House in Lavra Beach, Portugal

ON **SUSTAINABILITY**

Climate action noun /ˈklaɪmət ækʃn/

The act of doing something to reduce or stop climate change and prevent serious permanent damage to the environment.

In Oxford Learner's Dictionary

Sustainability noun /səˌsteɪnəˈbɪləti/

1. the use of natural products and energy in a way that does not harm the environment
2. the ability to continue or be continued for a long time

In Oxford Learner's Dictionary

ON SUSTAINABILITY

At BOAVISTA Windows we have taken climate action into our own hands

The future of building design must be based on the use of high quality, ecologically responsible products to ensure low carbon buildings. BOAVISTA fibreglass windows are the future. BOAVISTA is the brand of fibreglass window frames with a strong set of core values:

1. **SUSTAINABILITY**
2. **DURABILITY**
3. **PERFORMANCE**

All BOAVISTA Window systems are designed to have minimal impact in the environment, making a valid contribution to make the construction sector more environmentally sustainable.

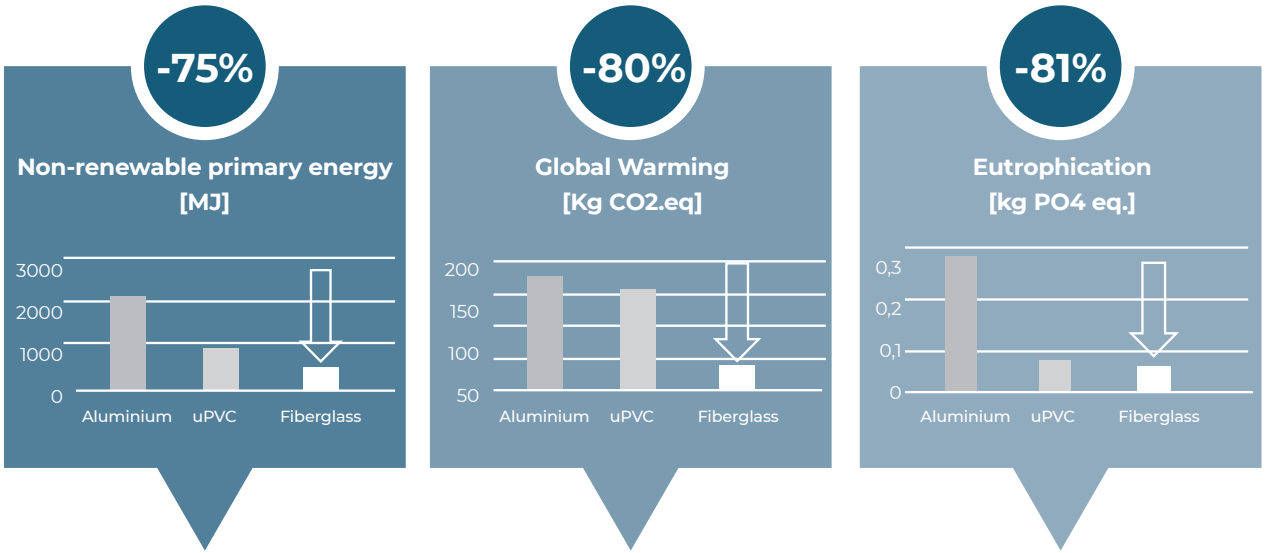
The use of fibreglass pultruded profiles is a clear choice to achieve this objective:

- **They have a low ecological footprint, with lower emissions and production of pollutants than other materials; > Avoiding pollution and CO^2 emissions from the start**
- **High Durability – by investing in durable windows, you will reduce the future need to replace windows. (the first R of the 5R's). > Avoiding pollution and CO^2 emissions throughout a building's life by extending it.**
- **Great thermal performance, contributing to lower energy consumptions in buildings. > Avoiding pollution and CO^2 emissions throughout a building's life.**

LOW ECOLOGICAL FOOTPRINT

According to a 2020 study (Saadatian et al., (2020)), **fibreglass windows have a lower ecological impact than aluminium windows** in all 5 impact categories calculated according to the CML 2001 method and ISO 15804 (2012): Non-renewable primary energy, global warming, acidification, eutrophication and ozone layer depletion.

These graphs show some examples of the comparison data where it is clear the advantage of using fibreglass.



Non Renewable primary energy
Evaluate the use of non-renewable resources

Global warming
Determines the contribution for global warming by a certain green-house gas to CO^2

Eutrophication
measures the impact of high level of macro-nutrients in the environment caused by emission of nutrients into air, water and soil

A 2021 study (Saadatian, S. et al [2021]) analysed not only the construction phase of a building but also the operation phase of a building.

When assessing the trade-offs between the environmental and Life Cycle cost (including initial investment and operation costs) in for several climate regions, fiberglass windows have:

– The lowest Global cost [€/m^2] vs Non-renewable primary energy consumption

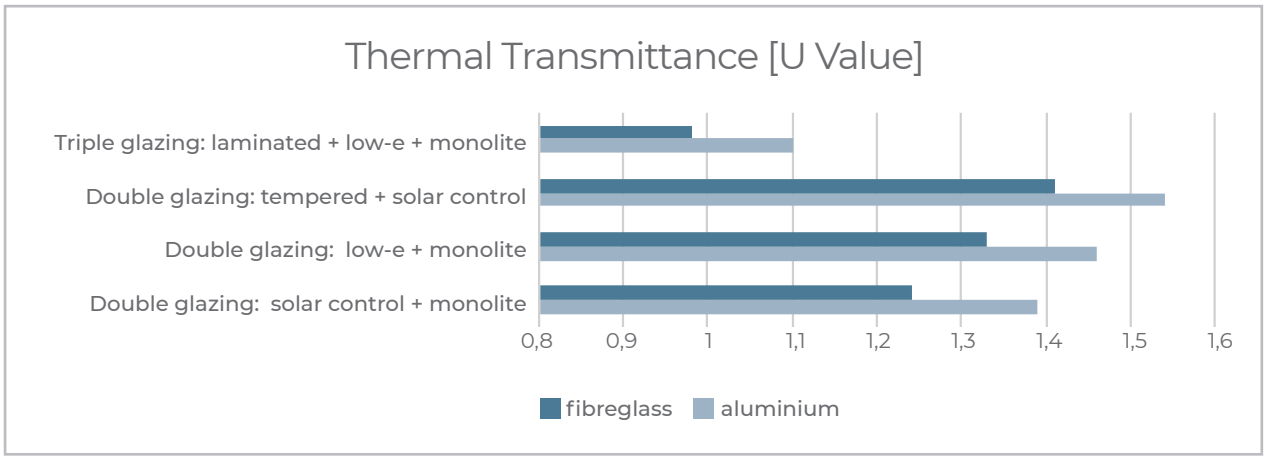
– AND the **lowest Global cost [€/m^2] vs Global Warming [kg CO^2 emissions]** in Southern European countries when compared with all other window Solutions (uPVC, Aluminium, Wood), using solar control double glazing and in Central European countries when using low-e triple glazing.

DURABILITY

According to a 2019 study (Broeckx-Smith, S., Suh, S., [2019]) fibreglass windows have a life expenctancy of 80+ years, which is more than double the life span of aluminium windows and 4-times the lifespan of uPVC.

Fibreglass pultruded profiles are chemically almost inhert, which means that they have a great resistance to corrosive elements, such as air pollution, accid rain and salted air. The contraction/ expansion ratio of the material is also very low and equivalente to the one of glass – this mean lower maintenace needed. These factors, combined with the fact that it is possible to re-paint the windows, will lead to a longer life span: there is no need to replace windows for more than a life time.

GREAT PERFORMANCE



Buildings account for 40% of our energy consumption and over a third of our CO^2 emissions. It is therefore important to have buildings with low energy requirements. Using top-performing windows ensures that the heat loss/gain through glazed areas is minimal.

Fibreglass windows have a lower thermal transmittance (Uw) when compared with aluminium windows with thermal break, for all glass types. (Saadatian.S et al [2021]).

References:
Broeckx-Smith, S., Suh, S. Comparative Life Cycle Energy and Greenhouse Gas Emission Performance of Window Frame Materials. Goleta, CA, USA: (2019). VitalMetrics (IERS LLC.).;
Saadatian, S., Freire, F., Simões, N., "Embodied impacts of window systems: a comparative assessment of framing and glazing alternatives" (2021) Journal of Building Engineering";
Saadatian, S., Simões, N., Freire, F., "Integrated environmental, energy and cost life-cycle analysis of Windows: optimal selection of components", (2021), Building and Environment;
Salazar, James, Sowlati, Taraneh, (2008)"A review of life-cycle assessment of windows", (2008)Forest Products Journal;

#ThinkAhead #ThinkBOAVISTA

www.boavistawindows.com

Think ahead, think BAVISTA

FIBRE GLASS WINDOWS

BOAVISTA

FIBRE
GLASS
WINDOWS

CARBONO
ZERO

At BOAVISTA we work daily to reduce our ecological impact on the planet, **heading for a neutral carbon footprint.** We compensate the CO2 emissions that we cannot eliminate by planting trees in the portuguese forest.

