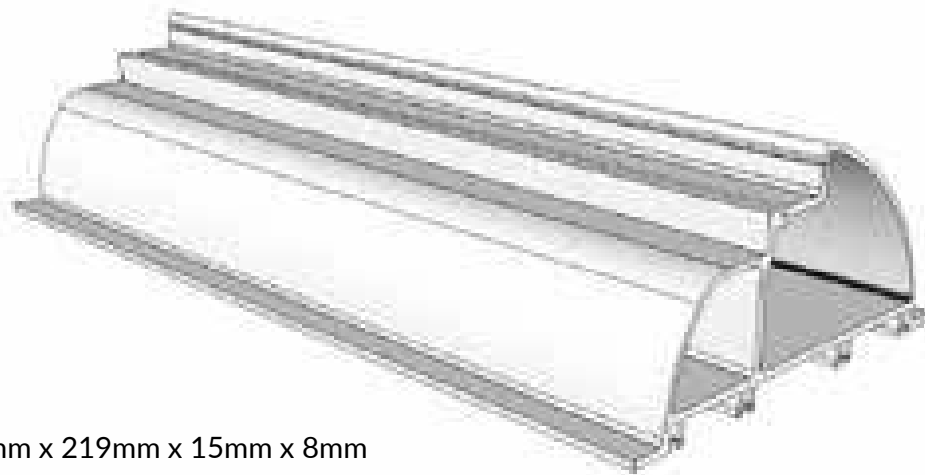
Property	FIBRA	Steel	Aluminum	PVC	Unit
Density	1.8	7.8	2.7	1.4	g/cm ³
Axial - Tensile Strength	350 - 450	370 - 500	200 - 400	40 - 60	MPa
Pull elongation	1.5 - 2.0	13 - 35	5 - 35	10 - 80	%
Flexural Strength	400 - 450	330 - 500	200 - 400	70 - 100	MPa
Elastic Modulus	25 - 30	210	70	2.8 - 3.3	MPa x 10 ³
Flexural Modulus	15 - 20	210	70	2.8 - 3.3	MPa x 10 ³
Impact Resistance	200	400	200	85 - 95	MPa/ m ²
Thermal Conductivity λ	0.25 - 0.35	100 - 230	100 - 230	0.15 - 0.25	W/m °C
Expansion Coefficient	5 - 20 x 10 ⁻⁶	10 - 14 x 10 ⁻⁶	20 - 25 x 10 ⁻⁶	50 - 100 x 10 ⁻⁶	m/m °C
Dielectric Capacity	5 - 15	-	-	40 - 50	KV/mm
Volume Resistivity	10 ¹⁰ - 10 ¹⁴	0.2 - 0.8	0.028	> 10 ¹⁶	ωcm



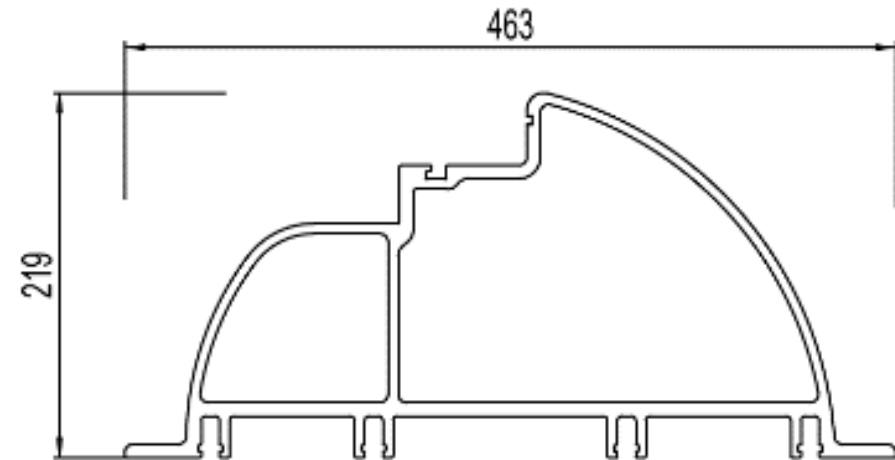
A CHALLENGING PROJECT: OSLO LIBRARY OUR EXPERIENCE IN THE FACTORY

It took 6 full months to set up and engineer the whole process.

