MIG **DHMb®**
LINING TECHNOLOGY

(Double Hybrid Membrane Technology)

THE SYSTEM FOR THE FUTURE

20 years MIG mbH

- Founded in 2001

  Dipl.-Chem.Ing. Burkhard Brandt and

  Beton Ing. Wolfgang Bonder
- Joint Venture in China 2016 – MIGinno
- Salzkotten, Germany
- Products - Chromate reduction

  - Innovative DHMb-Products

Dipl. - Chem. Ing. Burkhard Brandt

Ing. Wolfgang Bonder

- Focus: Innovative technologies for increasing the sustainability of our built environment
- Member of the Chinese standardisation committee for thin-layer insulation
- Recognised as “Key Innovator„ by the EU’s Innovation Radar for active facade insulation system in 2020 (https://www.innoradar.eu/innovator/934661058)

MIG **DHMb®** LINING

Product family

Building products
UV/IR reflective coating and plaster

Chrom VI Reduction
Binders and additives

Construction Chemicals
Concrete and mortar admixtures

MIG **DHMb®** LINING

Our customers

Selective client list Referenzliste

mig material innovative gesellschaft mbh

LAFARGE

CEMEX

Holcim

HEIDELBERGCEMENT

BASF
The Chemical Company

weber
SAINT-GOBAIN

mig

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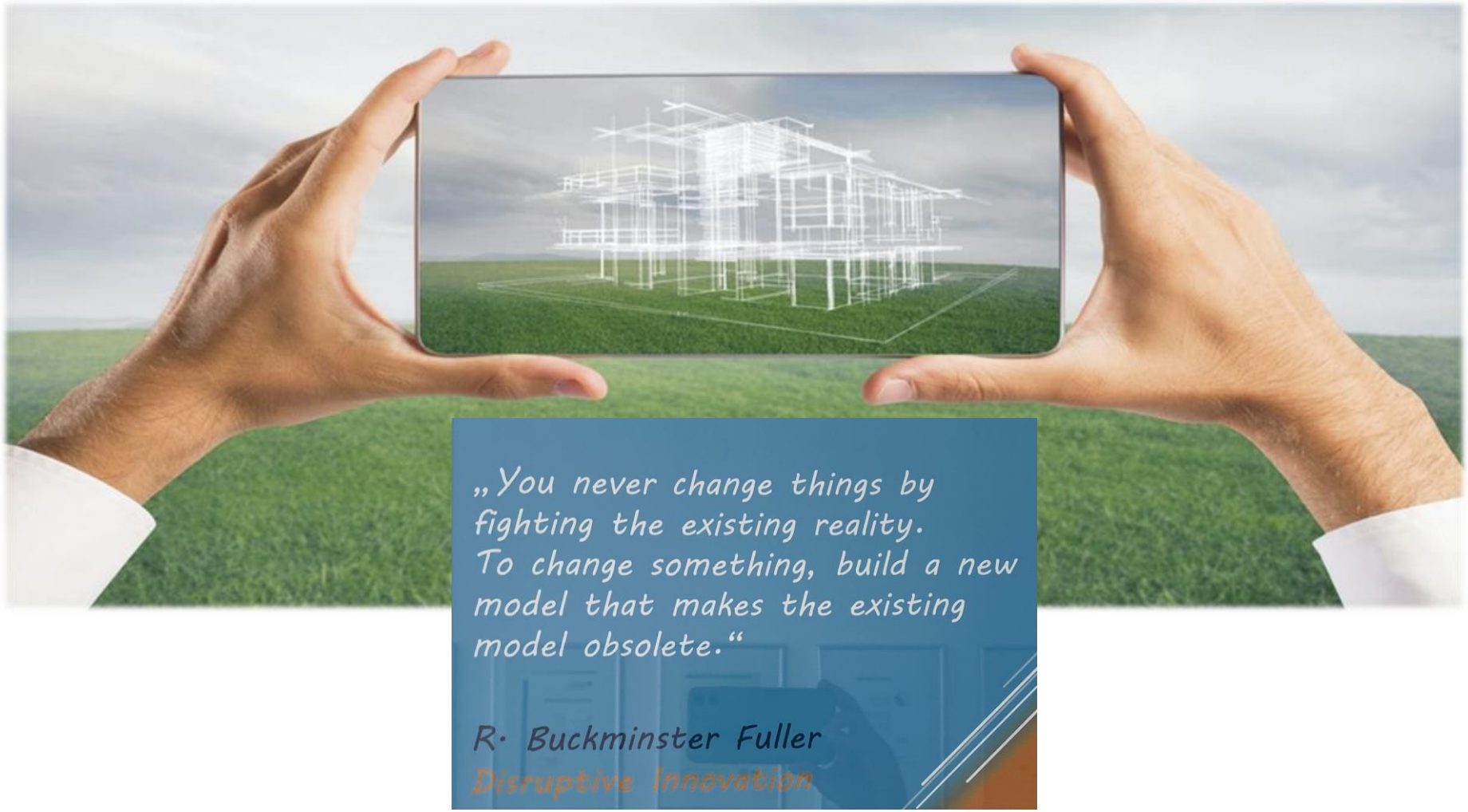
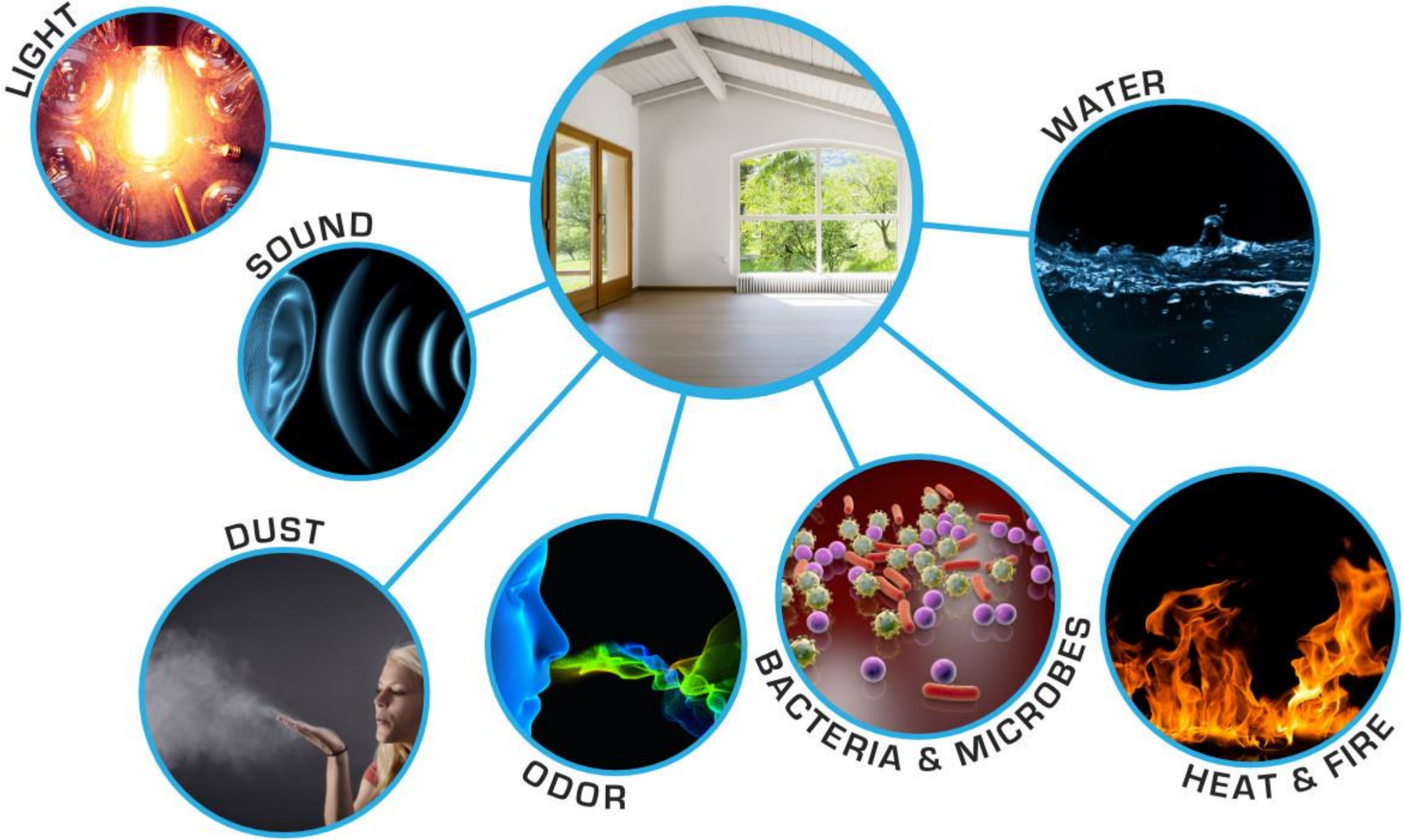
Innovative solutions