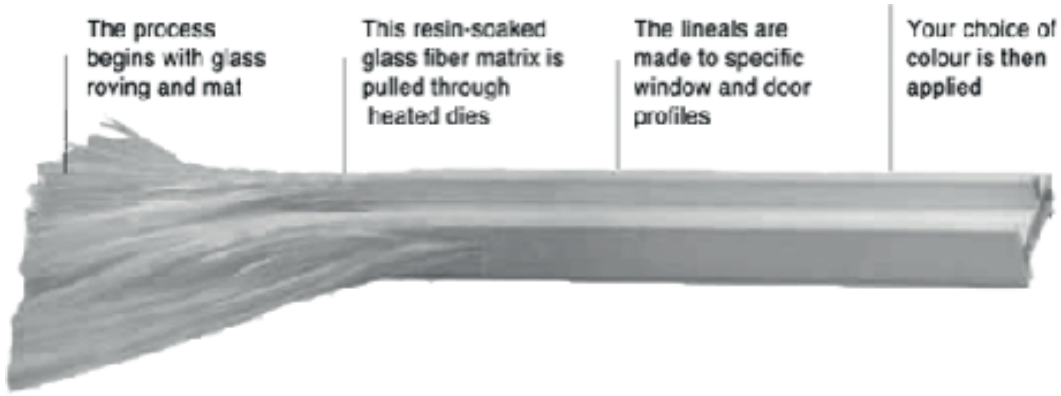
BOAVISTA

FIBRE
GLASS
WINDOWS

Boavista Windows is the first European window systems brand focused on **producing sustainable fibreglass windows with high durability and great design**.

what is fibreglass?

fibreglass | what is it?

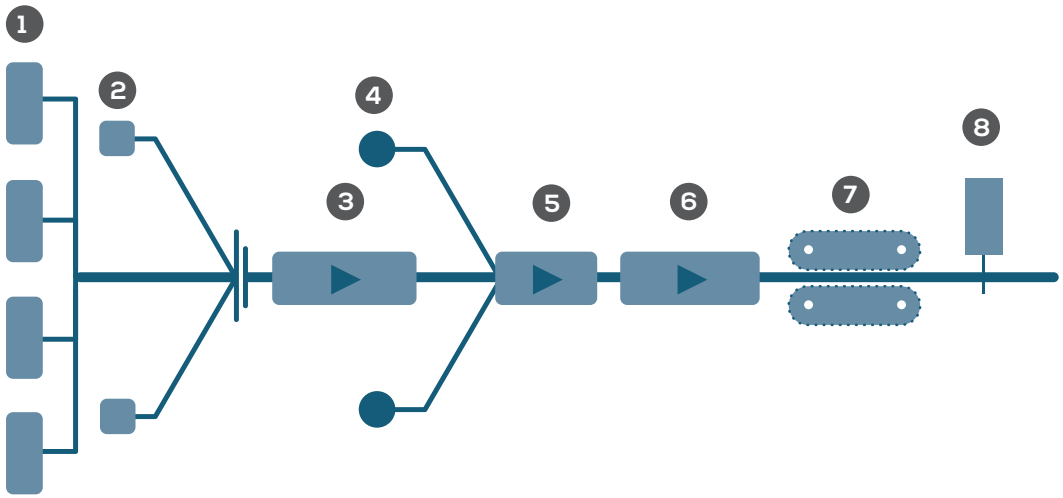


Fibreglass, the common name for GRP (Glass Reinforced Polymers), is a composite material that combines the best properties of each of its individual components.

Well known for its versatility, fibreglass presents a wide application range, from boats to wind turbines.

In the construction industry, fibreglass is used widely when the situation demands a stable, durable and resistant material.

fibreglass | pultrusion



1 Unidirectional Glass

2 Continuous strand mat

3 Resin bath

4 Surfacing Veil

5 Performer

6 Heated die

7 Pulling device

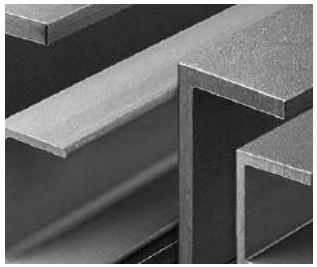
8 Cut off saw

The profiles used by BOAVISTA for its windows and doors are made using pultrusion.

This technology is a fully automated and continuous process that produces profiles with constant cross section.

It is also highly efficient for it only consumes 0,07 kW to produce a linear meter of profile (approx. 1kg).

fibreglass | examples of use



Structural Profiles

Decks

Bridge, Kolding Denmark

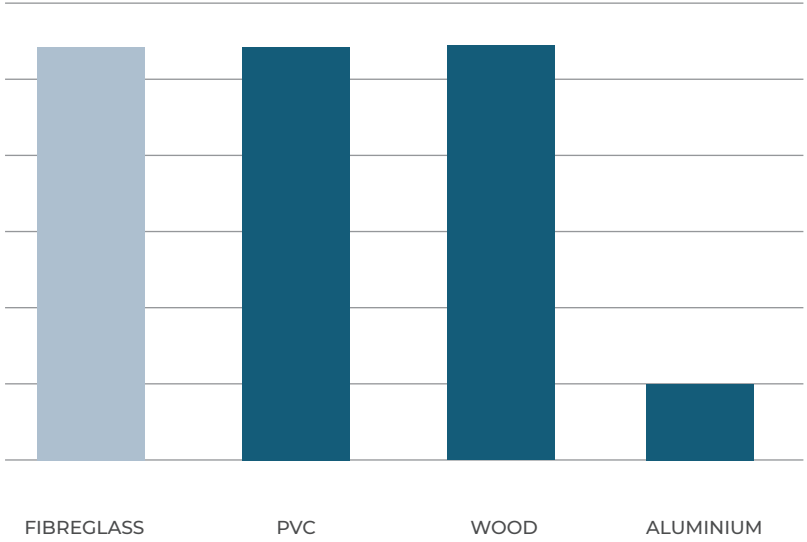
Water Treatment Center

Wind tower blade

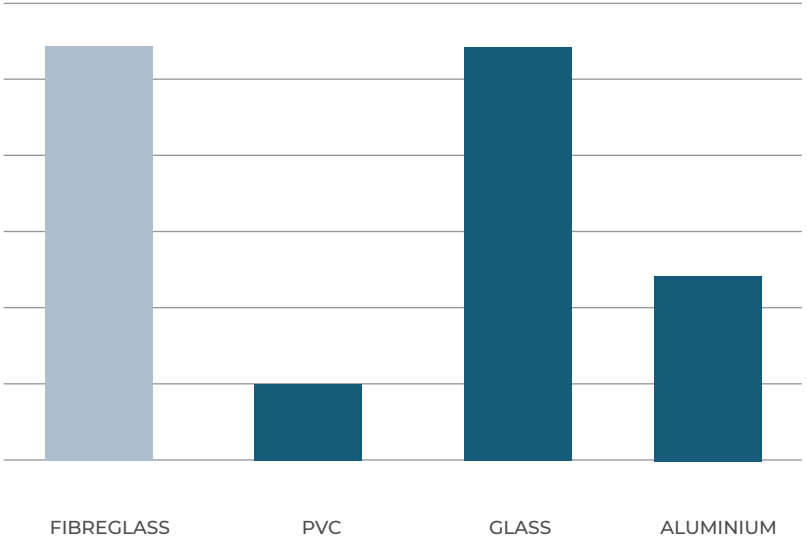
Racing vessels

fibreglass | pultruded profiles

Thermal Resistance



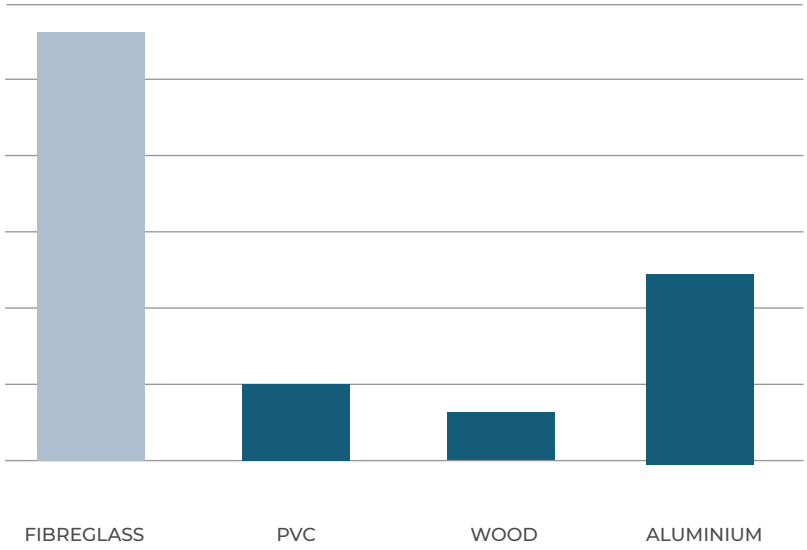
Dimensional Stability



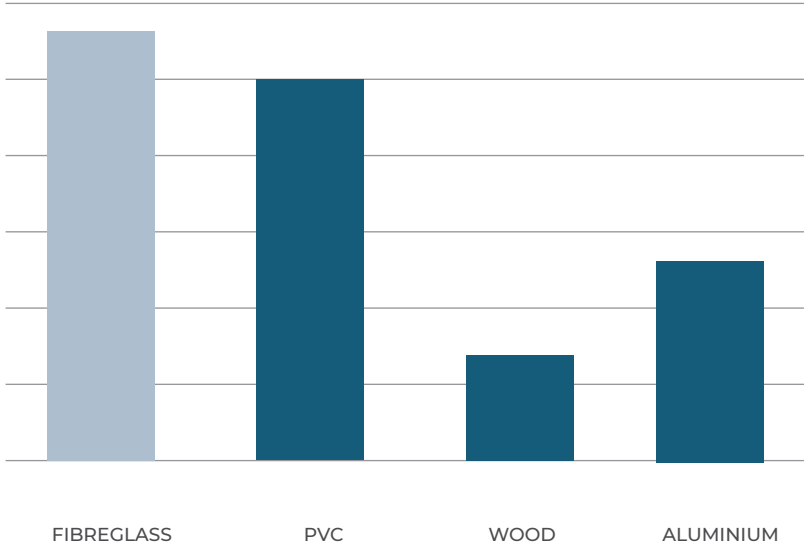
- low thermal conductivity
- low electric and acoustic conductivity
- high dimensional stability very similar to glass
- not fragile at low temperatures

fibreglass | pultruded profiles

Resistance/ Weight Ratio



Resistance to Corrosion/ Rot



- ✔ excellent resistance/ weight ratio
- ✔ excellent resistance to rot
- ✔ excellent resistance to corrosion
- ✔ excellent mechanical properties

