



mfree-S^{CCF}

A moisture free Sustainable
Closed Cavity Façade

PERMASTEELISA
U L T R A
technology

mfree-S^{CCF}

Clients' Expectations

Governments are enforcing ever more stringent energy regulations in order to reduce energy consumption and carbon emissions. Building developers aim for cost-efficient façade solutions which significantly contribute to high environmental ratings. Equally, tenants are increasingly aware that comfortable buildings with an abundant availability of daylight and light-thermal-acoustic comfort enhance productivity. Finally, architects focus on generating holistic design solutions without compromising aesthetic quality.



UCLH

London | United Kingdom
8,200 m² façade, of which 3,750 m² *mfree-S*^{CCF} with automated venetian blinds integrated into the cavity.

mfree-S^{CCF} Technology

The Permasteelisa Group introduced the innovative and very cost-effective moisture-dust free-Sustainable Closed Cavity Façade, *mfree-S*^{CCF}, into the high-end building market in 2008. Since then, many projects have been realised all over the world. The *mfree-S*^{CCF} is designed in such a manner that no contamination by dust and condensation is permitted inside the internal cavity of this special double skin façade.



New JTI International Headquarters

Geneva | Switzerland
18,500 m² of *mfree-S*^{CCF}

Ph.: ©Johannes Marburg Photography

Key Characteristics of the *mfree-S^{CCF}*



Roche Building 1

Basel | Switzerland

8,200 m² façade, of which 3,750 m² *mfree-S^{CCF}* with automated venetian blinds integrated into the cavity.

- Compliant with the latest building regulations with a maximum window-to-wall ratio
- Transparent façade performance properties: U , g , τ_v , R_w
 - High thermal insulation of fully glazed façade:
 U_{cw} : 0.9_{blind down} - 1.2_{blind up} [W/m²K]
 - High solar protection by automated blind control system:
 g : 0.06_{blind down} - 0.44_{blind up}
 - High daylight transmission combined with total glare protection:
 τ_v : 0.04_{blind down} - 0.63_{blind up}
 - High direct sound insulation:
 R_w 46 [dB]
- Extra rewards in green building rating schemes (LEED / BREEAM / etc.)
- Reduced long term façade cavity cleaning costs, avoiding disturbance for occupants
- High quality automated solar shading system
- No condensation risk inside the façade cavity

As the *mfree-S^{CCF}* configuration is always optimized to the local climate conditions and building functions, this technology can always achieve better results compared to traditional façades.

Highly Transparent and Performing Glazing

Thanks to the integration of special selected and pre-tested automated solar shading, the Permasteelisa Group is able to provide very high comfort levels in terms of daylight, thermal and acoustic comfort.

The visual appearance of the building, the type and aesthetics of the shading system as well as other façade components can be tailored to the desires of the architect and building users.



200 George Street

Sydney | Australia

Automated wooden venetian blinds inside the *mfree-S^{CCF}* façade.



Richti-Areal Plot 1 and 7

Wallisellen | Switzerland

Automated curtains inside the 26,650 m² *mfree-S^{CCF}*.

mfree-S^{CCF}

Quality Assurance

Clean and Moisture Free Cavity Conditions

Outdoor air is cleaned and dried up by a dedicated self-regulating simple air handling system. The level of moisture and dust in the treated air is kept to such a low level that the cavity remains dust free and condensation cannot occur, even in the most adverse environmental conditions, since the treated air is constantly blown into the closed cavity.

Durability by Testing and Experience

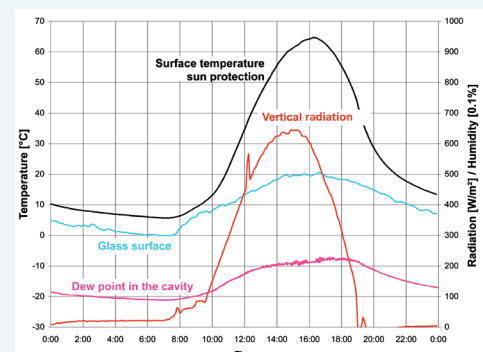
The performance of the **mfree-S^{CCF}** system is highly influenced by the design of the automated solar shading, which is integrated inside the closed cavity.