LIGHT
SOUND
WATER
DUST
ODOR
BACTERIA & MICROBES
HEAT & FIRE

DHMb® Membrane Function

WuFi-Care

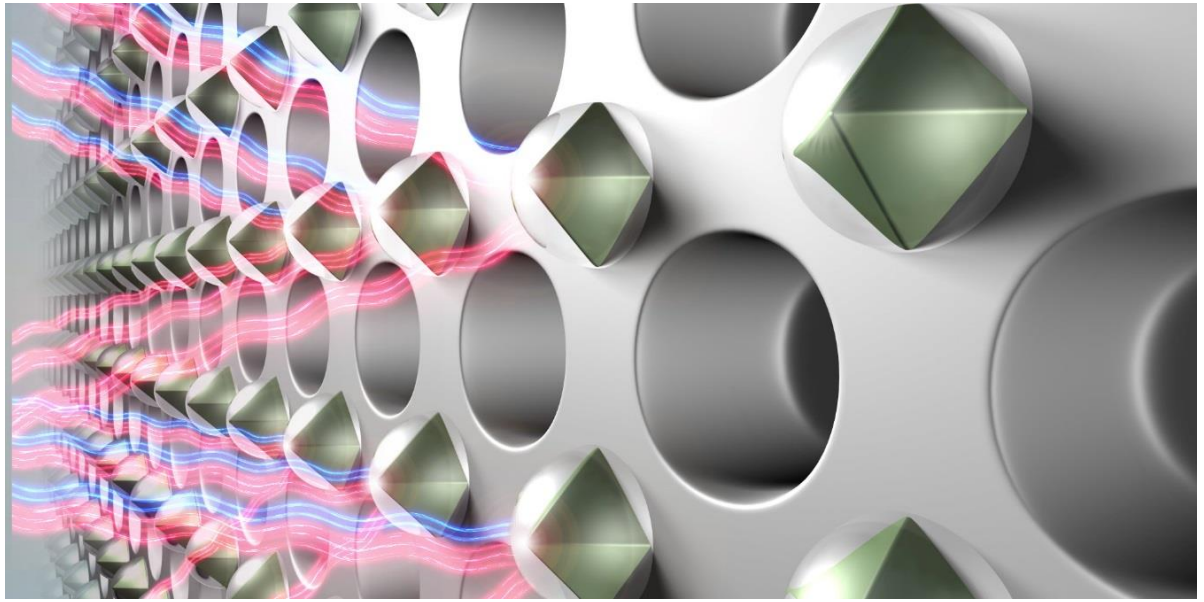
DHMb® membrane function

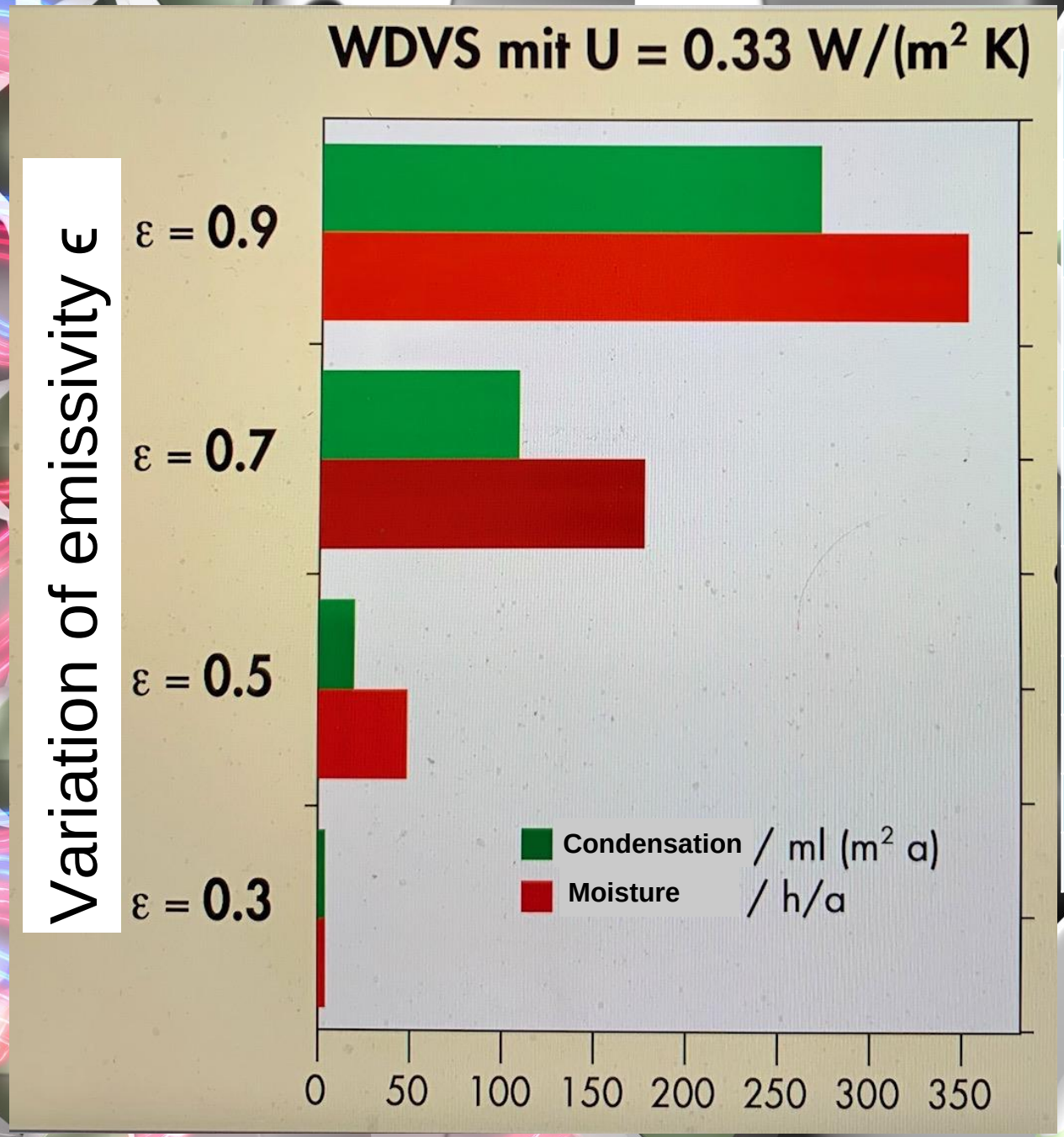
Function

✓ **Active** Combination of Low-e-coating, moisture management and high breathability

Benefits

✓ Significant energy savings
✓ Dry germ-free surfaces
✓ Fire protection
✓ Healthy indoor climate
✓ Noise reduction
✓ Brilliant durable facades



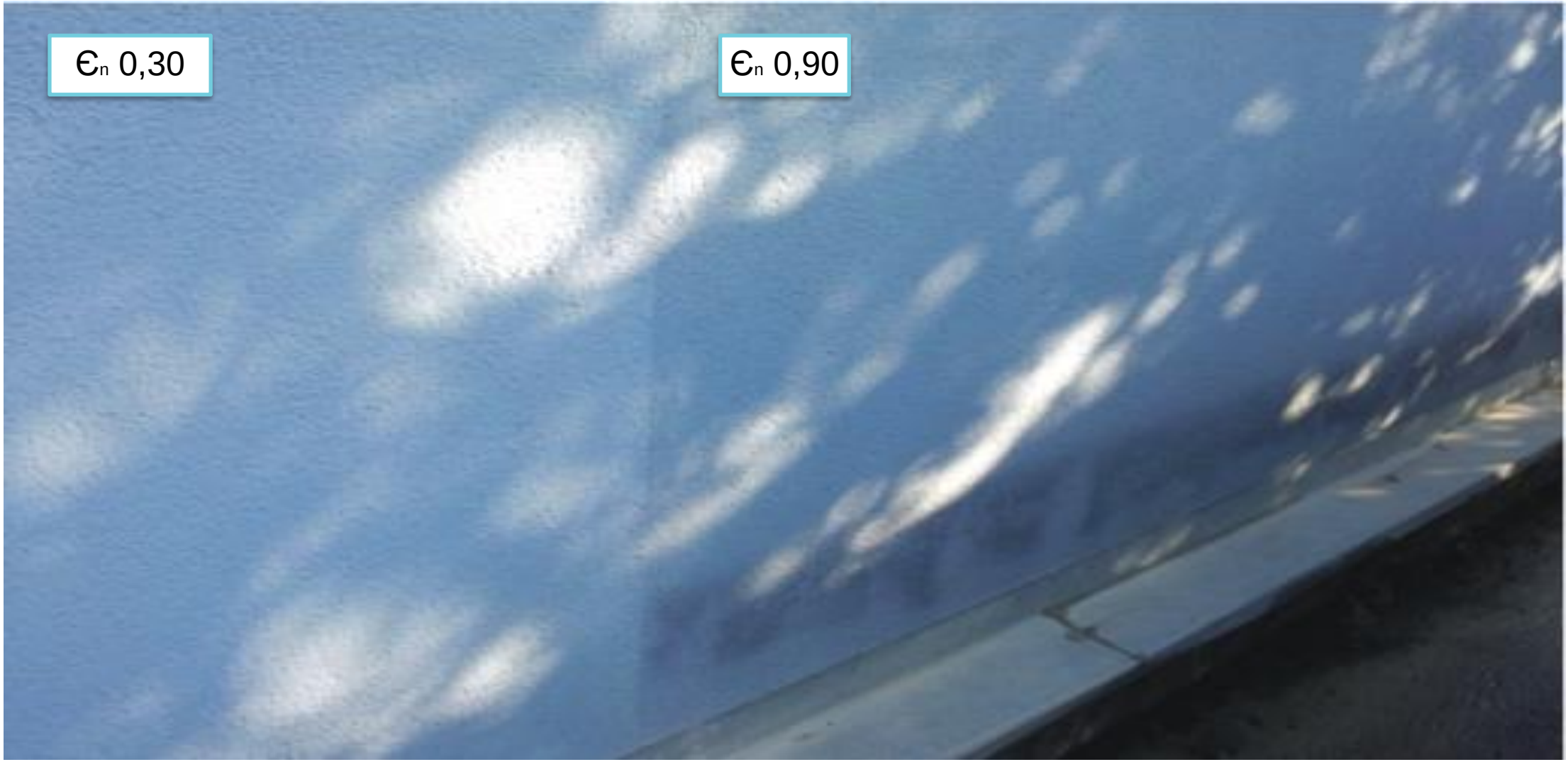


Materials surface	Thermal emissivity
Silver / Silber	0.02
Aluminum	0.03
Wood/Holz	0.90
Asphalt	0.88
Plaster, rough / Rauputz	0.89
Brick / Ziegelstein	0.90
Marble, polished / white Marmor poliert / weiss	0.90
Concrete / Beton	0.91
Glass, smooth (uncoated)	0.91
Limestone / Kalkstein	0.92
Skin/Haut	0.95