BOAVISTA

FIBRE
GLASS
WINDOWS

Boavista Systems

– BWTT 60 – Tilt & Turn
– BWSL 45 – Sliding
– BWD60 Door
– BWDS 35 – Double Sash
– BWS 35 – Sash

Premium Systems

– BWSL45 Evolution
– BWO60 – Casement
– Vintage Series

BWTT 60

tilt & turn

boavista systems

Boavista Windows tilt & turn 60 mm sash width

BWTT 60 tilt & turn

– Most versatile window system with multiple configurations and operating modes;
– Compatible with other BOAVISTA series;
– Standard hidden hinge system: perfect aesthetic and optimum functionality

Performance Test

Requirements	Test Method	Test Results
Thermal Transmittance [Uw]	ISO 12567-1 2010	From 0,74 W/m² oK
Acoustic Insulation [Rw]	ISO 10140-1 2010 ISO 10140-2 2010 ISO 10140-4 2010 NP EN ISO 717-1 2009	39dB (-2;-4)
Air Tightness	EN 1026 2000 EN 12207 1999	4
Water Tightness	EN 1027 2000 EN 12208 1999	8A
Wind Load Resistance	EN 12211 200 EN 12210 1999 EN 12210 1999/AC 2002	C5

BWTT 60 tilt & turn Window

Project: New build Residential project in Lisboa, Portugal

System: BWTT60

Finish: RAL 9004

BWTT 60 tilt & turn Window

Project: New build Residential project in Lisboa, Portugal
System: BWTT60
Finish: RAL 9004

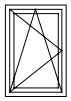
BWTT 60 tilt & turn Window

Project: Red House in Porto
System: BWTT60
Finish: textured RAL 3004

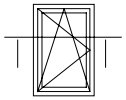
BWTT 60 tilt & turn Window

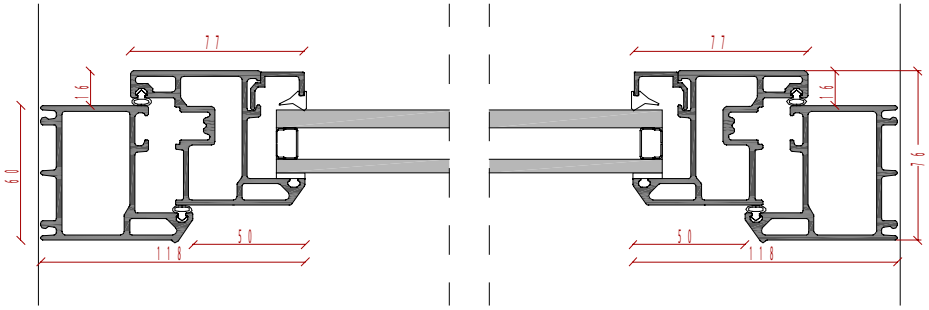
Project: Residential project in Porto, Portugal
System: BWTT60 – Fixed and Tilt & Turn
Finish: RAL 8014 – Matt Brown

Technical Drawing

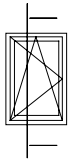


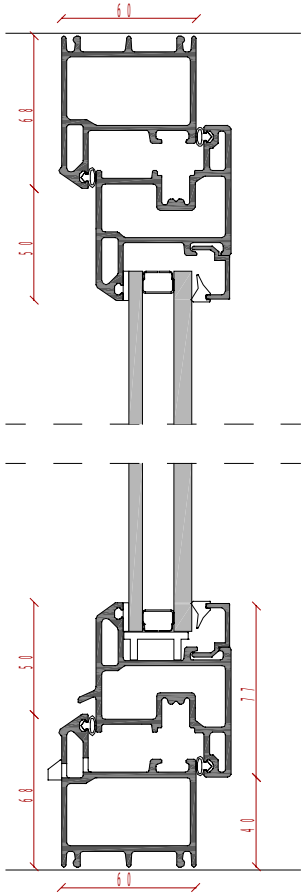
Horizontal Section





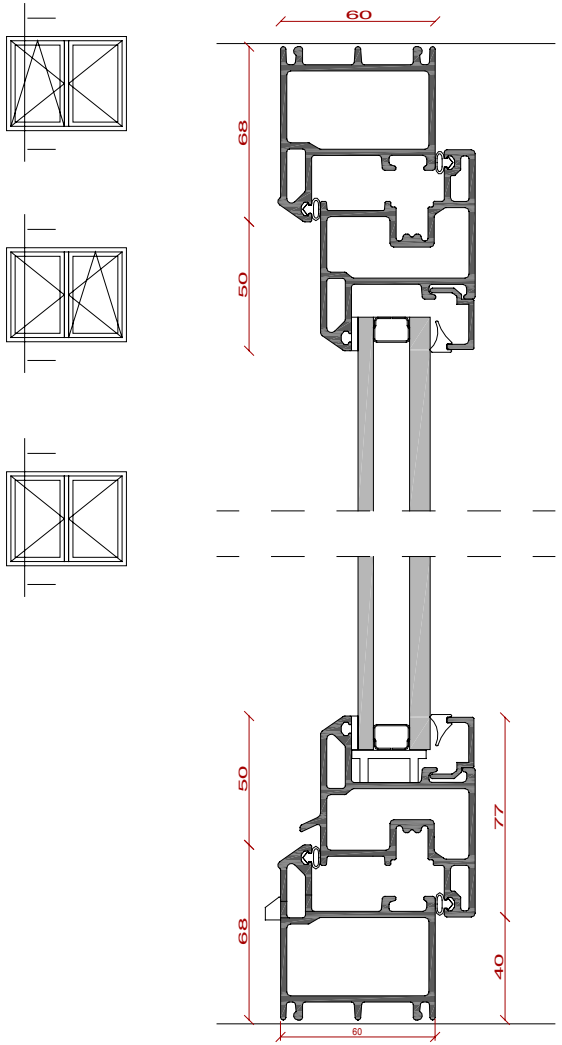
Vertical Section





Technical Drawing BWTT60 SOaSO

Vertical Section



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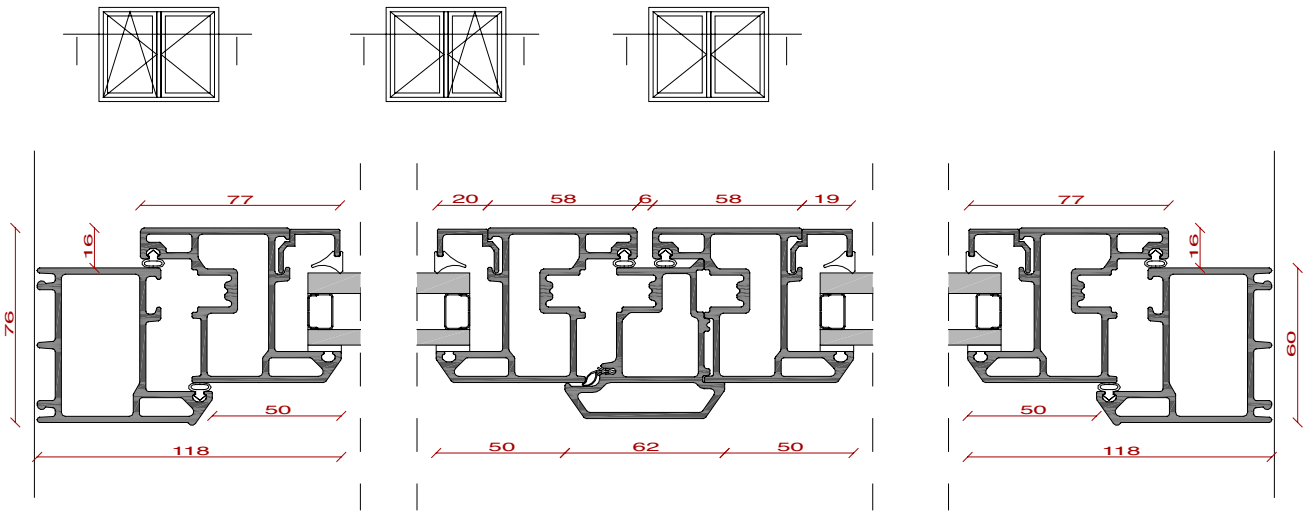


BWSL 45

Sliding

boavista systems

Boavista Windows Sliding 45 mm sash width

BWSL 45 Sliding

– Based on a modular system that allows multiple configurations;
– Standard sashes up to 250 kg (ex: 2,2 x 2,85 m);
– Low frame compatible to flush installations;
– Versatile lock upgradable to multi-point locking;