Particularly challenging has been the production of such a big profile with Fire Retardant and variable thickness.



Note: 463mm x 219mm x 15mm x 8mm



The EMPLOYED TECHNOLOGY is a New Generation highest pull capacity Pultrusion machine instead of traditional pultrusion.

RESULTS:

Stable pulling draw, perfect tolerance and thickness control.

The process is 100% COMPUTER CONTROL.

25 bar pressure in steel closed mould granting mass through cohesion VS hand lamination process which is not under pressure.





FIBER REINFORCEMENT

- **LONG** continuous Glass FIBERS and mats (compared to hand lamination which is using mats mainly)
- Special multiaxial glass fiber 45 degrees mat granting a higher torsional strength and reducing buckling



REQUIRED PROPERTIES AND SPECS FOR OSLO PROJECT

Lambda value: 0, 25

Variable thickness from 8mm to 15mm in the same section profile

13 MT length ONE PIECE, 100% jointless

Maintenance free

Fire retardant EN 13501 BS1 d0

Tensile strength longitudinal direction 380 Mpa

Elastic Modulus longitudinal 26-31 Mpa





ACTION

We acted in 3 ways:

- 1) we modified the standard fiber layout by increasing the fiber percentage from standard 60% to 70%, BUT the more fiber quantity the more difficult to pull and produce the profile.
- 2) Employment of a special multiaxial 45 degrees glass fiber mat.
- 3) A new FIRE RETARDANT RESIN FORMULA has been used so that the proportion between resin and fire retardant was engineered and balanced before production.



AESTHETIC FROM INDUSTRY TO ARCHITECTURE

Aesthetic in a product which is usually applied in Industry such as Railway, cooling towers, Chemical plants is not easy.

Saimex had been specializing in the window business for years and had improved the surface of Frp profiles in the window business already.

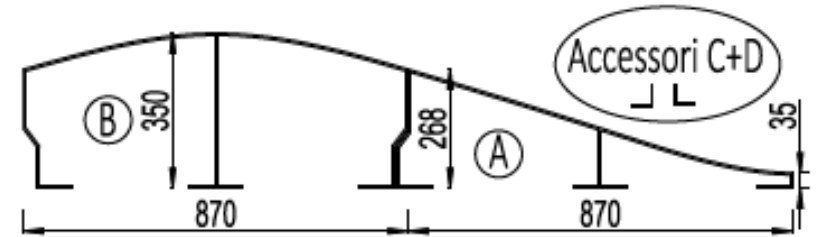
We further improved the surface for OSLO library and developed FIBRA SILK TOUCH for Oslo project.



NEW PRODUCT FROM OSLO KNOW HOW

FIBRA FAÇADE: A NEW ventilated wall cladding

TRASLUCENT like a lamp in the sky

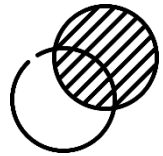


Note: 10mt long ONE PIECE





MAIN FEATURES AND BENEFITS



FIBRA FACADE traslucent wall cladding backlid by leds is allowing architectural play of light in the building, breaking the haviness of the wall



Big size and light weight: 1 jointless board 10 mt long by only 8 Kg per sqmt



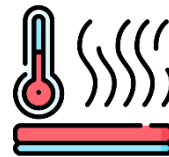
Very fast and easy assembly approximate 300 sqmt per day



