

Wall-ACE

Deliverable

D5.8: Creation of the marketing support materials

WP	5	Go to market
Task	5.8	Creation of the marketing support materials

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Contributing beneficiaries	QUICK-MIX, LEIPFINGER BADER, VIMARK, ENERSENS

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¹ Dissemination level: **PU** = Public, **PP** = Restricted to other programme participants (including the Commission services), **RE** = Restricted to a group specified by the consortium (including the Commission services), **CO** = Confidential, only for members of the consortium (including the Commission services)

² Nature of the deliverable: **R** = Report, Document, **DEM** = Demonstrator, Prototype, pilot, **DEC** = Websites, patent filings, **O** = Other

³ Creation, modification, final version for evaluation, revised version following evaluation, final

Deliverable abstract

This deliverable is focusing on the definition of the marketing leaflet that will be the marketing material to present and support the launch of the products commercialisation.

Deliverable Review

Reviewer #1: Stéphane Thiolière			Reviewer #2: Sergei Krupski		
Answer	Comments	Type*	Answer	Comments	Type*

Is the deliverable in accordance with

the Description of Action?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> M <input type="checkbox"/> m <input type="checkbox"/> a	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> M <input type="checkbox"/> m <input type="checkbox"/> a
the international State of the Art?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> M <input type="checkbox"/> m <input type="checkbox"/> a	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> M <input type="checkbox"/> m <input type="checkbox"/> a

Is the quality of the deliverable in a status

that allows it to be sent to European Commission?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> M <input type="checkbox"/> m <input type="checkbox"/> a	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> M <input type="checkbox"/> m <input type="checkbox"/> a
that needs improvement of the writing by the originator of the deliverable?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> M <input type="checkbox"/> m <input type="checkbox"/> a	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> M <input type="checkbox"/> m <input type="checkbox"/> a
that needs further work by the Partners responsible for the deliverable?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> M <input type="checkbox"/> m <input type="checkbox"/> a	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> M <input type="checkbox"/> m <input type="checkbox"/> a

* Type of comments: M = Major comment; m = minor comment; a = advice

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1. Methodology

In order help our prospects and customers understanding the benefits of our Wall-ACE system, the decision has been taken to develop a brochure.

This brochure has for objective to promote Wall-ACE system and components and the technology embarked.

It has to be pedagogical to explain the interest of using Aerogel, technical in order to help architects, building companies to be convinced by our new solution.

In order to complete this deliverables, a 3 steps process has been implemented:

- Consolidation of all technical, marketing element and product characteristics in a copy strategy document
- Edition of a “leaflet concept” and design agency briefing
- Design and edition of the final brochure.

2. Content – Copy strategy



Concept

- A huge number of uninsulated buildings exists in Europe
- Up to 35% heat loss of a building is caused through un-insulated walls
- The Wall-ACE project aims to provide a complete mineral insulation solution for a wall
- Wall-ACE addresses new building sector as well as the building retrofit
- 5 high performance insulation solutions based on silica-aerogel as light weight aggregate



Heat losses of a building



Project consortium

No	Name	Short name	Country
1	QUICK-MIX PUTZTECHNIK GMBH & CO. KG	QUICK-MIX	Germany
2	ENERSSENS SAS	ENERSSENS	France
3	TOUPRET SA	TOUPRET	France
4	VIMARK SRL	VIMARK SRL	Italy
5	LEIPFINGER-BADER KG	LeipfingerBader	Germany
6	UNIVERSITÄT STUTTGART	USTUTT	Germany
7	POLITECNICO DI TORINO	POLITO	Italy
8	COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	CIA	France
9	EFFINART SARL	Effinart	Switzerland
10	BUILDING RESEARCH ESTABLISHMENT LTD	BRE	United Kingdom
11	AGITEC AG	AGITEC AG	Switzerland
12	AGENZIA TERRITORIALE PER LA CASA DEL PIEMONTE CENTRALE	AIC Torino	Italy
13	WAVESTONE ADVISORS	Wavestone	France



Wall-ACE

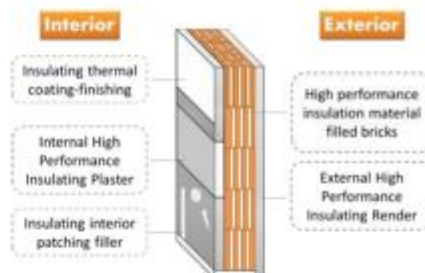
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Project objectives

1. Develop high energy efficient mineral based materials
2. Strongly reduce the energy consumption and CO₂ emission
3. Improve indoor air quality
4. Improved durability and sustainability
5. Develop affordable and high replication potential for Europe
6. To test/asset the products and systems in real condition and at building scale
7. Certification and standardisation of high efficient new systems

HONEST toolbox



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Major steps

- These highly efficient products are achieved through the synergy between the different members of the consortium through combining the high performance, sustainable, and advanced nanotechnology of the **silica aerogel**, with existing, already approved, efficient products.
- The **aerogel materials structure properties and cost** will be optimised.
- The process of the five high efficient mineral insulation systems will be **scaled-up** to test replicability, processability and reach **industrial scale**.
- Then, these five systems will be fully **characterised** including an LCA assessment, along with **certification and standardization** activities.
- In addition, the project sets a major focus on the "**go to market**" validation of the five products. Business planning and a field market test will be carried out, along with performance assessments on real buildings, and training and communication tools design, in order to maximize use potentials and foster a wide replication throughout Europe.