Performance Test

Requirements	Test Method	Test Results
Thermal Transmittance [Uw]	ISO 12567-1 2010	From 1,09 W/m² oK
Acoustic Insulation [Rw]	ISO 10140-1 2010 ISO 10140-2 2010 ISO 10140-4 2010 NP EN ISO 717-1 2009	26dB (-1; -2)
Air Tightness	EN 1026 2000; EN 12207 1999	3
Water Tightness	EN 1027 2000 EN 12208 1999	7A
Wind Load Resistance	EN 12211 200 EN 12210 1999 EN 12210 1999/AC 2002	C4

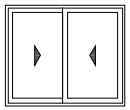
BWSL 45 Sliding Door

Project: Residential project in Oxfordshire, England
System: BWSLD45
Finish: RAL 9005 Textured Black

BWSL 45 Sliding Door

Project: Residential building in Porto, Portugald
System: Sliding
Finish: RAL 7021 – Textured Grey

Technical Drawing



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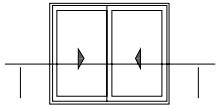
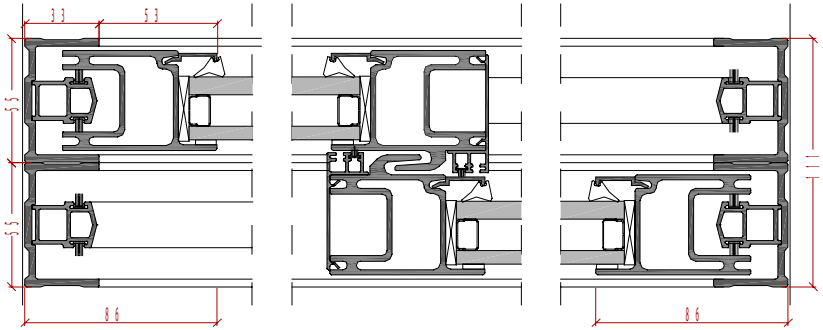
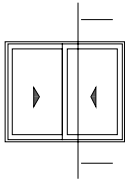
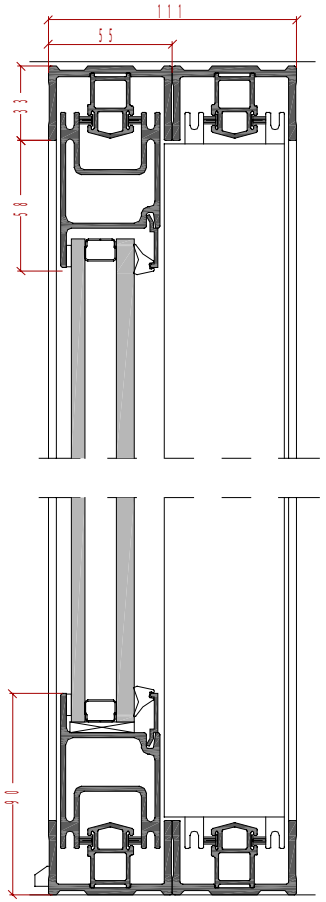


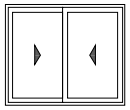


Vertical Section

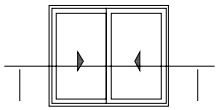


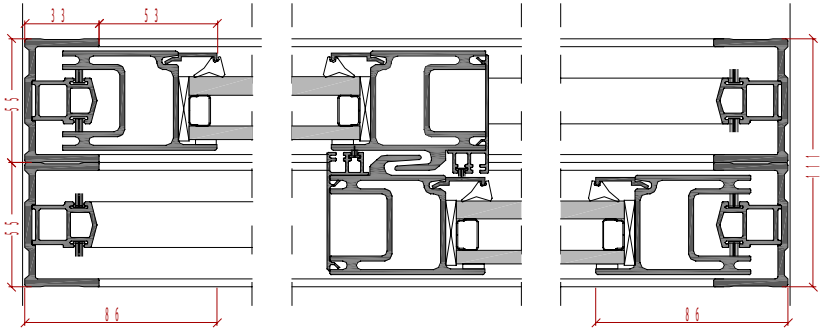


BWSLD45 – 2R MM

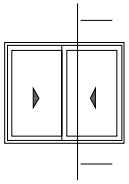


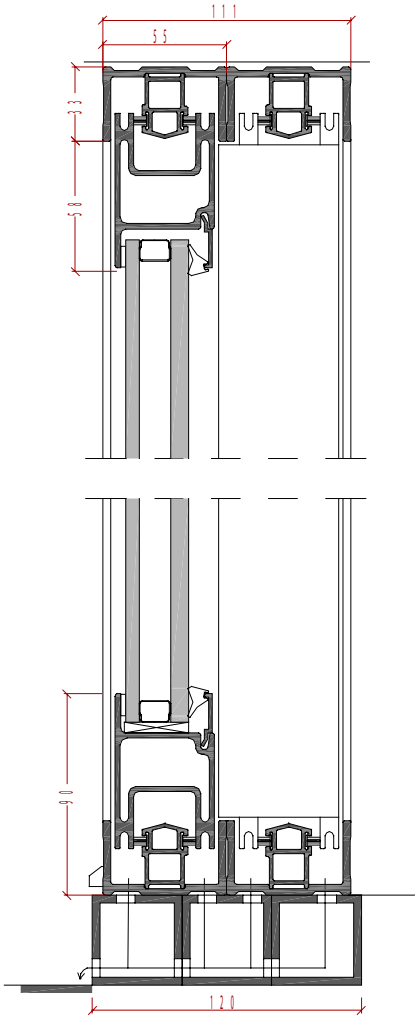
Horizontal Section





Vertical Section





BWD60

Door

boavista systems

Boavista Windows door 60 mm sash width

BWD60 Door

- Allows secure locking system, with multiple locking points;
- Can be used with glass or with opaque fibreglass panel;
- Customizable handles and colours

Performance Test

Requirements	Test Method	Test Results
Air Tightness	EN 1026:2016 EN 12207:2016	3
Water Tightness	EN 1027:2016 EN 12208:1999	4A
Wind Load Resistance	EN 12211:2016 EN 12210:2016	C5

BWD60 Door

Project: Office Building in Matosinhos, Portugal
System: BWD60 + fixed BWTT60
Finish: 7021 textured dark grey

BWD60 Door

Project: Residential Building in Lisbon Portugal

System: BWD60

Finish: 9004 matt black

BWDS 35

Double Sash Window

boavista systems

Boavista Windows Double Sash 35 mm sash width

BWDS 35 Double Sash Window

– Both panels slide;
– The bottom panel can be used as a balustrade;
– Great minimal looks

Performance Test

Requirements	Test Method	Test Results
Thermal Transmittance [Uw]	ISO 10077-1:2006 ISO 10077-2:2006	From 1,23 W/m² oK
Acoustic Insulation [Rw]	NP EN 14351-1:2006 + 1:2011	29dB (-1; -2)
Air Tightness	EN 1026 2000; EN 12207 1999	3
Water Tightness	EN 1027 2000 EN 12208 1999	8A
Wind Load Resistance	EN 12211 200 EN 12210 1999 EN 12210 1999/AC 2002	C2

BWDS 35 Double Sash Window

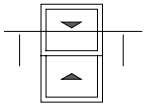
Project: Commercial project in Oxfordshire, England
System: BWDS35 – Double Sash Dimensions: 100mm x 2000mm;
Finish: RAL 7021 – Textured grey

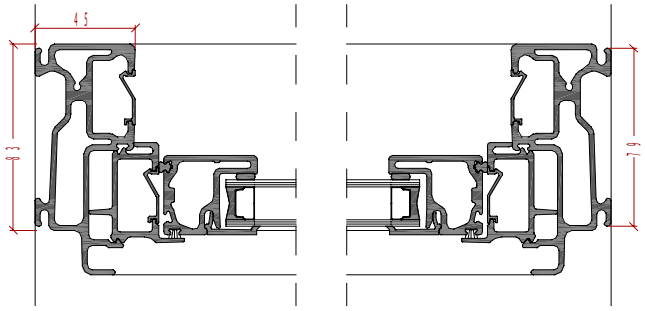
BWDS 35 Double Sash Window

Project: Commercial project in Oxfordshire, England
System: BWDS35 – Double Sash Dimensions: 100mm x 2000mm;
Finish: RAL 7021 – Textured grey

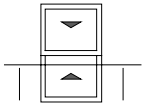
Technical Drawing

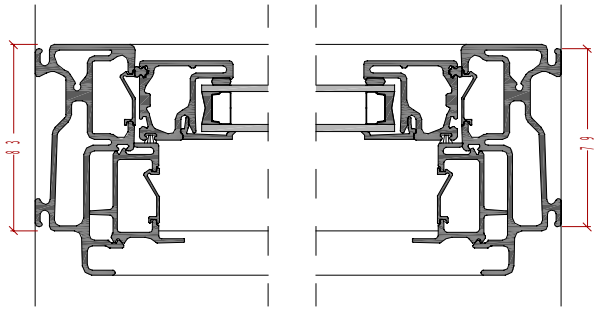
Horizontal Section



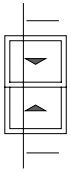


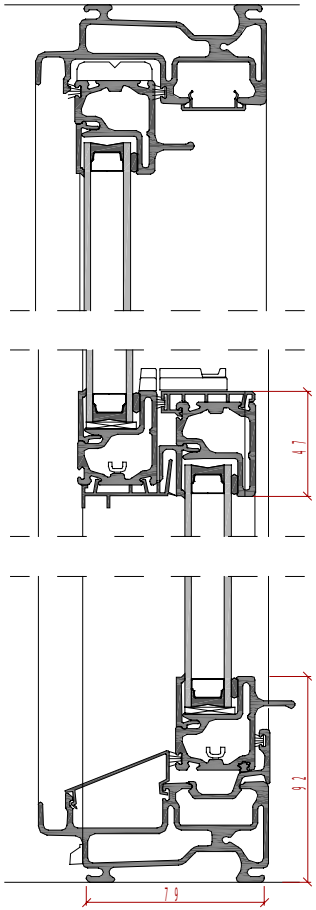
Horizontal Section





Vertical Section





BWS 35

Sash

boavista systems

Boavista Windows Sash 35 mm sash width

BWS 35 Sash

– Window with excellent ITT results, among the best of its class;
– Fixed upper sash and operable lower sash;
– Twin spring system makes it easy to use;
– Operable sash can be tilted for exterior cleaning