MIG-Exterior ϵ_n 0,30
MIG Interior ϵ_n 0,28
MIG Antimicrobial ϵ_n 0,15

With MIG-ESP® after 4 years

without MIG-ESP® after 4 years



Brilliant durable facades

High tech facade paint mould and
colour change due to exposure to UV radiation

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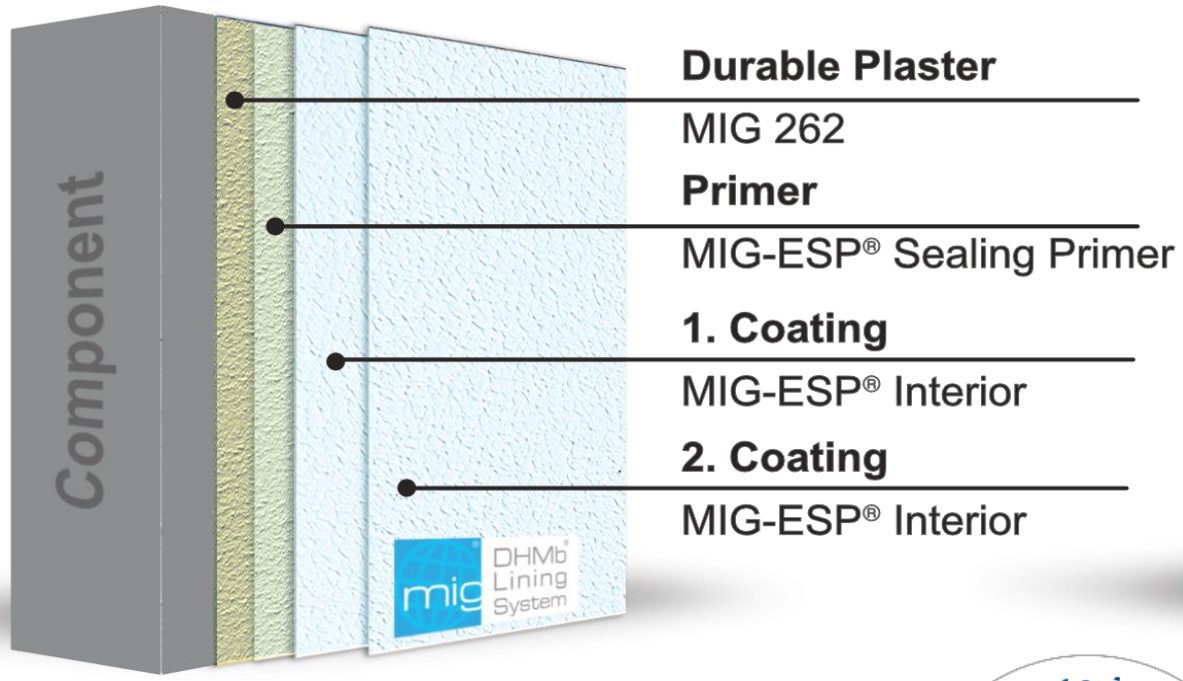
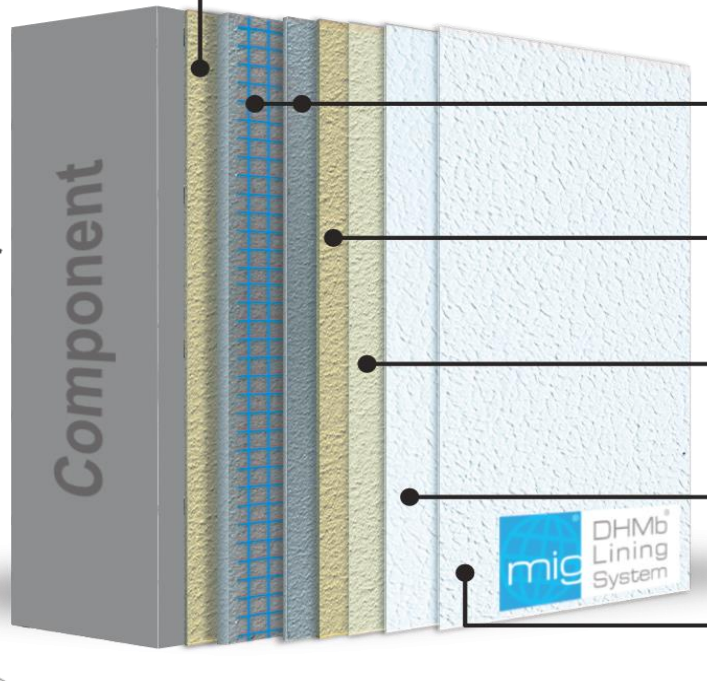
Wall structure



Durable Plaster
MIG 262
Primer
MIG-ESP® Sealing Primer
1. Coating
MIG-ESP® Interior
2. Coating
MIG-ESP® Interior



Durable Plaster
MIG 262
Mineral Lightweight Plaster
MIG Therm M 65
Durable Plaster
MIG 262
Primer
MIG-ESP® Sealing Primer
1. Coating
MIG-ESP® Exterior
2. Coating
MIG-ESP® Exterior

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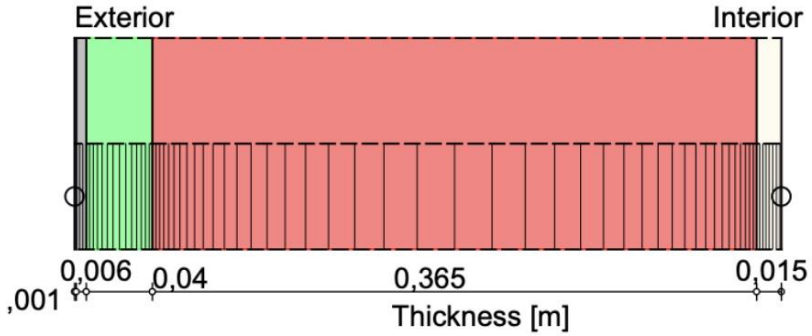
WUFI® Pro 5.3

U-Value Comparison

Component Assembly
Case: **Dispersion Paint**



○ - Monitor positions

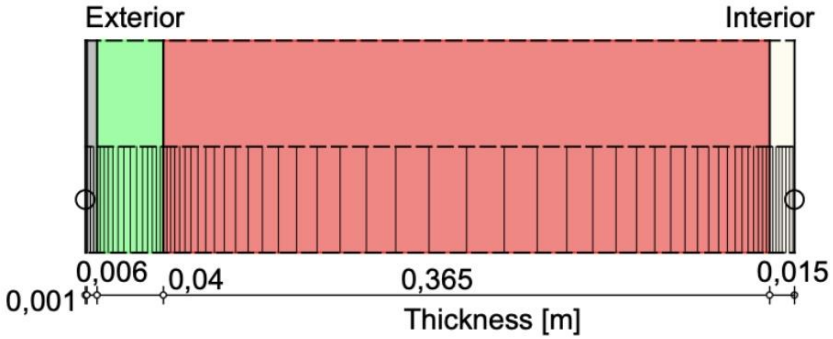
Materials:

- *Dispersion paint	0,001 m
- *MIG 262	0,006 m
- *MIG Therm M 65	0,04 m
- *Highly insulating brick	0,365 m
- *Gypsum plaster	0,015 m

Total thickness: 0,43 m
Heat transmission resistance R-value: 3,66 m²K/W
U-value: 0,26 W/m²K
Instantionary U-value: 0,258 W/m²k

Saving 20 %

Component Assembly
Case: **MIG-ESP® Exterior**



○ - Monitor positions

Materials:

- *MIG-ESP® Exterior	0,001 m
- *MIG 262	0,006 m
- *MIG Therm M 65	0,04 m
- *Highly insulating brick	0,365 m
- *Gypsum plaster	0,015 m

Total thickness: 0,43 m
Heat transmission resistance R-value: 3,69 m²K/W
U-value: 0,258 W/m²K
Instationary U-value: 0,208 W/m²k

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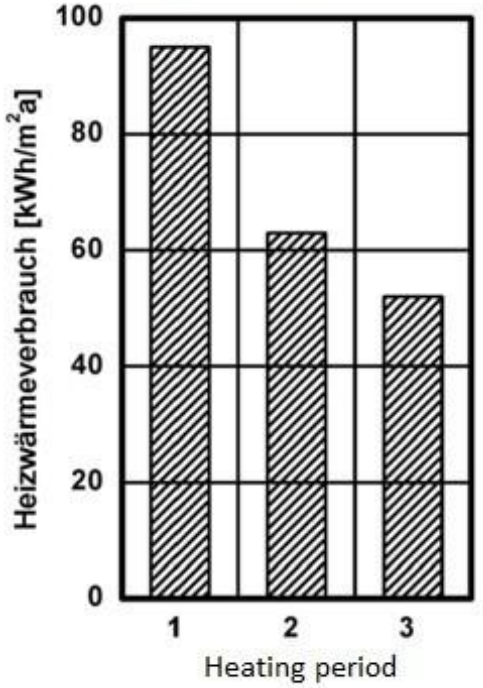
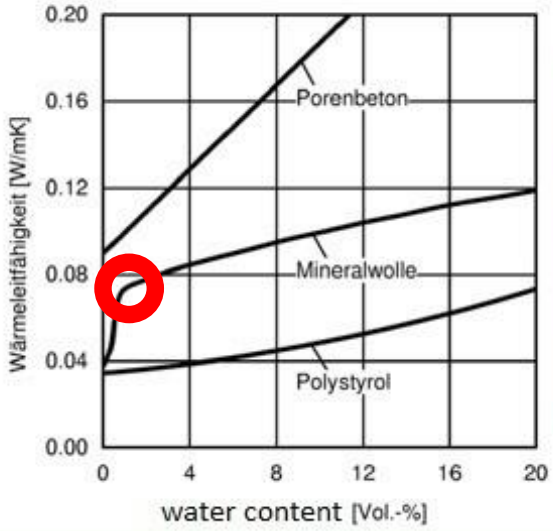
Hygrothermal loads

Hygrothermal loads (ASHRAE Handbook Chapter 25 & 26)

Construction moisture

low-energy house (aerated concrete)





To prevent mould, the air exchange rate must be increased when the moisture in the building shell dries out.