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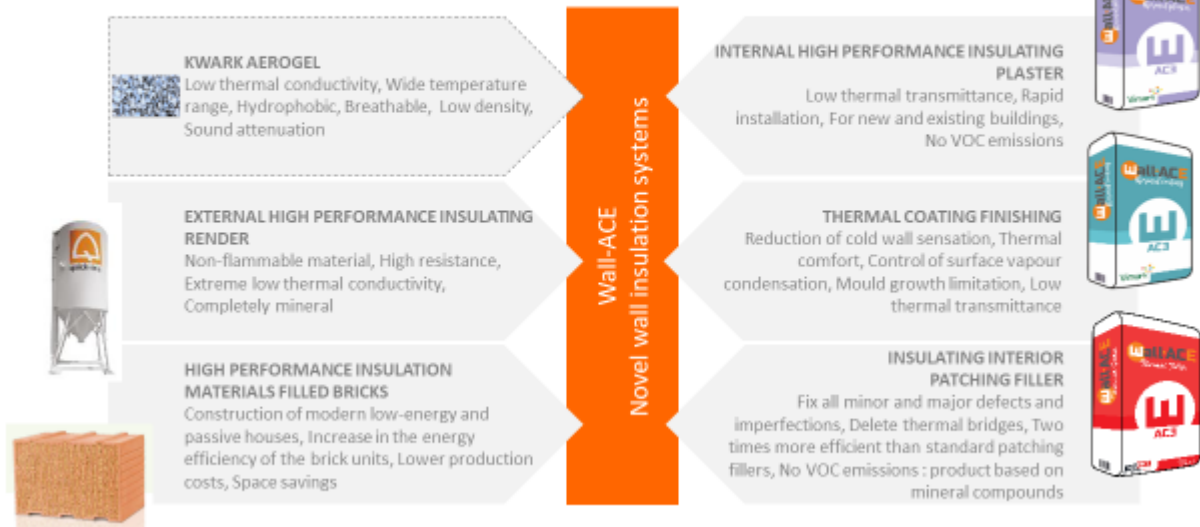
Key manufacturers and the HONEST toolbox



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→ System of 5 innovative products based on aérogel



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Silica Aerogel – High performance insulation material (ENERSENS) kwark Granules & Powders



Three product ranges of Kwark® as granules :

Kwark® GL	Kwark® GM	Kwark® GS
10 – 3500 µm	1250 - 3500 µm	10 – 1250 µm

Added values

- High thermal performance
2 times more efficient than conventional insulation
- Lightweight
- Weight reduction and ease of handling
- Hydrophobic & breathable
- Increased product life
- Good fire resistance

Non-flammable mineral material

Three product ranges of Kwark® as powders:

Kwark®XP500	Kwark®XP200	Kwark®XP100
< 500 µm	< 200 µm	< 100 µm

Key properties

- $\lambda = 0.018 - 0.021 \text{ W/m.K}^{-1}$
- $\rho = 60-90 \text{ kg/m}^3$
- $T^\circ = -160^\circ \text{ C to } 450^\circ \text{ C}$
- Sp. Surface = 850 m²/g
- Porosity = 95 %

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Internal high performance insulating plaster (VIMARK)

WALL-ACE THERMAL PLASTER

is a premixed ready to use, highly insulating render mortar (base plaster + thermal insulation)

Characteristics

- Permeable to the diffusion of water vapour ($\mu < 7$)
- High insulation performance $\lambda_{d10, dry} < 30$ mW/mK
- Bulk Density < 200 kg/m³
- Full mineral composition
- Non flammable

Use

- thermal insulation of internal walls
- thermal insulation of ceilings
- Reduction of thermal bridges

Application

- applied by hand or by spraying machine on internal walls
- It needs subsequent mineral finishing coats with or without reinforcing mesh
- Thickness: up to 12 cm
- Amount required: 10 L/m² cm



Installation of the thermal plaster at CEA/INES, FACT building in Chambéry (09/2018)

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Insulating thermal coating finishing (VIMARK)

WALL-ACE THERMAL COATING FINISH

is a premixed ready to use, white mineral powder coating, highly breathable with high insulating capacity for restoration and insulation of internal walls and ceilings

Characteristics

- Permeable to the diffusion of water vapour ($\mu < 7$)
- High insulation performance $\lambda_{d10, dry} < 30$ mW/mK
- Bulk Density < 200 kg/m³
- Full mineral composition
- Non flammable

Use

- Reduction of thermal bridges
- Reduction of mold growth
- Coating of internal walls

Application

- Applied by hand or by spraying machine on internal walls
- Amount required: 10 L/m² cm
- Thickness: up to 3 cm