Performance Test

Requirements	Test Method	Test Results
Thermal Transmittance [Uw]	ISO 10077-1 2006 ISO 10077-2 2012	From 1,23 W/m² oK
Acoustic Insulation [Rw]	ISO 10140-1 2010 ISO 10140-2 2010 ISO 10140-4 2010 NP EN ISO 717-1 2009	29dB (-1; -2)
Air Tightness	EN 1026 2000 EN 12207 1999	4
Water Tightness	EN 1027 2000 EN 12208 1999	7A
Wind Load Resistance	EN 12211 200 EN 12210 1999 EN 12210 1999/AC 2002	A4

BWS 35 Sash Window

Project: Residential project in Ontario, Canada

System: BWS35

Finish: RAL 9016 – Matt black

BWS 35 Sash Window

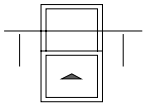
Project: Residential refurbsihment in a former convent, England

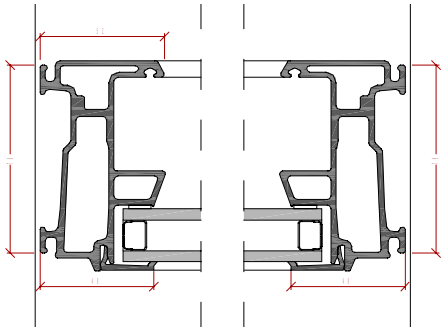
System: BWS35

Finish: RAL 9003 matt white

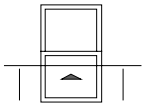
Technical Drawing Sash 1

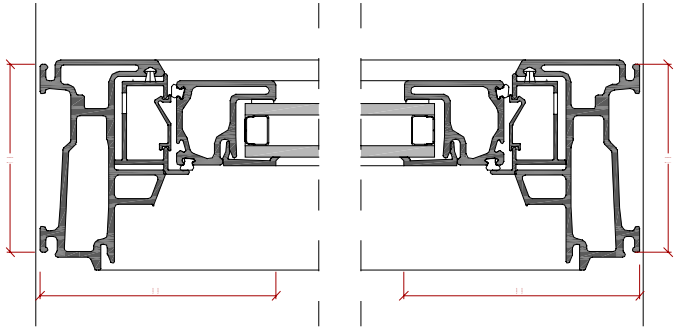
Horizontal Section



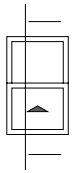


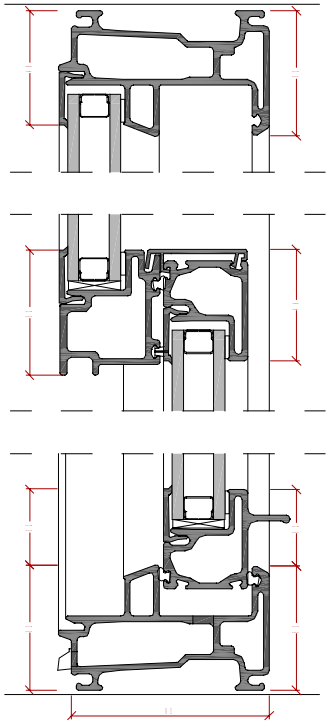
Horizontal Section





Vertical Section





BOAVISTA

FIBRE
GLASS
WINDOWS

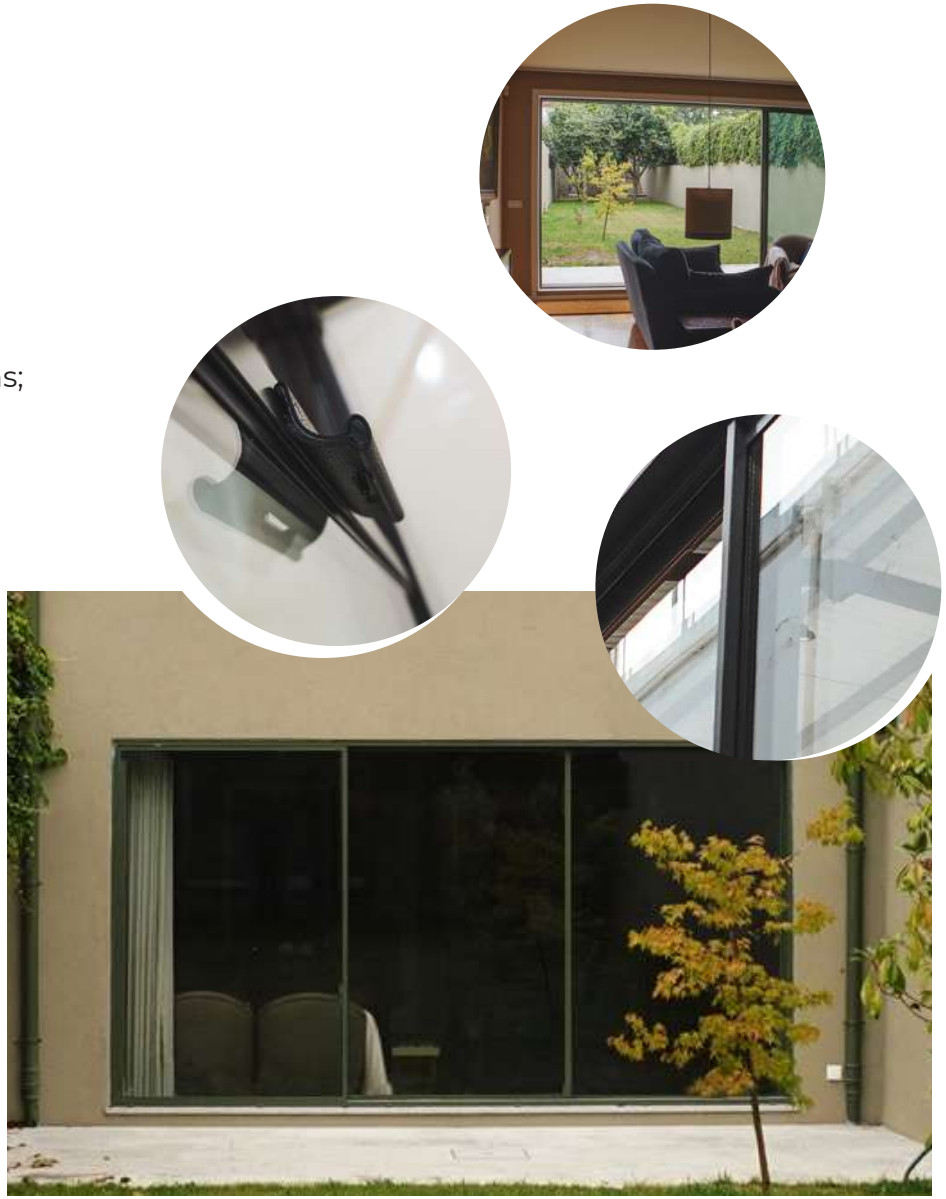
Fibreglass Windows
PREMIUM SYSTEMS

think ahead, think BOAVISTA!

boavista systems

BWSL Evolution

– Based on a modular system that allows multiple configurations;
– Standard sashes up to 7,5 m^2;
– Low frame compatible to flush installations;
– Sleek elegant design



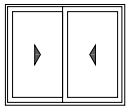
Performance Test

Requirements	Test Results
Acoustic Insulation [Rw]	35 dB (-2;-4)
Air Tightness	3
Water tightness	5A
Wind Load Resistance	B3

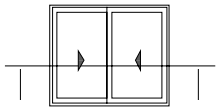
BWSL Evolution

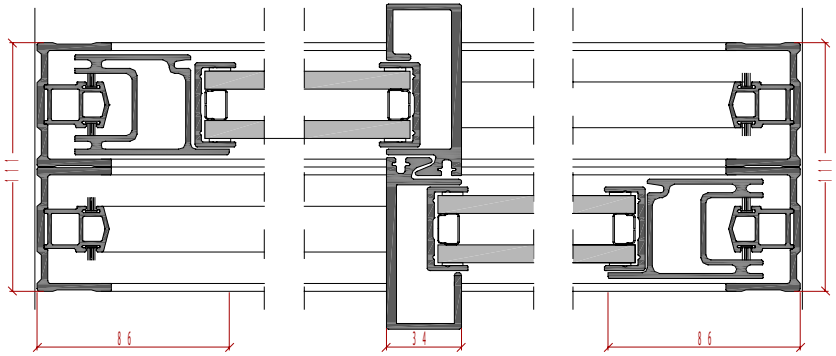
Project: Residential building in Southampton, England
System: BWSL45 Evolution
Finish: RAL 7016 – textured