The Permasteelisa Group has built, since the early nineties, a unique experience in the behaviour and durability of the different automated shading systems for double skin façades. Thanks to this experience we are able to assure a long lasting operability of the **mfree-S^{CCF}** technology.

As the solar shading device and the shading controls are already integrated during assembly in the factory, they are not affected by subsequent transportation, handling and installation activities. This ensures that high levels of quality are met, with a significant increase of the life expectancy of the façade, while maintaining access for inspection.



Façade test facility, Germany



Condensation-free cavity



Permasteelisa Group outside test facility

Customers' Benefits

- Sustainable transparent façade system, compliant with stringent building regulations
- High scores in *green building rating systems* (LEED, BREEAM, etc.)
- High-level of comfort for end-users
- Bespoke design solutions for different types of climate
- Dynamic and optimised response to external conditions due to integrated automatic solar shading
- End-user natural light management
- Larger net lettable area compared to traditional naturally ventilated double skin façades, because no access to the cavity is required
- Reduced long term façade cavity cleaning costs
- No condensation risk inside the façade cavities
- Very cost-effective technology:
 - Performance guaranteed for longer than standard double skin façades
 - Low maintenance costs
 - Extended lifetimes for blinds which are in a protected environment
- Maximum freedom of the interior design due to the absence of operable doors
- Building users are not disturbed since the cavity does not require cleaning

Façade characteristics for transparent buildings

Parameter	Single skin with internal blind	Naturally ventilated façade	<i>mf</i> free- <i>S</i> ^{CCF}
Environment preference	All	All, except dusty environments	All ¹
Glass surface / element	0 ²	++	++
End-user comfort summer	-	++	++
End-user comfort winter	0	+	+
Sustainability	-	+	++ ⁵
Façade maintenance costs ³	-	0	++
Dynamic façade performance	0	++	++
Natural light management	+	+	+
Solar shading	Exposed to occupants	Exposed to outside dust and moisture	Protected from internal and external
Shading controls ⁴	Others or PermasteelisaBlindTech System	Others or PermasteelisaBlindTech System	PermasteelisaBlindTech System

Notes:

1. Special durable design solutions have been developed by Permasteelisa to ensure the use in very hot/cold climates
2. Due to current building regulations, the effective glass surface has to be reduced unless environmental technologies demonstrate easier compliance
3. Single skin façades require extra maintenance due to interior solar shading systems, the shading in the naturally ventilated façade is exposed to the dust
4. PermasteelisaBlindTech System is a project specific turn-key control solution, to optimise and guarantee the dynamic façade performance
5. The *mf*free-*S*^{CCF} can be designed to a glazing life-time expectancy of more than 25 years.

*mf*free-S^{CCF}

Project References



LEO, FRANKFURT | GERMANY

28,000 m² façade of which 10,000 m² *mf*free-S^{CCF} including automated venetian blinds and partly motorised and BMS linked operable windows for natural ventilation.



NEW JTI INTERNATIONAL HQ, GENEVA | SWITZERLAND

20,900 m² façade of which 18,500 m² *mf*free-S^{CCF}.



INHAUS2, DUISBURG | GERMANY

1,800 m² façade of which 450 m² *mf*free-S^{CCF} with façade integrated automated venetian blinds.



ONE NEW BURLINGTON PLACE, LONDON | UNITED KINGDOM

23,000 m² *mf*free-S^{CCF} with façade integrated automated venetian blinds and inclined panels.



Ph.: ©Stephan Liebl



SBB OPERATIONS CONTROL CENTRE, OLTEN | SWITZERLAND
2,150 m² façade of which 1,400 m² **mfree-S^{CCF}** with façade integrated automated venetian blinds.



Ph.: ©Johannes Marburg Photography

ROCHE BUILDING 1, BASEL | SWITZERLAND
38,800 m² **mfree-S^{CCF}** the highest building in Switzerland.