Installation of the thermal coating finish at BRE Innovation park, Glasgow, Scotland (10/2018)

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Insulating interior patching filler (Toupret)

- Aerogel based thermal patching filler
- Prevents interior thermal bridges or degradation of the wall thermal performance
- Low thermal conductivity ($\lambda < 0.065 \text{ W/mK}$): almost 2 times more efficient than standard
- Short hardening times and good workability
- No depth limitation



Application of the Patching filler on wall cracks

- The product was successfully transfer to industrial Pilot (70l)
- Application internally shows good results, installation to be done in INCAS in February



Developed by



Wall-ACE

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High performance insulation material filled bricks (Leipfinger Bader)



- innovative brick design with optimized geometry and modified hole pattern
- improved material combination
- high performance filling material, non- flammable, recipe contains silica-aerogel
- good workability at the building site
- low thermal conductivity

- production of bricks in industrial-scale test runs
- development of a method for filling the brick holes with the aerogel containing filling material both in a lab scale and in larger scale
- construction of test specimen and tests walls
- simulations and measurements of the filled bricks and installations



construction of a test wall with the new bricks, site PASSYS, CEA in France

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External high performance insulating render (quick-mix)

WALL-ACE insulating render

is a premixed ready to use, highly insulating sprayable render, based on silica-aerogel and inorganic binders

Characteristics

- Permeable to the diffusion of water, breathable
- High insulation performance $\lambda_{D10, dry} < 30 \text{ mW/mK}$
- Bulk Density $< 200 \text{ kg/m}^3$
- Full mineral composition
- Non flammable
- Thickness: 2.5 cm – 5 cm per layer and up to 12 cm in total
- High yield with up to 7L per kg of dry material

Use

- thermal insulation of external walls (on new building and in refurbishment sector)
- Reduction of mould growth due to inferior water condensation
- Reduction of thermal bridges

Application

- applied by hand or by spraying machine on external walls
- It needs subsequent mineral finishing coats with reinforcing mesh



Installation of the thermal plaster at CEARNES, FACT building in Chambéry (FR/2018)

Wall-ACE

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• Product technical attribute :

- Wall-ACE insulating render is a premixed ready to use high performance sprayable insulation, based on silica-aerogel and inorganic binders
- Physical and technical features:
 - Permeable to the diffusion of water, breathable
 - High insulation performance $\lambda_{D10, dry} < 30 \text{ mW/mK}$
 - Full mineral composition
 - Non flammable
 - Application thickness : 2.5 cm – 5 cm per layer and up to 12 cm in total possible
 - high yield: Up to 7L per kg of dry material

- Colour: off-white/ grey

– Application method

- Applied by hand or by spraying machine on external walls

– Recommendations

- Needs subsequent mineral finishing coats with reinforcing mesh

• Customer benefits...

- Reduce thermal bridges
- Full mineral Thermal insulation of external walls (on new buildings and in refurbishment sector)
- Reduction of mould growth due to inferior water condensation

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others

- Packaging features
 - Silo
- Job site pictures application



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Demonstration sites



BRE Innovation Parks'