Technical Drawing

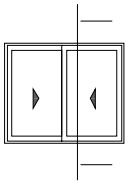


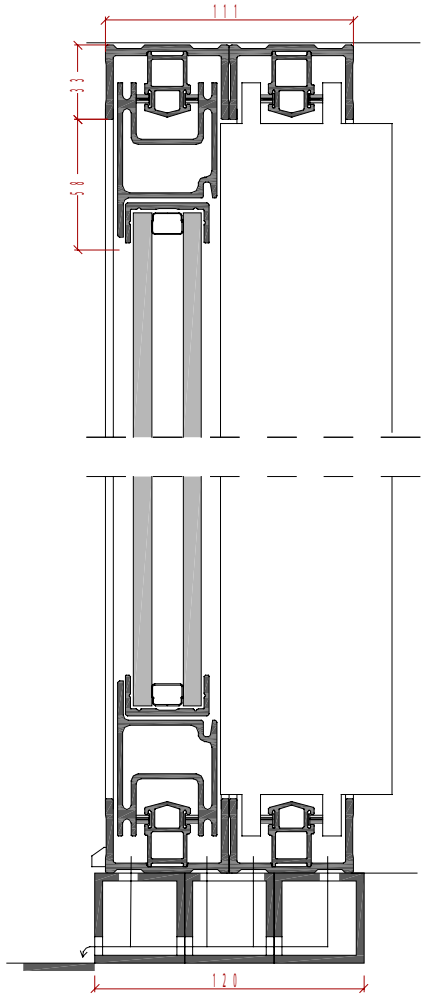
Horizontal Section



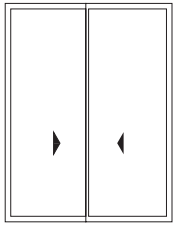


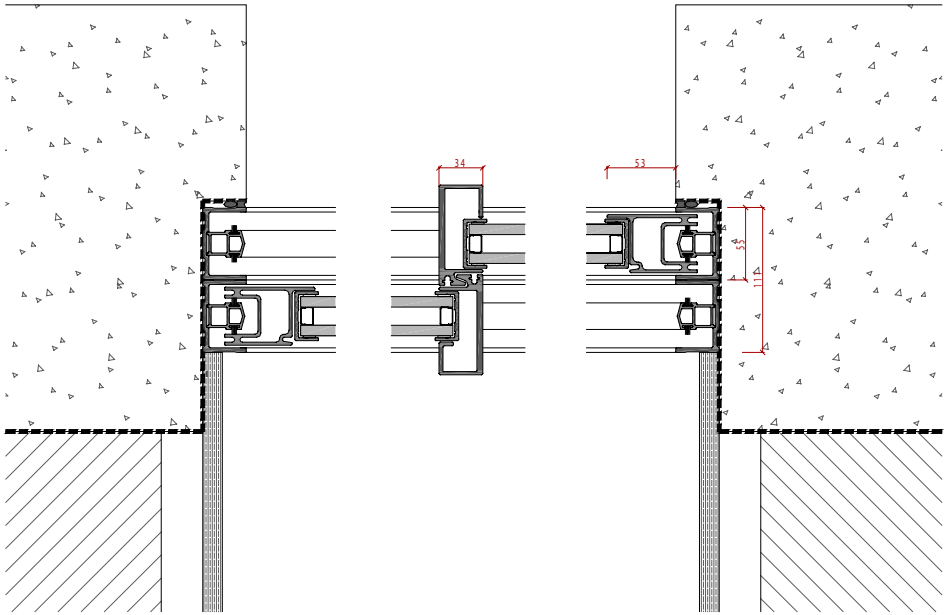
Vertical Section

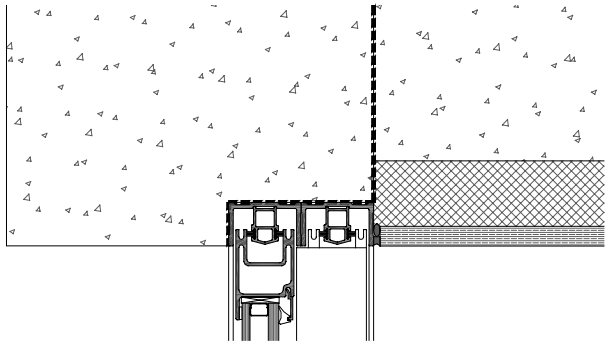


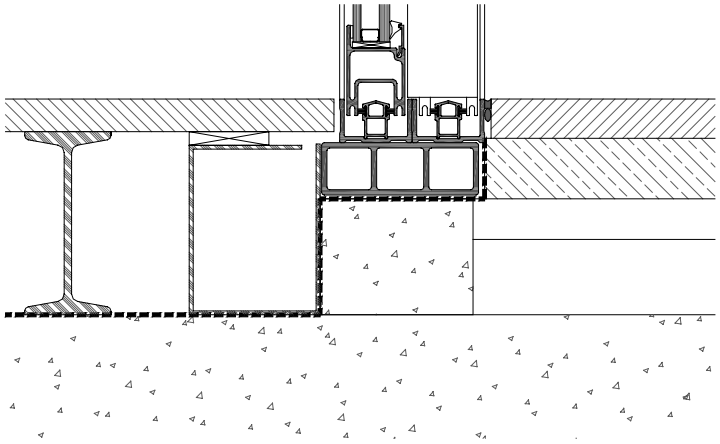


Technical Drawing

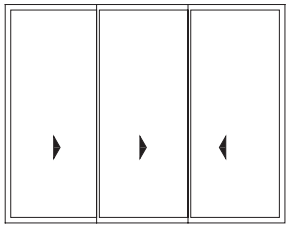


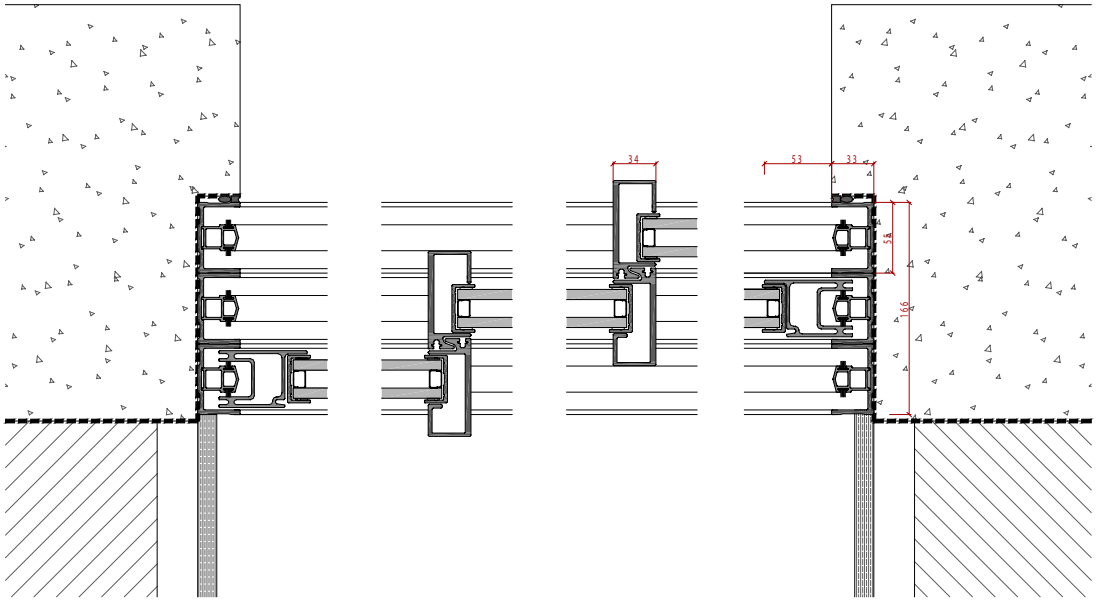


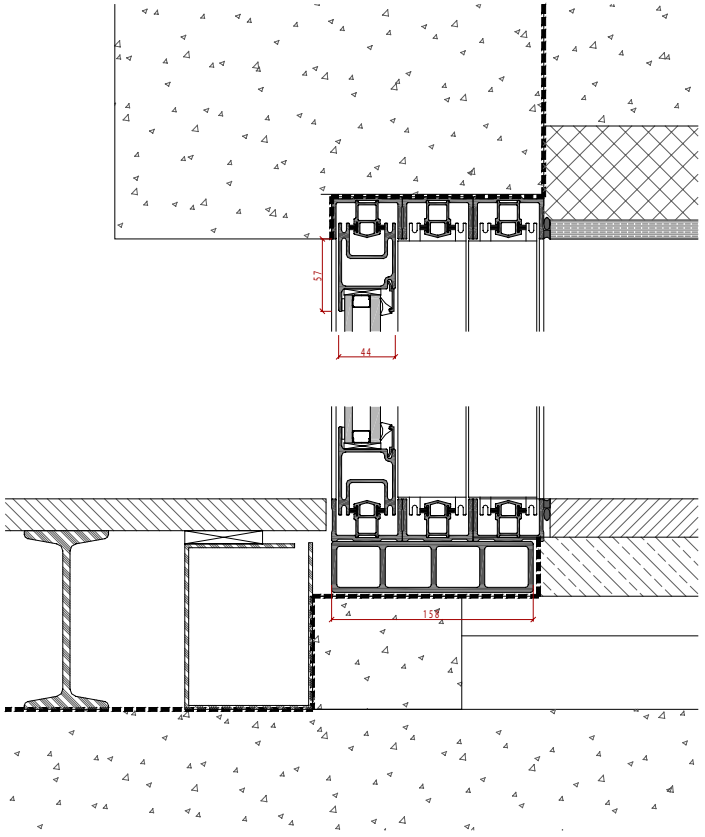




Technical Drawing







BWO 60

Outward Opening

boavista systems

BWO 60 Outward Opening Window

– With slim frame, for a minimal look;
– Outward side hung opening or top hung projecting window