Moisture in the building shell increases heating energy consumption (heat conduction ↑ & latent heat↑)

Calculating the lambda value with the exclusion of moisture content is a common problem in conventional thermal insulation.

This problem is solved by the DHMb® technology.

Source:
Fraunhofer IBP
Hartwig M. Künzel

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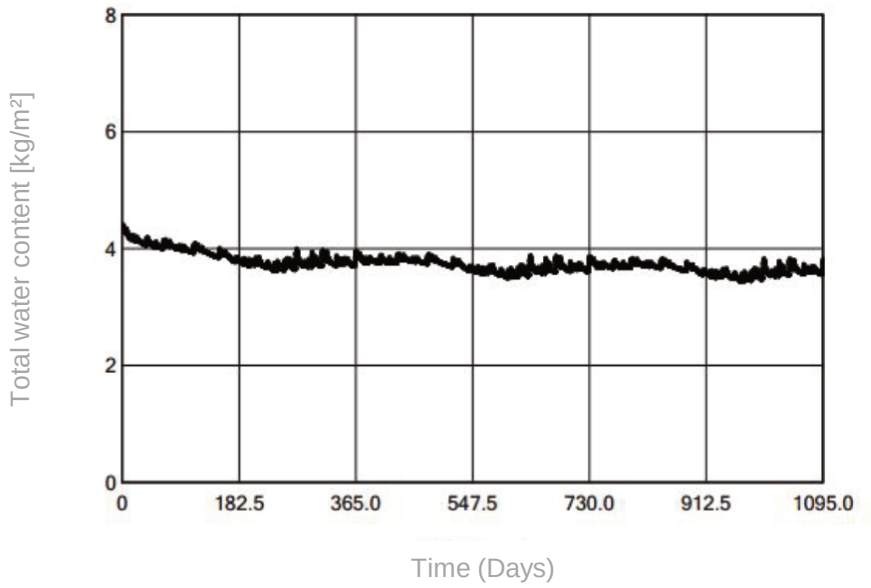
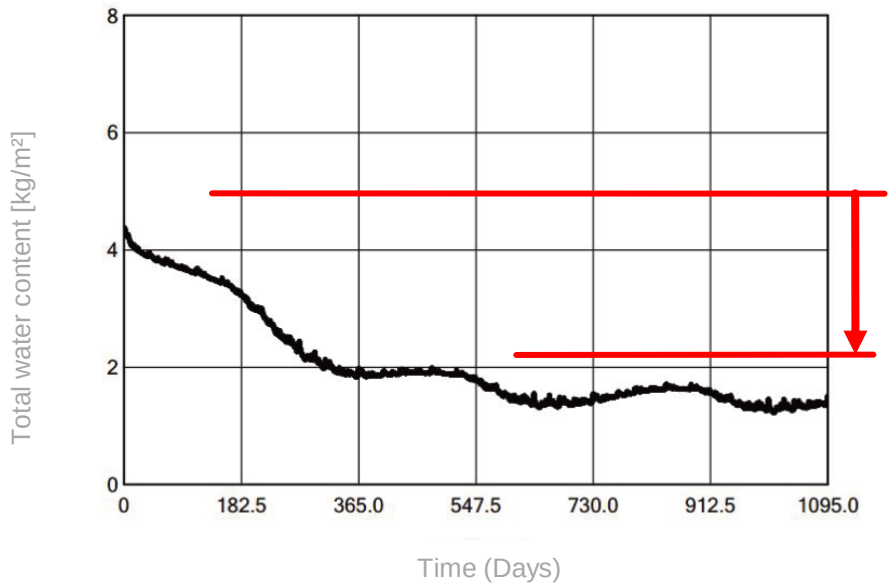
Comparison of total water content in building components

Total water content in the component

Variant: Emulsion paint



Variant: MIG-ESP® Exterior



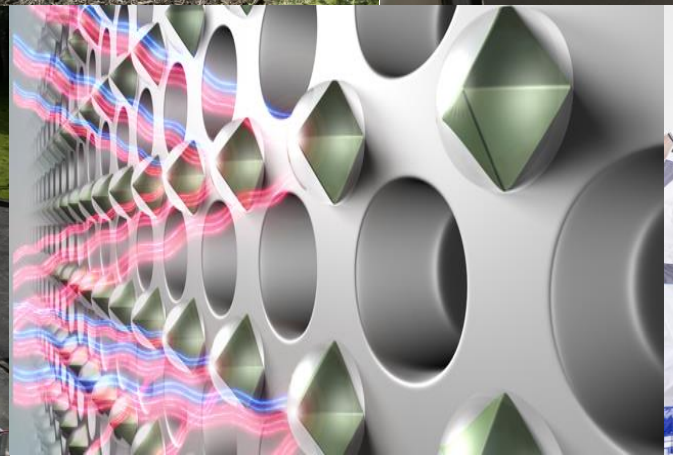
39 %

Water reduction from 4.2 to 1.6 kg/m²

WuFi-Care

Easy application

On concrete, plaster, metal, wood, plastic , aluminium, stone, glass and textiles



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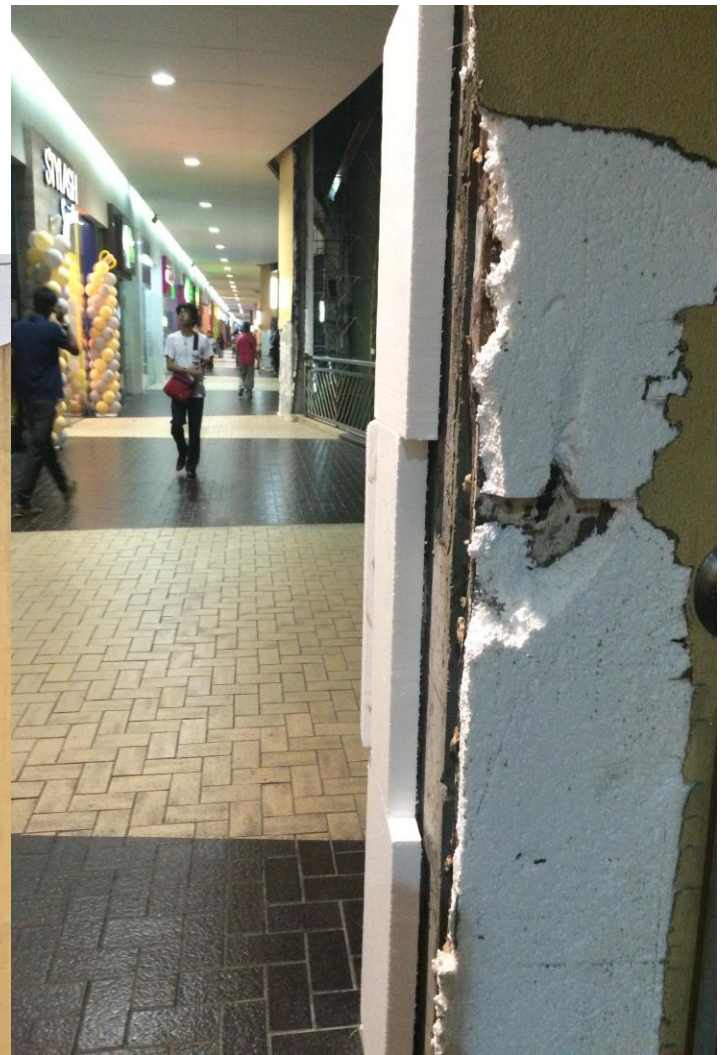
MIG DHMb® LINING TECHNOLOGY

Result of weathering, mould, corrosion, high energy transport

Mall of Asia, Manila 2018



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Indian school Dubai 2015

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Mould and germs on the surface already after 2 years

MIG **DHMb®** LINING

Result since 7 years with MIG-ESP®
No mould, no smell of chlorine, brilliant germ-free surfaces