Customized shape: FIBRA WAVE, FIBRA FLUTED PANEL



Hailstorm proof no indentation, corrosion free, Zero Maintenance

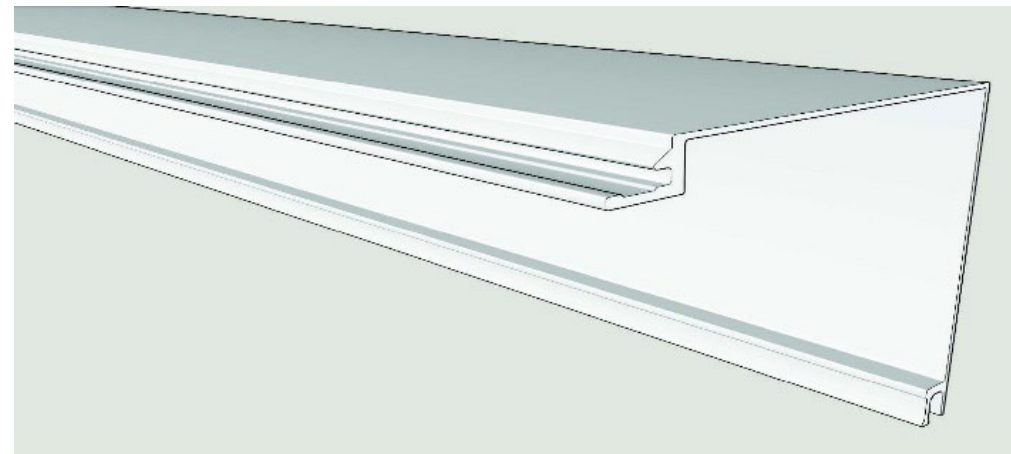
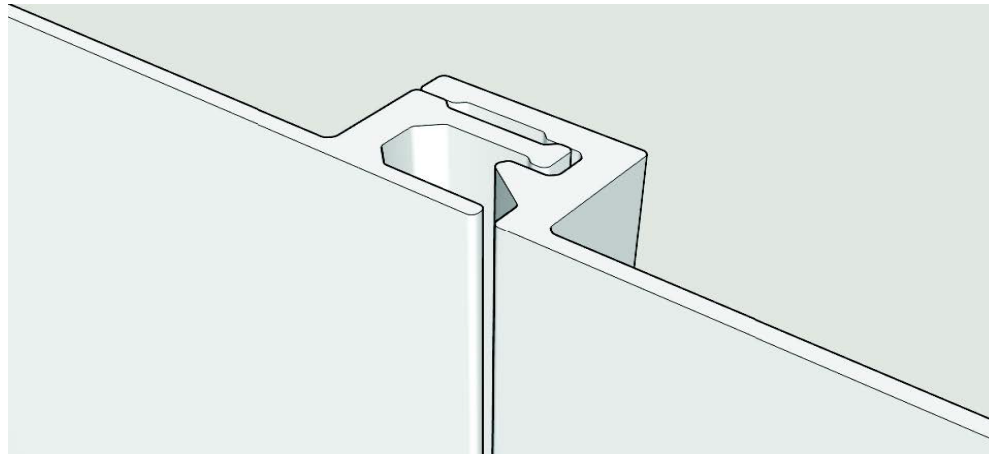
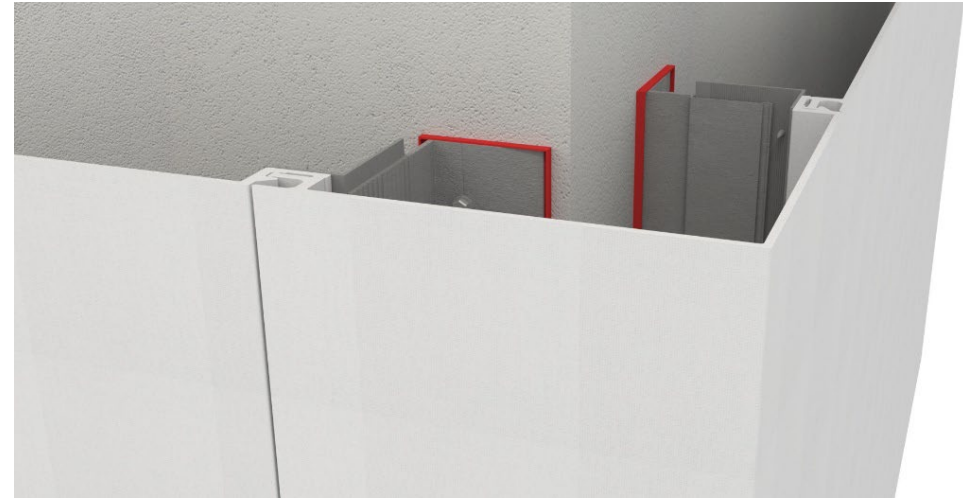