Performance Test

Requirements	Test Results
Thermal Transmittance [Uw]	From 1,19 W/m2 oK
Acoustic Insulation [Rw]	37 dB (-1;-4)
Air Tightness	4
Water Tightness	6A
Wind Load Resistance	C4

BWO 60 Outward Opening Window

Project: Grade I listed building in Sussex Square, Brighton

System: BWO60

Finish: RAL 7024

BWO 60 Outward Opening Window

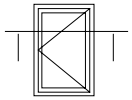
Project: Residential Project, Ontario, Canada

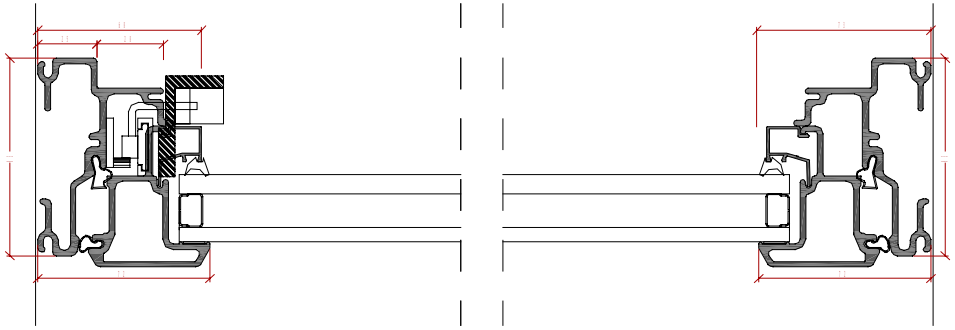
System: BWO60

Finish: RAL 9016 – Matt black

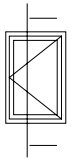
Technical Drawing

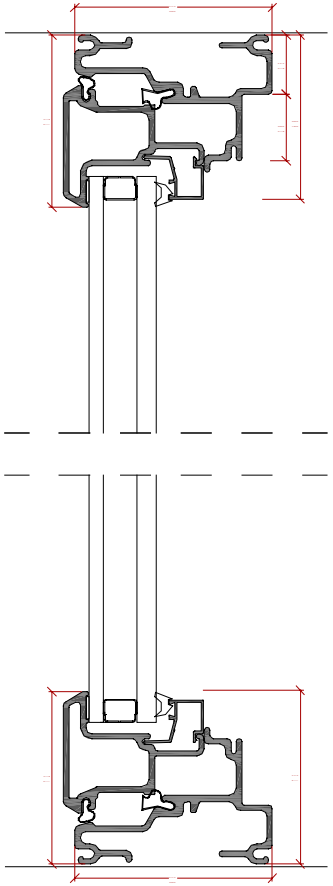
Horizontal Section





Vertical Section





Vintage Series

boavista systems

Vintage Series

– Vintage look with modern performance;
– Fibreglass reinforced profiles provide;
– Great durability even in harsh conditions

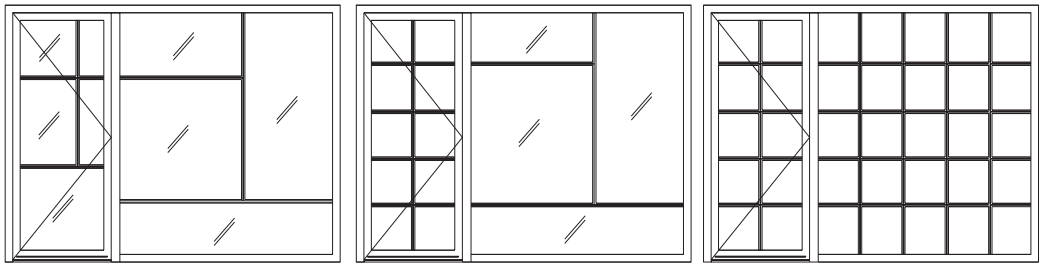
Performance Test

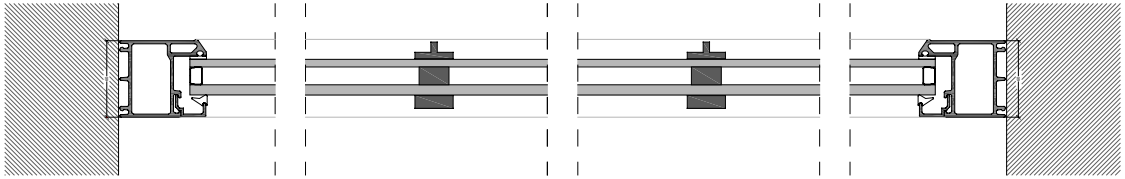
Requirements	Test Results
Thermal Transmittance [Uw]	From 0,74 W/m2 oK
Acoustic Insulation [Rw]	39dB (-2; -4)
Air Tightness	4
Water Tightness	8A
Wind Load Resistance	C5

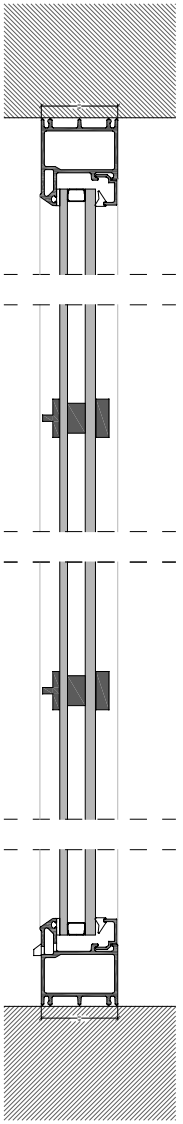
Vintage Series

Project: Fintech Service Center in Matosinhos, Portugal
System: Vintage Series
Finish: RAL 7016 – textured

Technical Drawing







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Energy Rating for windows

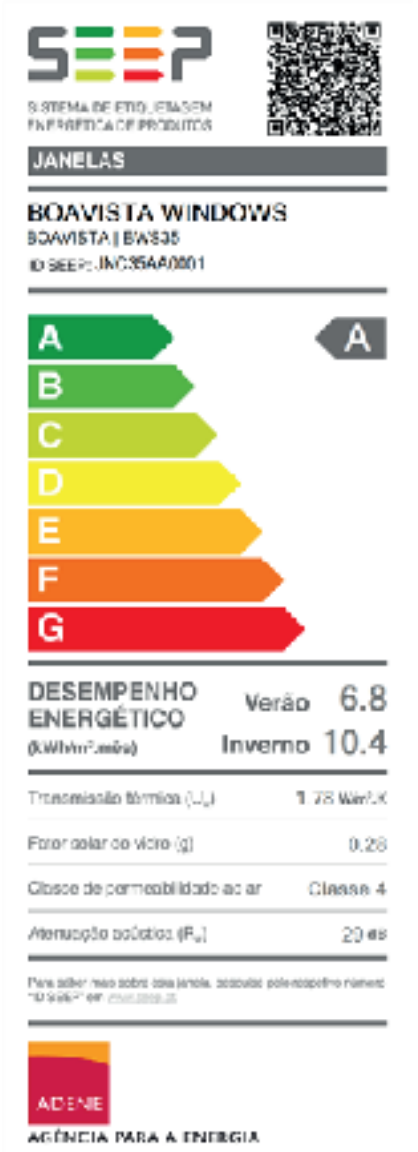
Energy Rating for windows

How does it work?

The Window Energy Rating system follows a similar pattern to appliance energy labels, with windows being rated between A or A+ (the best) and G (the worst).

It can be used by consumers and specifiers to compare in a simple and quick way the energy efficiency of a fenestration.

Windows can account for over 25% of a heating bill and a difference in energy saving between an A or B-rated window could be an additional 6.5% on your energy bills.



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Technical Support

Our technical team is available to study your projects BOAVISTA provides assistance in:

– Detailed design

– Bills of quantities

– Window schedules

– Specifications.