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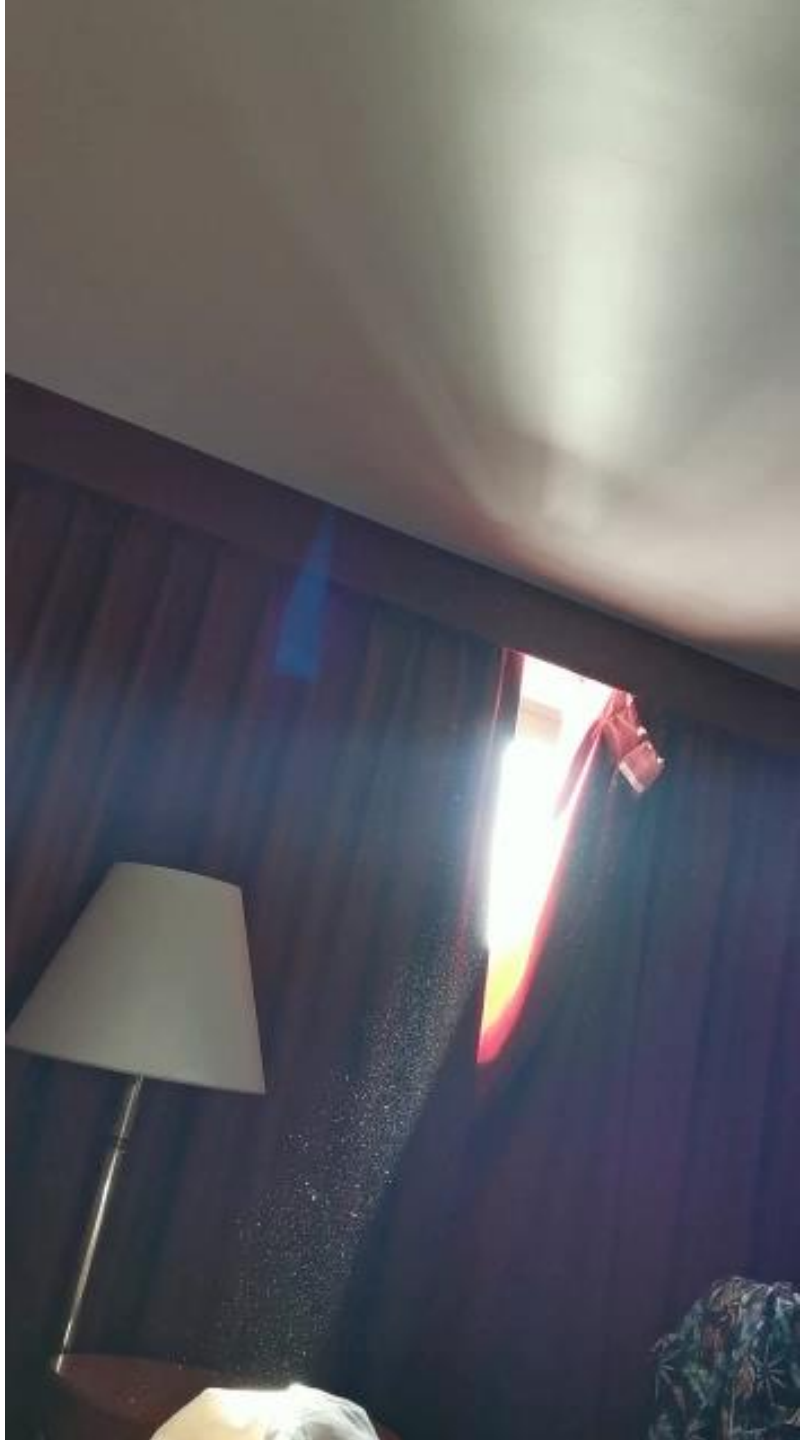
Fine dust PM 2.5

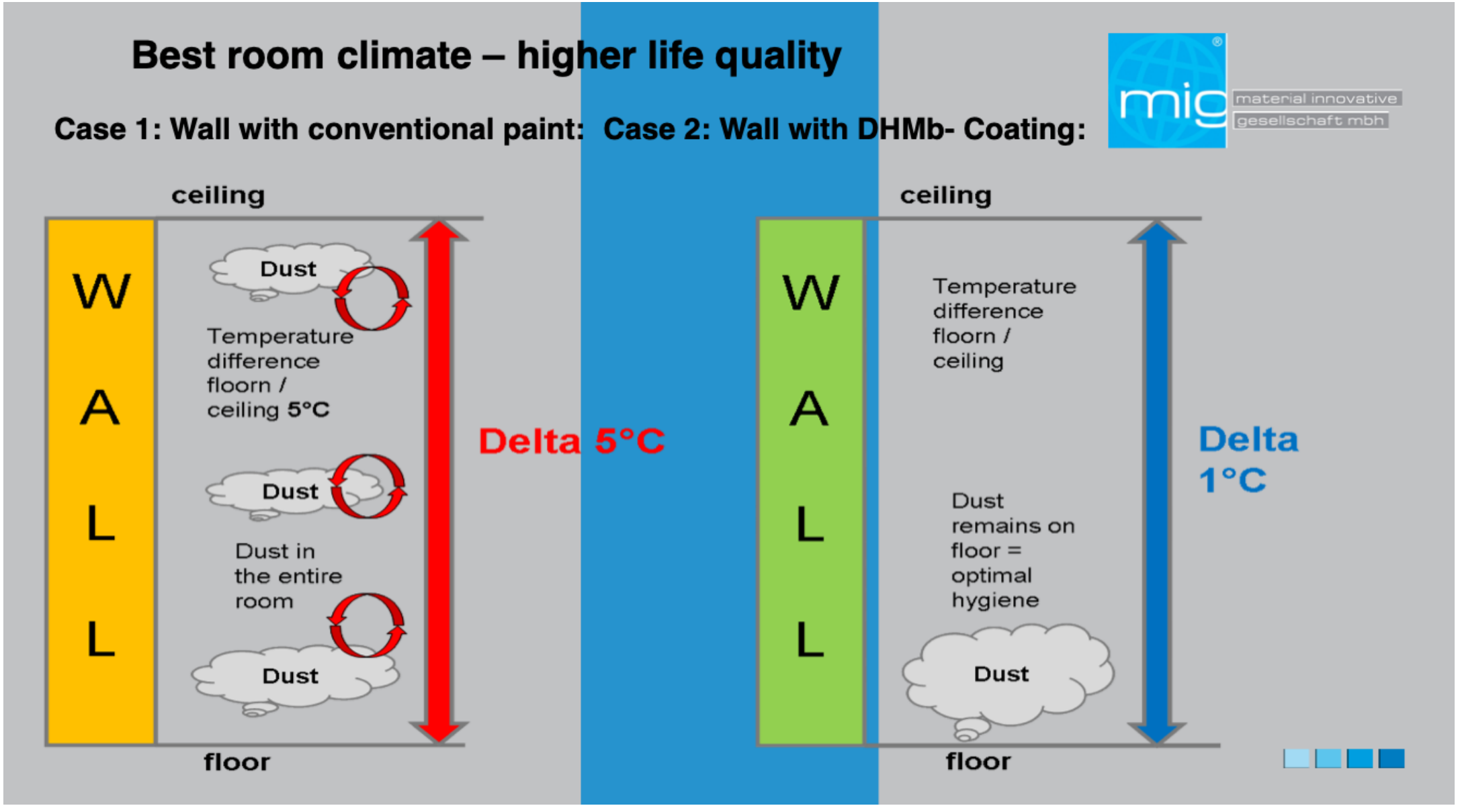
Transports germs, bacteria, viruses and radon (lung cancer)

Deaths from particulate dust 2021

Europe 300.000
Germany 63.000



MIG **DHMb®** LINING



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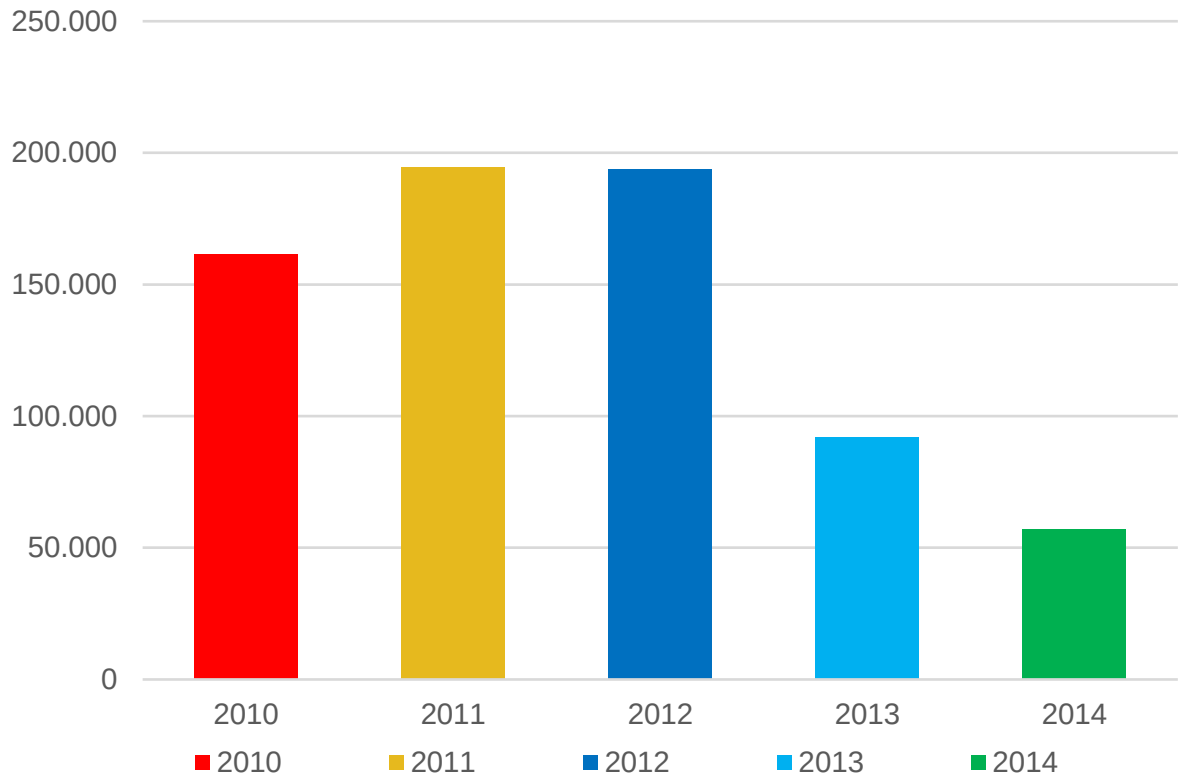
Cost curves for heating demand 2010 - 2014

7-family apartment building
with a living area of 590 m^2

Westring 4
D-33154 Salzkotten

Year	kWh
2010	161.316
2011	194.555
2012	193.982
2013	92.000
2014	57.000



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MIG-ESP (Liquid Coating) = Energy Saving Product

Comparison of Heating Oil Consumption

Please find here below a comparison of the heating oil consumption for 4 consecutive years and specifically from 2010 until 2014. The first two winter periods were when the houses had no protection while the next two years the Mig-Esp was placed (in house A' the application was made on the exterior and interior walls and in house B' only on the exterior walls).