FACT at CEA INES

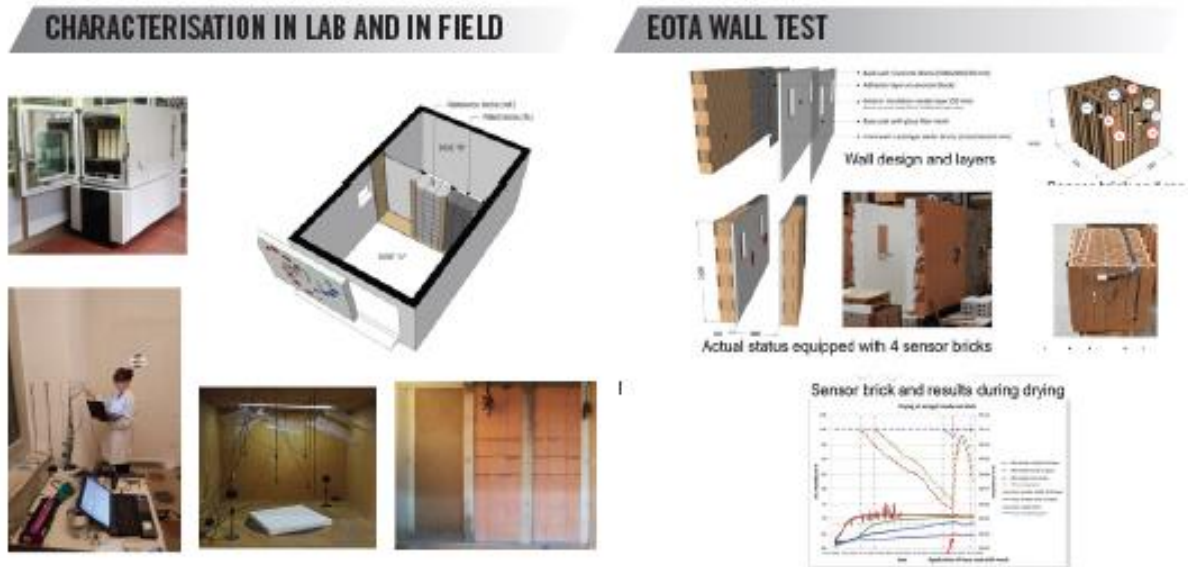


Residential buildings provided by ATC and AGITEC



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3. Concept of brochure

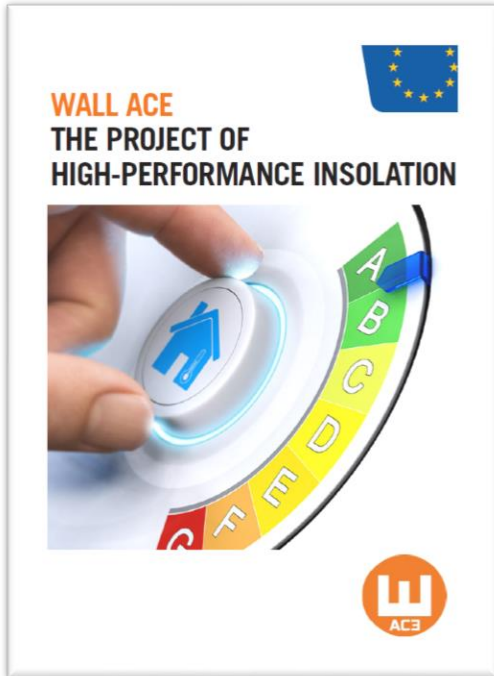
The concept is to have a brochure which contains the different technical data sheet of all single product in order for the prescription to have the explanation of the concept and of the performances for the wall-ace solution and a deeper information about each component.

Here below the example:



4. Execution

Execution based on previous content:



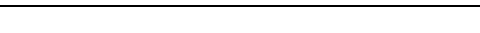
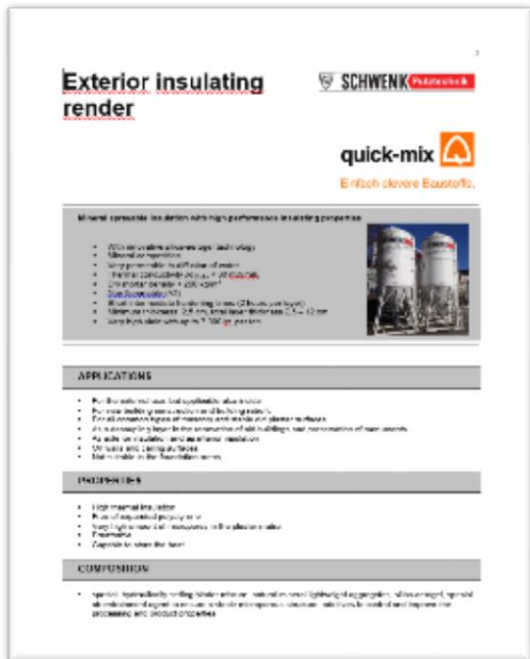
	1	2	3	4	5
EXTERNAL HIGH PERFORMANCE INSULATED RENDER	Cavity bricks filled with high performance insulation plaster	INTERNAL HIGH PERFORMANCE INSULATING PLASTER	INTERNAL HIGH PERFORMANCE INSULATING COATING FINISH	INTERNAL HIGH PERFORMANCE INSULATING PATCHING FILLER	
DIMENSION	500 x 15 mm	0.9 m ² / 240 x 240 x 15 mm	300 bag	300 bag	1.9 bag
COMPOSITION	Special hydraulically setting binder ensures optimal lightweight properties, flexural strength, special air entrainment agent, and additives	Estector : Wall back Isolador : High performance insulating render	Mineral Hydraulic Lime, Knecht Aerogel and additives	Mineral Hydraulic Lime, Knecht Aerogel and additives	Filler based on cement, Knecht aerogel, glass ball-balls, special hydrophobic resin and additives
BENEFITS	<ul style="list-style-type: none"> - Non-flammable material - High resistance - Extreme low thermal conductivity - Complementary material 	<ul style="list-style-type: none"> - Construction of modern low-energy and passive houses - Increase in the energy efficiency of the brick units - Lower production costs - Space savings 	<ul style="list-style-type: none"> - Excellent thermal performance - Reduced thermal bridges - Thermal-hygrometric comfort - Reduction of cold sensation of walls - Not flammable - Small thicknesses allowed (coating) - Light packaging 	<ul style="list-style-type: none"> - Excellent thermal performance - Reduced thermal bridges - Not flammable - Good adhesion material - Light packaging 	
SUBSTRATES	all common types of masonry and stable old plaster surfaces	Raw ceiling	Any kind of masonry, brick, blockwork, expanded or lightweight concrete, brick-concrete, reinforced concrete, concrete or metal roofs, old plaster, etc...	Any traditional mineral surface, traditional lime plaster, pre-mixed plaster, lime-cement mortar, plasterboard, painted surfaces, or structural supports	any internal substrate after preparation or painted, gypsum plaster, plaster tiles, plasterboards, old painted surfaces, Co-mix, concrete, cellular concrete, hollow blocks, bricks, stones, Paved road
APPLICATOR	20-35 mm		10mm-30mm	5-30 mm	-
APPLICATOR TOTAL LAYER THICKNESS	25-120 mm		10mm-70mm	5-30 mm	without limit
SETTING TIME	2h		4-54h	???	once the filler is dry - 1.2424h
DRYING/WORKING TIME	2 days per 1 cm layer thickness		10 days	72h	12-24h
APPLICATOR TOOLS	Manual/mechanical	Manual	manual/mechanical	manual/mechanical	manual
DENSITY (kg/m ³)	0.7	0.135	0.135	0.135	0.183
CONSUMPTION	3.8kg/m ² per cm	1.6 bricks/m ²	10 L/m ² per cm of thickness	10 L/m ² per cm of thickness	0.183 kg powder allows to fill 31
THERMAL CONDUCTIVITY (λ)	<0.03	<0.040 (gross) / Internal Render (0.025	0.03	0.03	0.034
FIRE RESISTANCE	A2	F50-A (external brick)	A1	A1	???
WATER VAPOR PERMEABILITY (μ)	Ca. 5	NC	7	3	???
WORKING TIME		0.73 h/m ²	60 min	60 min	30-45 min
COLOR	Grey	Brick-red	Pink beige	Pink beige	White