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4410 - 022 Serzedo - V.N.Gaia
tel/fax +351 222 080 777
hello@boavistawindows.com

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Portfolio

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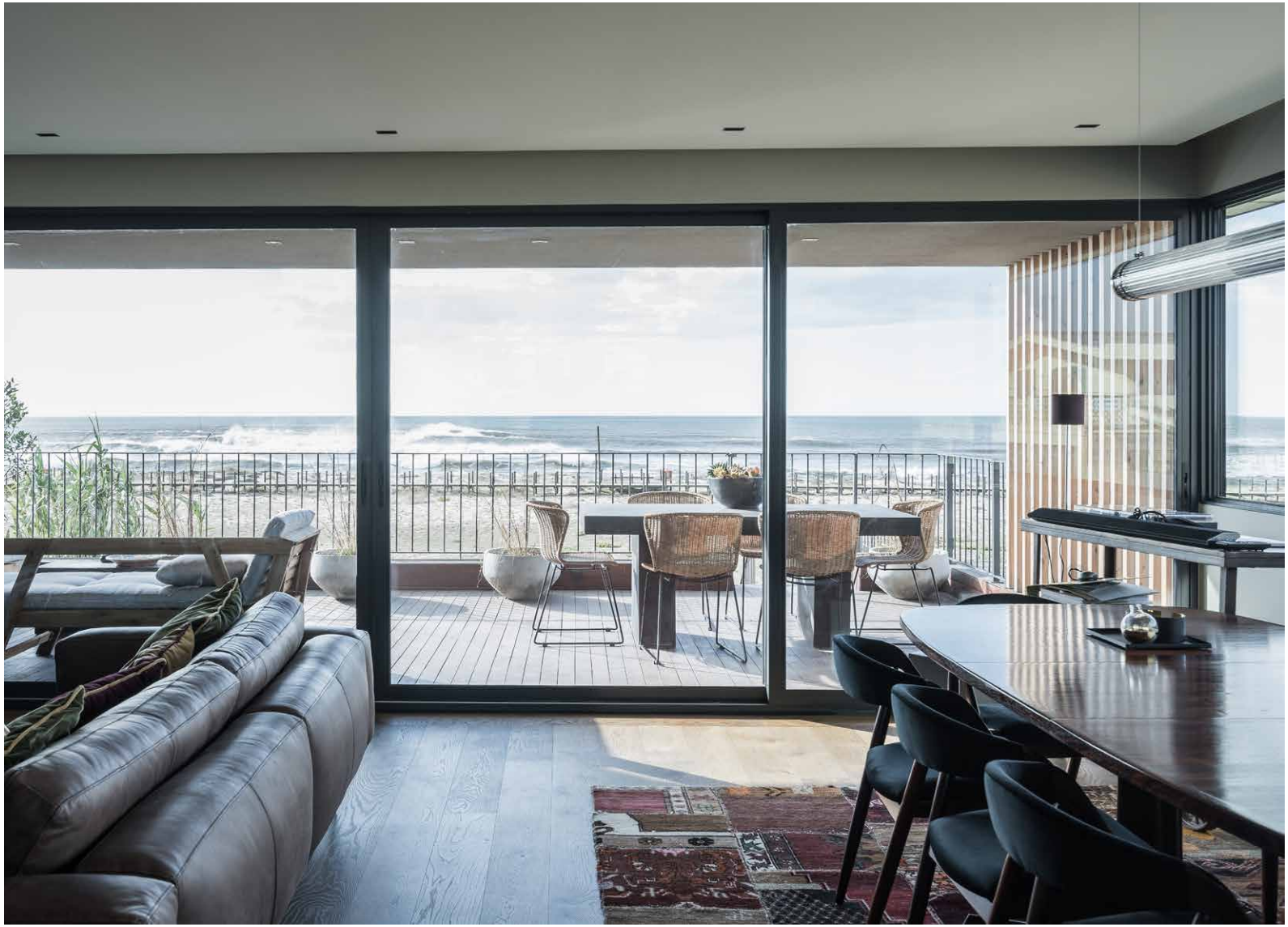
SLIDING



House in Lavra. Architecture by Carlos M. Figueirinhas.

Systems used: **BWSL45, BWO60**

Systems used: **BWSL45, BWO60**

Systems used: **BWSL45**

House in Leça da Palmeira. Architecture by CPrata Arquitectos.

Systems used: **BWSL45**

Systems used: **BWSL45**

Systems used: **BWSL45**

House in Matosinhos Beach.

Systems used: **BWSL45**,
2 rails multiple panels,
11 meters wide.

Systems used: **BWSL45**,
2 rails multiple panels,
11 meters wide.

Systems used: **BWSL45**,
2 rails multiple panels,
11 meters wide.

House in Porto. Architecture by Paulo Camelo Arquitectos.

Systems used: **BWSL45, BWTT60**

Systems used: **BWSL45, BWTT60**

House in Crowsport, Southampton, England.

One large **BWSL45** window,
6m wide by 2,4 m tall

One large **BWSL45** window,
6m wide by 2,4 m tall

Work in Progress. 5 Star Hotel in Ericeira.
Architecture by Tiago Silva Dias Arquitectos.

Systems used: **BWSL45, BWSL Evolution**,
3 meters high

Systems used: **BWSL45, BWSL Evolution**,
3 meters high

Work in Progress. Residential building in Rua de Pinheiro Chagas, Lisboa.

Systems used: **BWSL Evolution, BWTT60.** With corner windows.

BAVISTA

FIBRE
GLASS
WINDOWS

TILT AND TURN

House in Oeiras.

Systems used: **BWTT60, BWSL45**

Systems used: **BWTT60, BWSL45**

House in Lavra. Architecture by Carlos M. Figueirinhas.

Systems used: **BWSL45**, **BWO60**

Systems used: **BWSL45**, **BWO60**

House in Leça da Palmeira. Architecture by CPrata Arquitectos.

Systems used: **BWO60**

Systems used: **BWO60**

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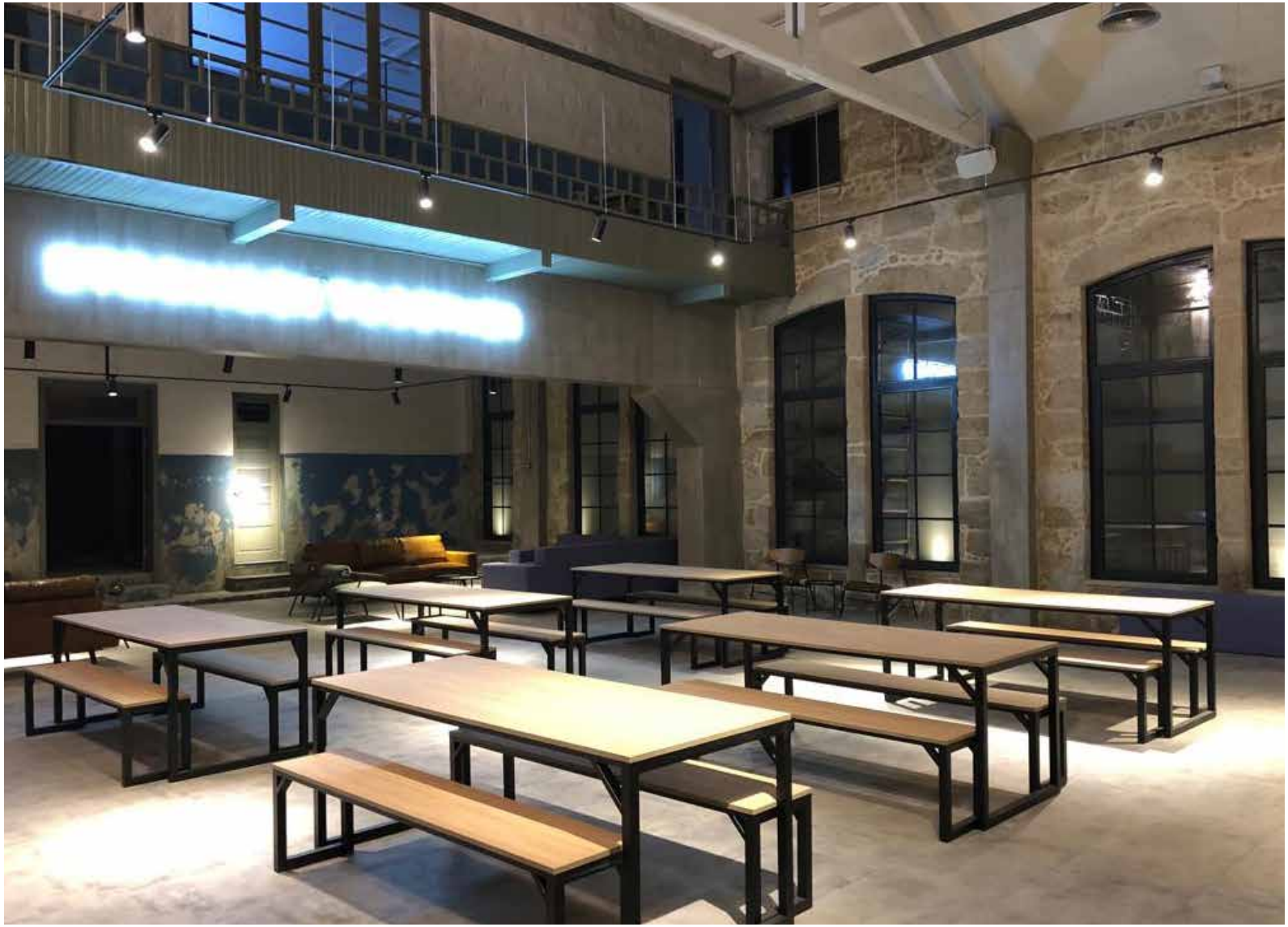
FIBRE
GLASS
WINDOWS

SPECIAL PROJECTS

Office and residential building in Oxforshire, England.

Systems used: **BWDS35, BWSL45**

Systems used: **BWDS35, BWSL45**



Office building for fintech company in Matosinhos.

Systems used: **Vintage Series**

Systems used: **Vintage Series**

Residential building in Hampshire, England. Architecture by Flower Kittle Architects.

Systems used: **BWO60, BWTT60, BWD60**

Systems used: **BWO60, BWTT60, BWD60**

Systems used: **BWO60, BWTT60, BWD60**

House in Lavra. Architecture by Carlos M. Figueirinhas.

Systems used: **Vintage Series**

Systems used: **Vintage Series**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