The two houses are identical in size and in interiors, they have the same external aspects, the same initial materials (construction year 1988) and the same materials were used in 2012 for repairs (please see Table below with relevant details):

T A B L E of Heating Oil Consumption

Ref. No.	Winter Period	HOUSE A'	HOUSE B'
1	2010/2011	2450 L	2500 L
2	2011/2012	2400 L	2500 L
APPLICATION OF MIG-ESP			
3	2012/2013	1400 L	1780 L
4	2013/2014	1500 L	1830 L
Average Saving	Liters/Year Percentage %	975 L 40,2 %	695 L 27,8 %
Interior Surface		250 m²	250 m²
Application of Mig-Esp Interior Exterior		 Yes Yes	 No Yes
Floors		3 floors	3 floors
Exterior Walls (Construction Typology)		Cavity wall: brick 10, void 10, brick 10 cm Normal plaster 25-35 mm.	
One common wall		Semi touch houses	
Owner		Katia Spiritou	Georgia Zervou
Both houses are situated in Nicosia (Cyprus)			

MIG **DHMb®** LINING

References

•Industrial Buildings •Architecture •Heritage Buildings

MIG **DHMb®** LINING

Electronic Müller 2013 Salzkotten

- 3.000 m^2 facade
- 9.000 m^2 interior

MIG **DHMb®** LINING

School auditorium for 400 pupils, Salzkotten

- ✓ dust-free
- ✓ odour-free
- ✓ noise reduction
- ✓ energy savings

MIG **DHMb®** LINING

Restaurant and fitness Club, Shanghai, China

- ✓ dust-free
- ✓ odour-free
- ✓ noise reduction
- ✓ energy savings

MIG **DHMb®** LINING

Temple Dongguan, China

Windowless VIP restaurant

MIG **DHMb®** LINING

Tobacco plantation in Hunan, China

- ✓ Significant reduction in rejects as a result of mould
- ✓ Improvement of indoor climate
- ✓ Significant savings of CO_2
- ✓ Reaching target temperature faster (from 30 minutes to 5 minutes)
- ✓ Improving tobacco leaves quality from C to B

MIG **DHMb®** LINING

EU energy-efficient retrofit project, Saragossa, Spain

- ✓ This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement N°680658.
- ✓ Project start 2015 with 60 residential units
  https://www.innoradar.eu/innovator/934661058

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innoradar.eu

European Commission

English EN

European Commission > Horizon 2020 > Innovation Radar >

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INNOVATOR

MIG MATERIAL INNOVATIVE GESELLSCHAFT MBH

SHARE:

DETAILS

Organisation type

Large Enterprise

Address

AM GRAROCK 3
33154 SALZKOTTEN
GERMANY

Contact

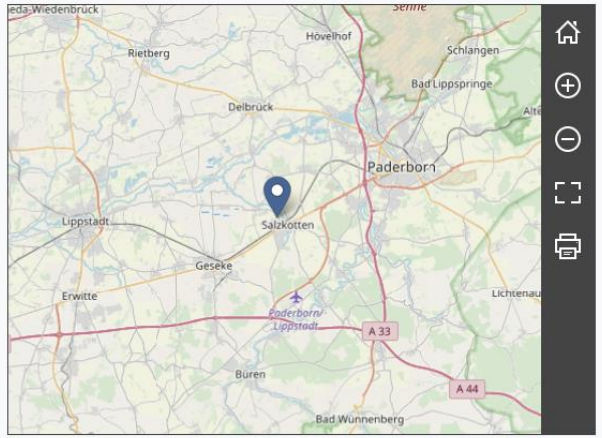
E-mail this innovator

Visit innovator's website →

Funding

Total H2020 EU funding **€245k**

H2020 EU funding data provided by Horizon 2020 funding →



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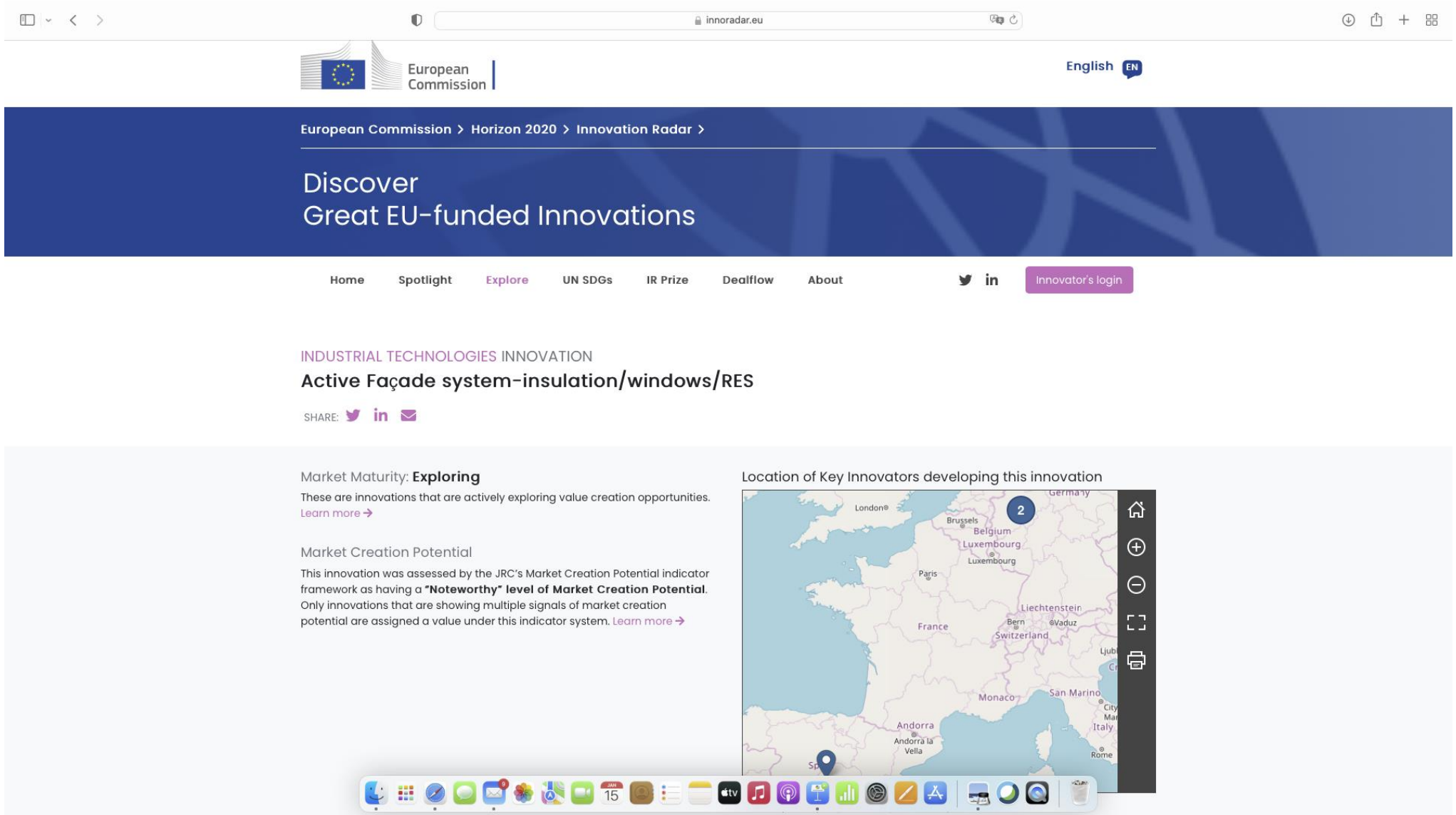

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High school in Podgorica, Montenegro

before **after**

Slobodan Skerovic High School, Podgorica Montenegro

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Financing basis

Klijent/ Client:	Projekat / Project:	Konsultant / Consultant:
Ministarstvo ekonomije Crne Gore Ministry of Economy of Montenegro	Program energetske efikasnosti u javnim objektima u Crnoj Gori	FICHTNER
Projekat finansira / Project financed by: KFW KfW Development Bank	Montenegro Energy Efficiency Program in Public Buildings (EEPPB)	Lokalni projektant / Local Sub-Consultant: KOPRING PMC

Montenegro
Ministry of Economy,
Directorate for Energy Efficiency

Crna Gora
Ministarstvo ekonomije

The project started in 2016 with the KFW energy efficiency program

The Fichtner company from Stuttgart, was selected as a consulting firm
BMZ-IP 201066877

Energy Efficiency Program in Public Buildings - phase II
(EEPPB II)

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Listed heritage buildings effectively protected

MIG **DHMb®** LINING

Salinator-Penning House, year of construction 1563

Renovated 2016

MIG **DHMb®** LINING

Salinator-Penning House, year of construction1563

- ✓ MIG-products were chosen by the Office for Monument Protection in Münster
- ✓ Non-flammable
- ✓ Algae free
- ✓ Thin film insulation preserves historical buildings
- ✓ Significant energy savings
- ✓ Healthy indoor climate