5. Technical Datasheets

In addition technical datasheets have been issued for our customers






6. Installation Guides

Quick Mix:



1

APPLICATIONS



SCHWENK PUTZTECHNIK

WALL-ACE EXTERNAL RENDER


APPLICATIONS

SYSTEM STRUCTURES


Wall-ACE insulating render is mineral, non-flammable and suitable for a variety of different substrates and masonry types. The render can be applied as an outdoors energetic optimization in new buildings and old buildings and additionally as interior insulation in the retrofit of old buildings.

The processing of the Wall-ACE render is carried out exclusively in system with the right matching components, which are: a primer, a reinforcing plaster with reinforcement mesh, a finishing coat and a paint if needed. The final layer thickness of the render can be between 25 and 120 mm, depending on the desired and required insulating effect. The necessary layer thickness is determined by the planner through a U-value calculation or, in demanding cases, a WUFI® calculation.


Examples of the use of Wall-ACE render on different masonry types



Wall-ACE external render in new construction as external insulation on highly heat-insulating masonry



Wall-ACE external render in old building as external insulation on masonry




Wall-ACE external render in the old building as interior insulation

WALL-ACE EXTERNAL RENDER

SCHWENK PUTZTECHNIK

2

PROCESSING OF WALL-ACE EXTERIOR INSULATING RENDER



SCHWENK PUTZTECHNIK

WALL-ACE EXTERNAL RENDER

PROCESSING OF WALL-ACE EXTERIOR INSULATING RENDER

2.1 GENERAL


Wall-ACE external render is applied in a similar way to a thermal insulation plaster, but processed by machine. Manual processing is possible with the machines listed in Chapter 3. We recommend the manual application only for very small areas in the course of repair work.

Due to the particularly fast strength development of a maximum of three hours, additional layers of Wall-ACE external render can be applied one after the other at short intervals. This allows the product to be applied up to the maximum layer thickness of 12 cm in one day.


Per layer, the render can be applied in thicknesses of approx. 25 to 35 mm. The layer thickness, in particular the first layer, is dependent on the surface and absorbency of the substrate. More absorbent substrates, e.g. lime bricks, allow a higher application thickness than smooth and slightly absorbent substrates.

Low temperature and high humidity delay the setting, drying and hardening processes. Strong warm wind can also


Walls drying and processing




Protect against frost



Protect against moisture




Protect against wind




Protect against solar radiation

negatively affect these processes. To protect against strong sunlight, wind and rain in particular, the scaffolding should therefore be equipped with tarpaulins or nets.



Wall-ACE external render has reached its final strength after a drying time of at least two days per centimeter of layer thickness. This must be planned and complied



HINT Keep freshly plastered surfaces moist for several days at high outside temperatures.

WALL-ACE EXTERNAL RENDER

SCHWENK PUTZTECHNIK

2.2 IN THE NEW BUILDING ON HIGH HEAT-INSULATING MASONRY

SUBSTRATE ASSESSMENT

According to the accepted rules of building technology, the substrate must fulfil the typical requirements for load capacity, absorbency, cleanliness and moisture protection. In the new building also attention must be paid to a compliant masonry. Further information and details can be found in our brochures.

HINT

There must always be a permanently dry masonry!



SUBSTRATE PRE-TREATMENT

If the Wall-ACE external render is only applied in the minimum layer thickness of 25 mm, as is customary in the case of highly heat-insulating masonry, the absorbency should have been previously pre-treated with water. If necessary, using a water hose and spray nozzle. This prevents the too rapid desiccating of the render layer.

Otherwise, the same conditions are valid for the Wall-ACE external render as for the application of normal fine-grained lightweight plasters.

Pre-treat the outer wall



Pre-treatment of strongly absorbent masonry by pre-soaking with water hose.