No thermal expansion, No overheating , No Heat Islands, temperature shock resistant



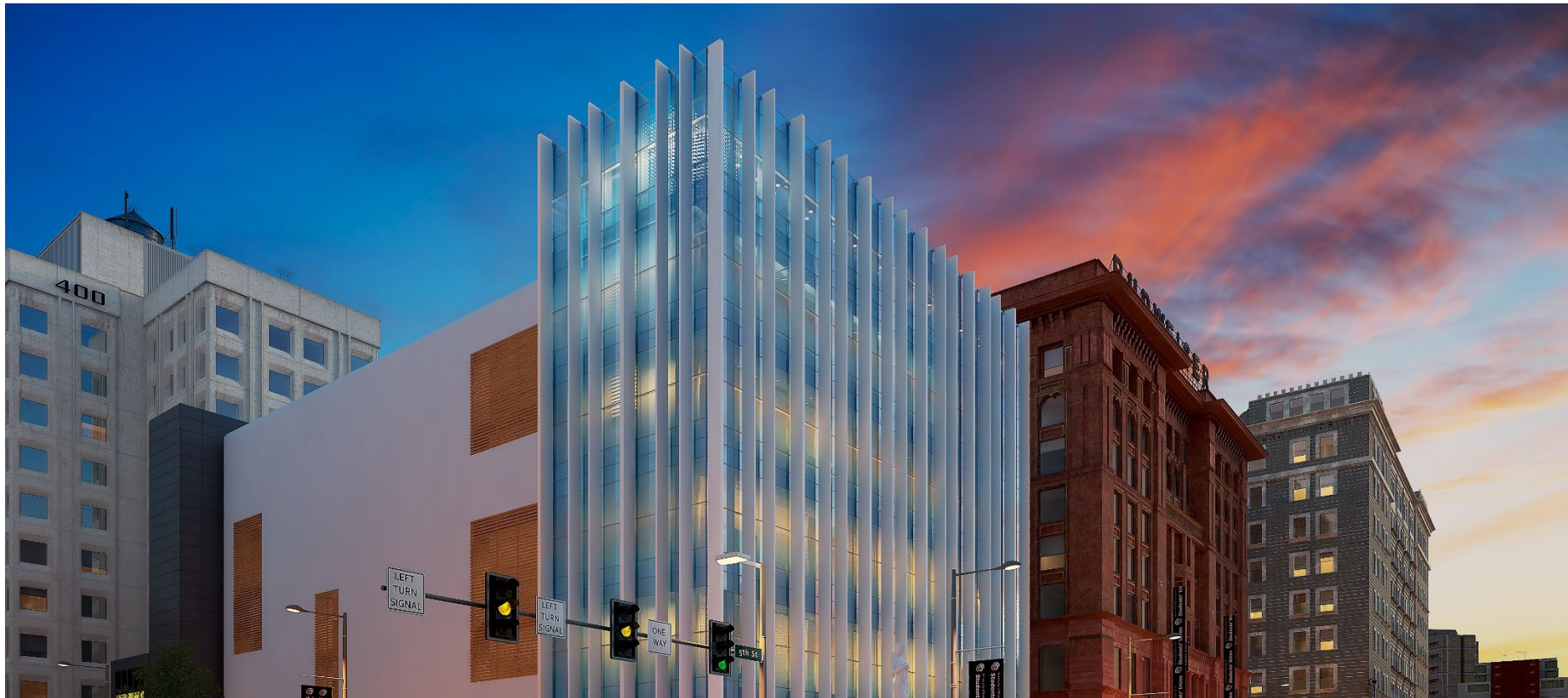
FIRE RETARDANT: BS1 d0 - A2 under process

FIBRA VENTILATED FAÇADE SYSTEM



TRANSLUCENT LOUVERS

Note: 10mt long ONE PIECE jointless



TRANSLUCENT FIBRA WAVE

Note: Customised shape, wave, prism, fluted



Saimex is for durable maintenance free materials which are not causing garbage in the environment.

Glass FRP scraps are ground and re-used as fillers and reinforcements inside concrete for road surface and other concrete applications.

This helps reducing co2 print in the production of concrete.



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