Awarded by the State Office for Monument Protection

WuFi-Care

Lange bakery, Salzkotten 2015

- The ceiling had to be freed from mould every 9 months that was caused by water and yeast.
- 7 years mould-free since using MIG-ESP®

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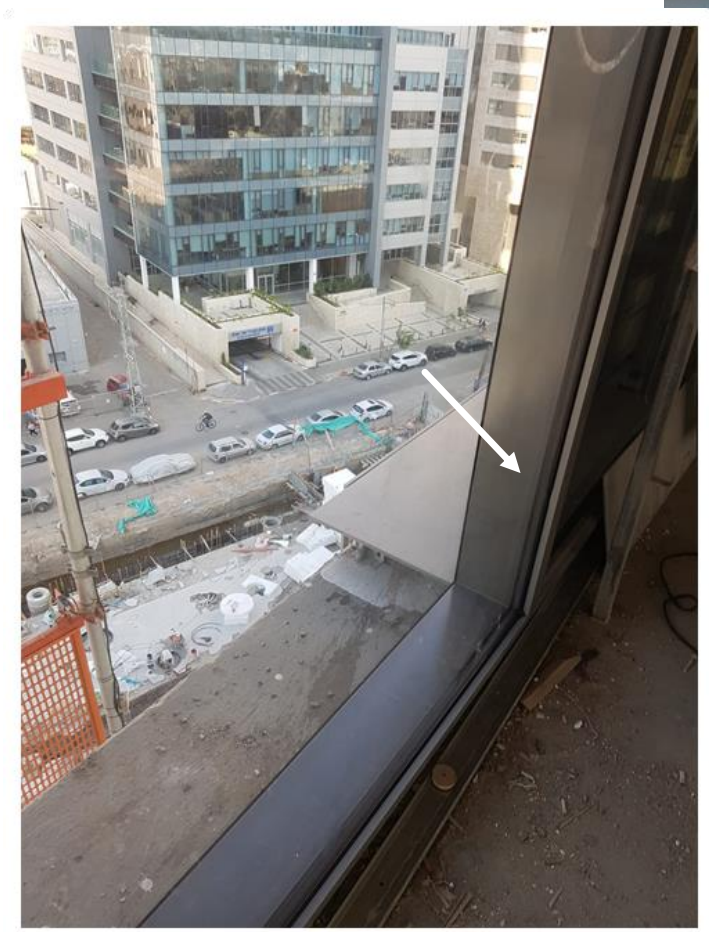
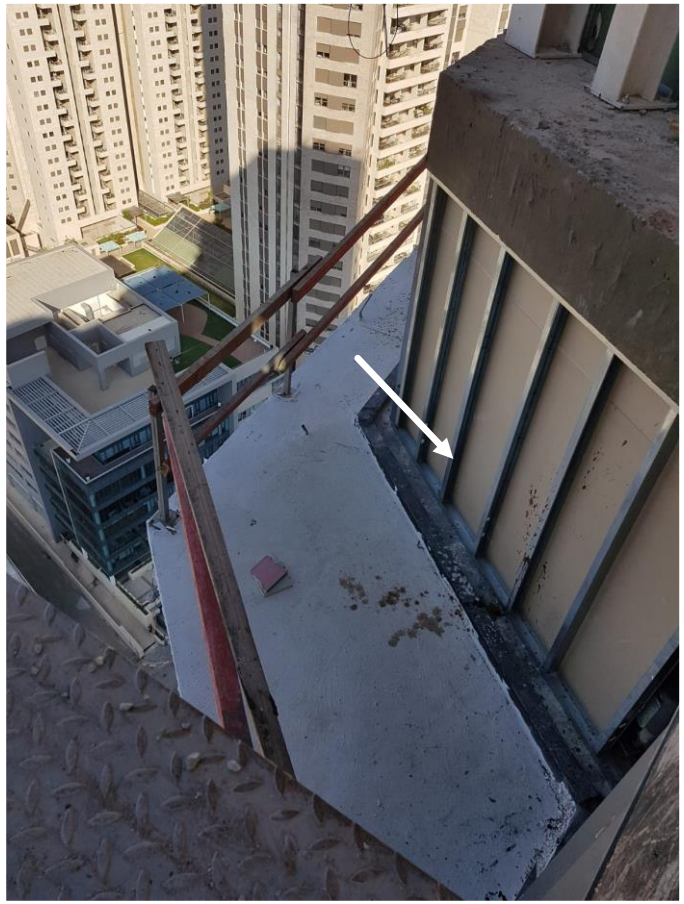
ToHA Building, Tel Aviv, Israel

MIG **DHMb®** LINING

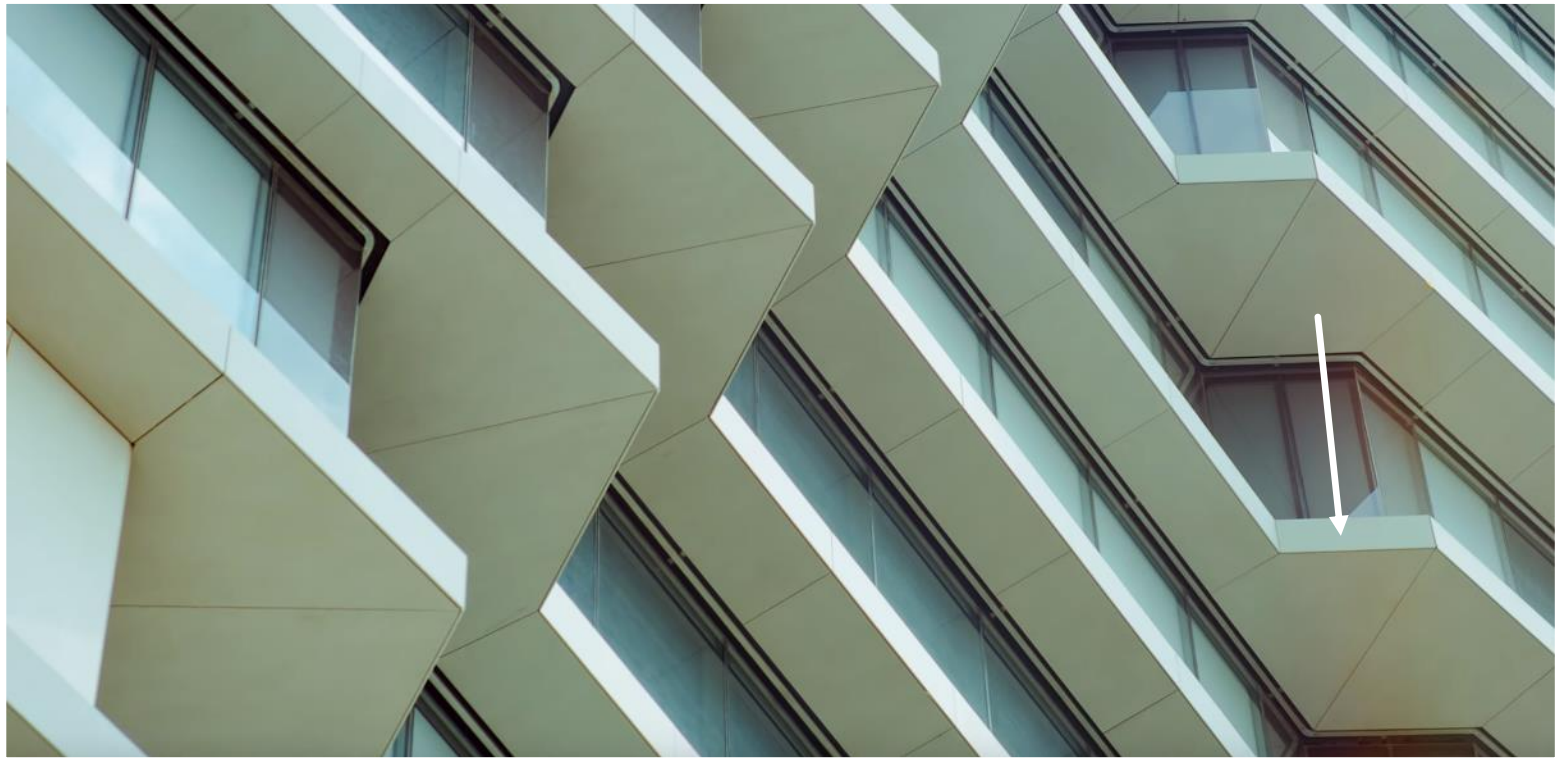
ToHA Building, Tel Aviv, Israel





MIG **DHMb®** LINING

ToHA Building, Tel Aviv, Israel



- ✓ MIG-ESP® Exterior
- ✓ Replaced mineral wool
- ✓ Brilliant durable facade
- ✓ No colour change
- ✓ Non-flammable
- ✓ 3 months less construction time
- ✓ Energy savings

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Siemens office, Shanghai, China

Replacement of wet mineral wool with DHMb-Technology insulation, both Interior and exterior

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Siemens Shanghai with MIG-ESP®

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Villa Dubai L10. Palm Jumeirah 2021 before

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Villa Dubai L 10 Palm Jumeirah with MIG DHMb®