APPLICATION OF WALL-ACE EXTERNAL RENDER

The Wall-ACE external render is applied with the plastering machine to the first layer thickness at intervals of approx. 1.5 to 2 hours between the layers. The exact time depends on ambient and component temperature.

HINT

When applying the render, it should be noted that the maximum application thickness per layer of 30 to 40 mm is never exceeded, since the Wall-ACE external render is easy to apply due to its light consistency. Too thick layers inevitably slip afterwards. A rework or correction of these surfaces is very time-consuming.

An ideal application is achieved with an 18-millimeter nozzle on the plastering machine. For an optimum spray pattern, the air supply should be adjusted so that the Wall-ACE external render spreads in a broad area in the possible layer thickness on the plaster base. If this is not the case, the air supply should be corrected and the size of the nozzle checked.

HINT

Further information on the application machine technology as well as on its adjustment and application can be found in chapter 5.

Application by machine



Apply the render in render bands from top to bottom. In the lowest part of the wall then bottom to top.



Only after about 1.5 to 2 hours, when the previous layer has reached sufficient strength, the next layer of the Wall-ACE external render can be applied.



Repeat the process in the desired final layer thickness.



After reaching a sufficient strength the final layer can be treated with a Tyndall brush.



On the following day, treat the surface with a roller in a uniform rough surface.

HINT

If the final layer thickness can not be completed on the same day, the Wall-ACE external render can be applied on the existing layer without further measures on the following day.

2.3 IN OLD CONSTRUCTION AS EXTERIOR INSULATION



SUBSTRATE ASSESSMENT

According to the accepted rules of building technology, the substrate must fulfil the typical requirements for load capacity, absorbency, cleanliness and moisture protection. In addition, the masonry must be checked for defects that may need to be professionally removed or repaired. If there are doubts about the load capacity, this can be improved by applying a Winkler metal grid mesh. The metal mesh is mechanically fixed to the plaster base with at least 8 cm dowels per square meter.

HINT

Generally, the assessment of the substrate is very similar to that of normal light-weight plasters.

The masonry must be dry and the subsequent moisture introduced in the masonry must be prevented.

Rising moisture that migrates into the insulation reduces the insulation capability of the Wall-ACE external render and can lead to failure of the system. Rising moisture is usually also associated with an entry of harmful salts. This leads to an additional exposure. In general, it must be avoided that the masonry is or will be contaminated with harmful salts.

INSULATED SURFACES WITH XPS-PI PLATES

On all insulated surfaces, a mineral adhesive bridge must be applied before plastering. In the case of XPS-PI insulating boards, it is not to be ensured that the surface does not yellow due to long periods of stagnation and sunlight.



If this is the case, the top layer must be removed. Careful cleaning makes the surface ready for the application of the bonding agent. Smooth XPS plates are not a suitable substrate for the render.

These must be intensively roughened before applying the bonding agent. By contrast, XPS-PI insulation boards with a veined surface are generally suitable without further pretreatment. However, the basic prerequisite is that the insulation boards must have a stable connection to the substrate.

2.4 IN OLD CONSTRUCTION AS INTERIOR INSULATION



SUBSTRATE ASSESSMENT

Moist interior insulation systems have been proven and established on the market for many years. The functions of a temporary moisture absorption, temporary storage and re-drying in the insulating layer provide a year-round pleasant room climate. The Wall-ACE external render can be applied as well on external walls as inside of a building.

The arguments for the render as a sprayable interior insulation are convincing, as it is used as leveling plaster and insulative in a single operation. Due to the cavity-free processing and in combination with the capillary properties of the Wall-ACE render, the application ensures security at the highest level.

HINT

Substrate pretreatment and application of the Wall-ACE external render system in the old building as interior insulation are identical to pre-treatment and processing in the new building.

HUMIDITY PROTECTION AND DRIVING RAIN

In the old building it is imperative to pay attention to the moisture protection. Not always a sufficient building seal is present, which provides reliable protection against driving rain on the outer wall. However, this protection is a basic requirement for the application of interior insulation with TRISO-THERM M. When testing and evaluating the substrate, it must be ensured that the masonry is dry and that this condition is maintained. In the case of cracks or plaster damage in the exterior of the masonry, these must be remedied before applying the interior insulation.



2.5 DRYING AND PRIMING OF THE PLASTER SURFACE

DRYING

When all works have been completed and the insulation layer finished, Wall-ACE external render must harden completely and dry out. This process begins immediately after applying the last layer of the external render. Since the moisture must completely evaporate from the relatively thick layer of plaster, this takes a certain amount of time.

The drying time in normal climatic conditions ($+20^{\circ}\text{C}$ and 60% relative humidity) is about two days per 1cm plaster thickness.

Low temperatures or high humidity extend the process. If Wall-ACE external render is applied outdoors, appropriate measures must be taken to protect the render surface from moisture, direct sunlight or strong wind during application and drying out. A proven method is the usage of the scaffold with tarpaulins or nets. During the entire drying time, frost must not affect the plaster surface.