Ph.: ©Matthew Longden

200 GEORGE STREET, SYDNEY | AUSTRALIA
20,000 m² **mfree-S^{CCF}** including 2,900 façade integrated wooden venetian blinds. The façade performance is managed by Permasteelisa blind control system.



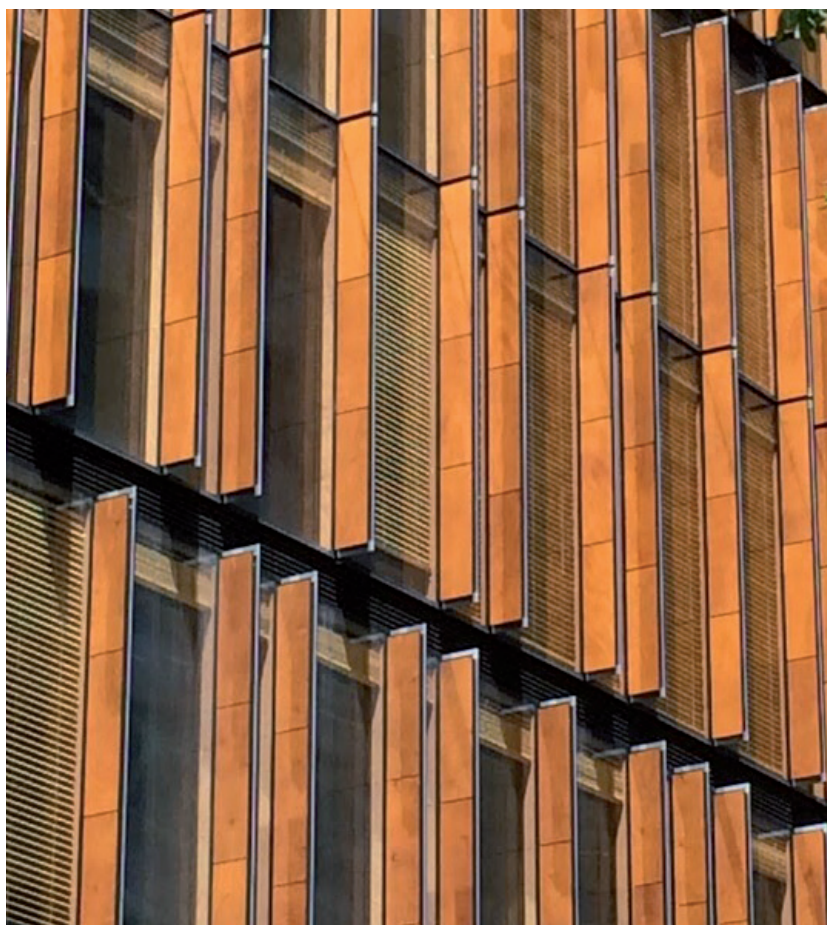
Ph.: ©Bruno Klotzler Fotografie

HILTI INNOVATION CENTER, SCHAAN | LIECHTENSTEIN
8,250 m² **mfree-S^{CCF}** with façade integrated automated venetian blinds.



OPPLE INDUSTRIAL PARK, SUZHOU | P.R. OF CHINA
The building resisted a typhoon in 2012. 24,300 m² **mfree-S^{CCF}** with façade integrated venetian blinds. The façade performance is managed by Permasteelisa BlindTech.

mfree-S^{CCF}



Ph.: ©Matthew Longley

200 George Street
Sydney | Australia

Automated wooden venetian blinds inside the *mfree-S*^{CCF} façade.

Contact Us

A permanent exhibition of the *mfree-S*^{CCF} is located at our representative Palazzo in Venice. You are welcome to experience first-hand the *mfree-S*^{CCF} façade technology as well as other new façade technologies and full scale mock-ups at: *Palazzo Giustinian Lolin, Calle Giustinian 2893, 30124 Venice - Italy*

To book your visit and for more information, please send all requests to: info.i-s@permasteelisagroup.com



Follow Us



Download the App



www.permasteelisagroup.com



IIII GARTNER



PERMASTEELISA



SCHELDEBOUW