MIG **DHMb®** LINING

Energy Consumption Test

Cooling action

25.8°C

Container without MIG DHMb®

Time needed for cooling: 76 min

Energy consumed: 5.5 kW

Container with MIG DHMb®

Time needed for cooling: 36 min

Energy consumed: 3.19 kW

52 % Time and 42 % Energy saving

Ceiling and walls remain dry even after 12 months

2.0°C

Refrigerated container for food storage

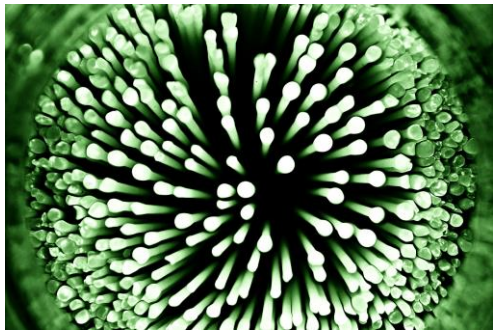
MIG **DHMb®** LINING

Refrigerated container for food storage, Israel

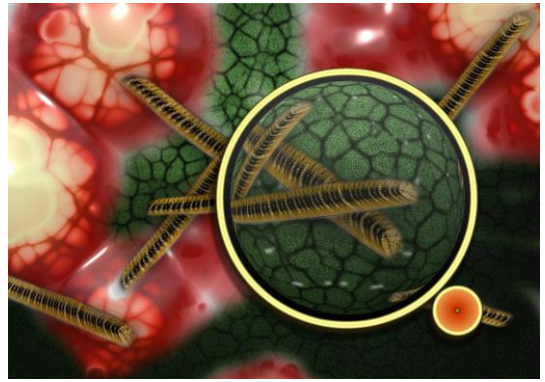
WuFi-Care

Hygiene - Disinfection

- ✓ MIG-ESP® Interior was tested by the testing institute Quality Lab - Biomaterial Testing, for Escherichia coli DSM and Staphylococcus aureus DSM (MRSA).
- ✓ The antibacterial activity of the germs was tested on a plastic surface coated with MIG-ESP® Interior.



Test result confirms long-term antimicrobial reduction of 99.99%



- ✓ Test report according to ISO 22196 (Mod)
- ✓ Measurement Staphylococcus aureus DSM: 191203-10313-22196-01
- ✓ Measurement Escherichia coli DSM: 191203-10313-22196-02

WuFi-Care

Zollernalb hospital, Albstadt,Germany 2021

WuFi-Care

MIG-ESP® Interior Anti-microbial used in central emergency room, Zollernalb Hospital

WuFi-Care

Recovery room, Zollernalb Hospital, Albstadt 2021

Hygiene Consulting Society

HBG - Hygiene Consulting -Heinrich -Theobaldstr. 2, - 74889 Sinsheim

Zollernalb-Klinikum GmbH
Mr. Markus Prüßner
Friedrichstr. 39

72458 Albstadt

24.09.2021

Application of MIG DHMb® Lining System
Active exterior and interior coating

Dear Mr. Prüßner,

Regular microbiological inspections of your patient areas, where the MIG DHMb® Lining System was applied, show no evidence of pathogenic germs.

Please do not hesitate to contact me if you have any questions.

Yours sincerely

B.Heiß-Blum

Address:
Heinrich Theobaldstr. 2
74889 Sinsheim
blum.duehren@t-online.de

Tel.: 07261-976 302
Mobile phone:
0172-7249277

The registered office and place of jurisdiction is Sinsheim.
Commercial register: HRA-NR. 700529
Managing Director: Beate Heiß-Blum
Tax Office Sinsheim

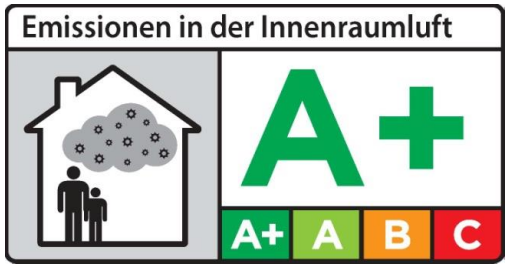
Sparkasse Kraichgau
IBAN DE70663500360007075296
BIC BRUSDE66XXX
Tax-ID-No. 44114//31191

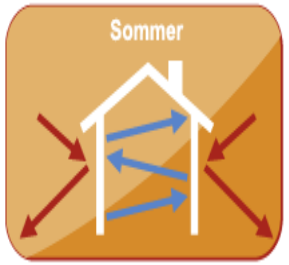
WuFi-Care

Benefits of MIG-ESP®

- ✓ Significant energy savings
- ✓ Moisture management
- ✓ Active membrane surface
- ✓ low-e function
- ✓ Health and hygiene
- ✓ Fire protection
- ✓ Odour neutralising
- ✓ Noise reduction

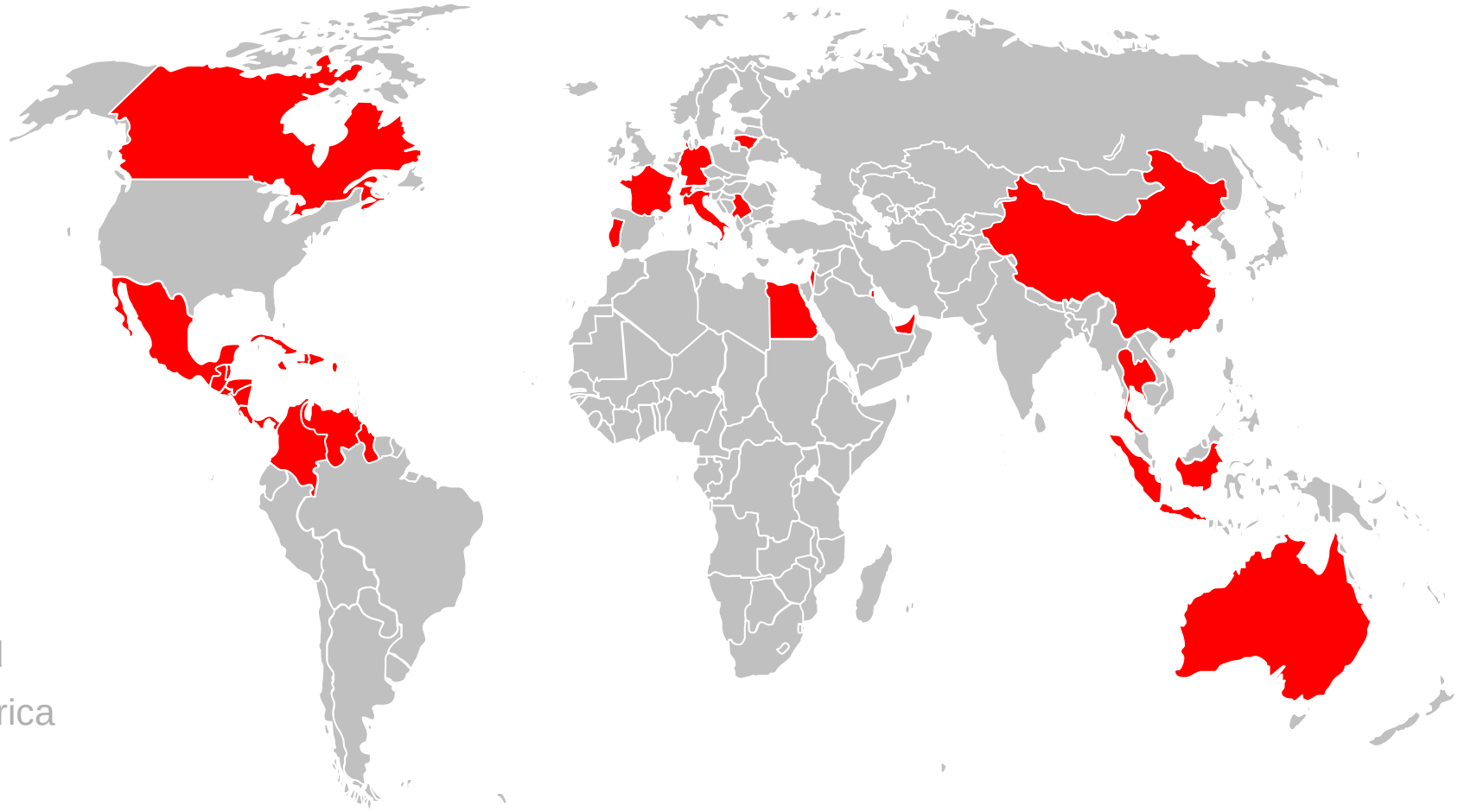
https://www.innoradar.eu/innovator/934661058





MIG **DHMb®** LINING

Our international partners



Central and
South America

Australia
Canada
China
Egypt
France
Hong Kong
Indonesia
Italy
Kuwait
Lithuania
Montenegro
Portugal
Switzerland
Serbia
Thailand
VAE

MIG **DHMb®** LINING

Thank you for your attention!

leading by innovation

CLIMATE-FRIENDLY SOLUTIONS

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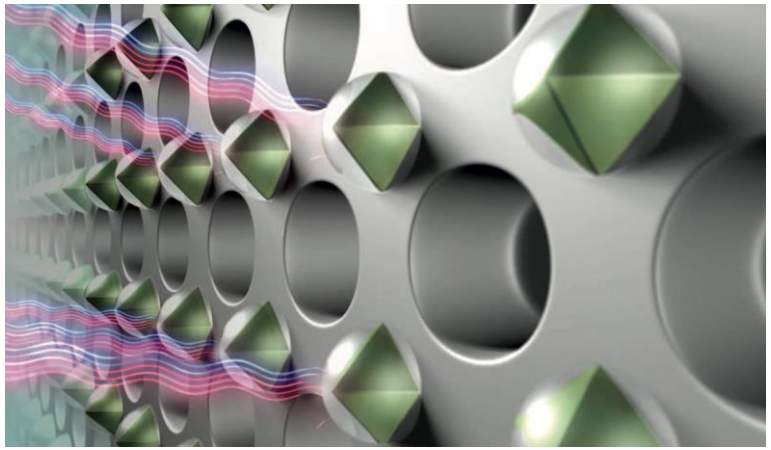

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