PRIMING

On the completely dried layer of Wall-ACE external render a diffusion-open primer is applied. This has the function of solidifying the surface layer and thus of protecting against excessive sanding. The main purpose is to reduce the high absorbency of Wall-ACE external render, which protects the following reinforcement layer against too rapid water withdrawal.

As a primer available are the products: SCHWENK TG-B Tiefgrund Silikat for indoor use, SCHWENK TG-C Tiefgrund Compact for indoor and outdoor use. For rational processing, a pressure sprayer is recommended.

Alternatively, painter roll or brush can be used. The drying time of SCHWENK TG-B is at least 24 hours, SCHWENK TG-C after approx. 2 to 3 hours at normal temperatures.

HINT

The primer must always be diluted at least in the ratio 1:1 with water. Further information can be found in the technical data sheet for the respective product.

Application of the primer



DISS: SCHWENK TG-C Tiefgrund Compact or SCHWENK TG-C Tiefgrund Compact in a ratio 1:2 with water.



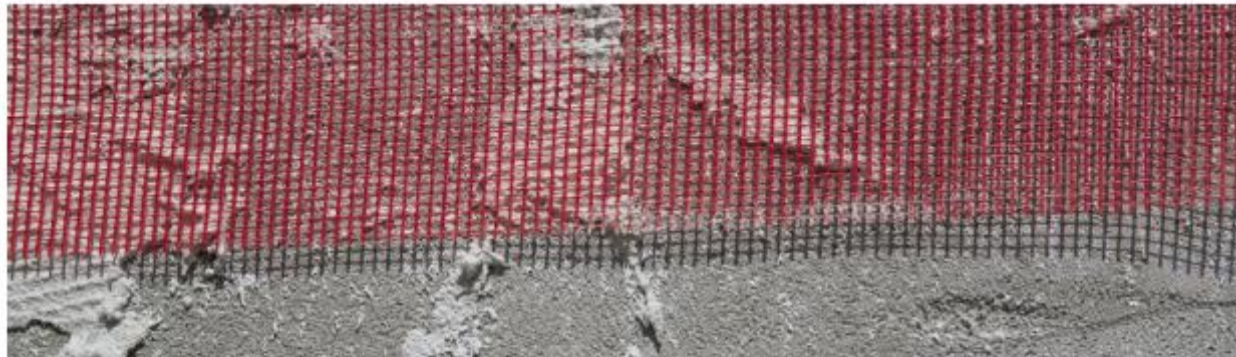
Apply primer with a suitable tool.



Observe drying time before applying the reinforcement layer.

HINT

When applying the primer, make sure that no shored surface layer (Stir) forms. This can be achieved by adequate dilution.



2.6 REINFORCING LAYER

REINFORCEMENT MORTAR WITH MESH

Due to the very low material bulk density of $\approx 200\text{ kg/m}^3$, the Wall-ACE external render has a relatively low compressive strength and therefore can not have a direct final coating, e.g. a finishing coating. It is therefore necessary to apply to the primed surface a reinforcement mortar with mesh insert in a thickness of 7 to 8 mm.

The reinforcing plaster layer is pulled off directly after application with the leveling plate to a closed surface. The reinforcing mesh is pressed into the upper reinforcement mortar and the surface is then smoothed with a suitable tool.

The additionally installed reinforcement mesh protects and prevents as far as possible cracks that may occur in the plaster base, in particular when Wall-ACE external render has been applied to discontinue the substrate.

The application is analogous to thermal insulation composite systems with the products approved for the Wall-ACE external render system. These were tested in the ETCS chamber after a specially conducted extreme weathering test and found to be recommendable.

The following products may be used as reinforcing plaster and reinforcement mesh:

- Indoor
 - R20 Vollspachtel Natur
 - UN-75 Universal-Faserputzsysteme
 - SGU-1, Spezial- und Ankerputzsysteme (new)
 - GA-2, Gipsputzsysteme
 - MS-4-S-1 leicht Spezial- und Kleberputz
 - Ankerputzsysteme M
- Outdoor
 - UN-75 Universal-Faserputzsysteme
 - SH-Misch-Spachtelputz
 - SGU-1, leicht Spezial- und Kleberputzsysteme
 - MS-4-S-1 leicht Spezial- und Kleberputz
 - Ankerputzsysteme M

PROFILES IN THE REINFORCING LAYER

On the Wall-ACE external render a reinforcement plaster with a mesh insert in a thickness of 7 to 8 mm is always to be applied. The required profiles are provided by our ETCS program. Depending on the requirements, the following profiles should be used:

At building corners and openings, depending on the finishing thickness, the Gewebe-Klebstoff-Massiv- und Vollputz ETCS APU STABLO W15-4 or APU STABLO W15-11 is used. If it is necessary to build up the reinforcement mortar with top coat, the Gewebe-Klebstoff-Massiv- und Vollputz APU DEK W12 can be used.



APU STABLO W15-4 APU STABLO W15-11

For building parts, for example, windows or doors that require a drip edge, the finishing profile APU DRO-TEX QUATTRO W40-4 can be used.



APU DRO-TEX QUATTRO W40-4

For demarcation of the plaster surface, the end profile APU DEXO W40-10 are suitable, or, if necessary due to the plaster thickness, APU DEXO W44-15.



APU DEXO W40-10

For a neat edge of the render, a suitable end profile APU 8 mm, 10 mm or, if required, 14 mm is used.

For molar profiles on the plaster surface, for example, for the construction of building separation joints, the molar profile APU DUXO-TEX IN W50-4 is available. This can also be used on inside corners.



APU DUXO-TEX IN W50-4

2.7 FINISHING COAT



INDOOR

Only diffusion-open products may be used on interior wall surfaces to ensure the full effect of the moisture-regulating properties of Wall-ACE external render. For this reason, no additional primer is applied. All of the products listed below are processed directly on the reinforcing layer. We recommend the use of our certified top coats.

HINT

Organic coats are not suitable.

For finely structured surfaces, SCHWENK products such as fine plaster or fat plaster (in various sizes) and fine-meshed mortar are used. If the surface is to be smoothed, then SCHWENK fine smoothness or SCHWENK XON fine filler mixture are used. For a decorative, individual design of the surface, SCHWENK Hydrotect is recommended. The application of creative techniques makes a multitude of freely configurable surface structures possible. If granular structures are required, all mineral topcoats from SCHWENK and quick-mix can be used.

OUTDOOR

For exterior wall surfaces weather protection and optics are in the foreground. For weather protection, only mineral topcoats with water-repellent function are to be used.

An additional primer should be avoided, as this may affect the diffusion behavior. The desired finishing coat is applied directly to the reinforcing layer and structured as desired. All mineral top coats can be used by SCHWENK or quickly, with the exception of scratch plaster. The use of scratch plaster is being tested and will be released later if it is suitable.

Thanks to its heat-insulating properties, the Wall-ACE external render, like all heat-insulating building materials, favors microbial attack by algae or fungi on the facade. Our perfectly hydroprotected topcoat system MS HYDROCONB and the specially adapted, also perfectly hydroprotected quick-mix silicate filler coat MC 425 HYDROCONB are available for a natural facade protection against surface growth by microorganisms. The products of the HYDROCONB system have a purely physical effect. Thanks to the HydroControl effect, the water condensation on the surface and thus the feed base for algae and fungi is prevented. In addition, HYDROCONB prevents color changes due to its special raw materials.



Plaster plaster



Grit plaster



Fat plaster



Free-style plaster

3

DELIVERY AND MACHINE TECHNOLOGY



DELIVERY AND MACHINE TECHNOLOGY

3.1 DELIVERY

The Wall-ACE external render is a very light material and is therefore delivered as a loose product in a closed container due to heavy dust. Both pressure-less and pressure containers can be used.

On request, containers can be equipped with the Silodur silo pump. It has a high flow rate and is especially suitable for the treatment of the Wall-ACE external render. The minimum delivery and calculation quantity is 1.25 t. A later refill by silo train is possible.

Even over long distances, no quality-relevant segregation occurs during transport to the construction site. Due to the low bulk density of the dry mortar of approx. 200 kg / m³, the weight of the filling container for construction site containers is limited to between 2.5 and approx. 4 t, depending on the site.

3.2 SUPPLY OF DRY MORTAR

The conveying width of the dry material from the silo train to the site container is a maximum of 80 m. The delivery hose must be provided with baffles for height differences in order to convey the material. The maximum distance between plastering machine and construction site container is about 50 m.

For the promotion of pressureless and pressure containers in the plastering machine, the associated conveying technique, a g. PPT "Silodur" or pressure equipment are suitable.

HINT

In the case of pressure delivery, care must be taken not to exceed a system pressure of 0.5 to a maximum of 0.8 bar.

DELIVERY AND MACHINE TECHNOLOGY

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3.3 MACHINE TECHNOLOGY

PLASTERING MACHINE PFT 04

The Wab-Ace external render can be processed with the plastering machine PFT 04. This is to be equipped with the attachment PFT 04 for insulating plaster and PUTZMIX. The existing rear-view sensor must be replaced with a special larger one available from PFT. This can be done in a few workshop steps. As screw pumps, types D 8-S (yellow), D 7-Z-E (of purple) and others with cones have proven successful in practice. The use of the Telester type is not possible, as these screw pumps are subject to high wear and change the quality of the render mixture.

All equipment components can be obtained from the PFT accessory program. Pipes with 25 mm can be used. The delivery width of the end mortar approx. 25 to 30 m. Even when using the 04, the fire plasterer must be equipped with an 18 mm spray nozzle for optimum application of the Wab-Ace external render. The amount of water to be set on the machine to approx. 350-450 L at the right place.

All information on the equipment of the PFT 04 plastering machine can be found in our machine technology recommendation for processing the Wab-Ace external render or in the equipment plan on the website of PFT (under the heading - Insulation).

Due to the properties of the mortar, changes in the water setting clearly have a time delay of several minutes. That's why the adjustment of the amount of water can be done only in small steps and in large time intervals.

Work stoppages should be limited to approx. 15-20 minutes as the wet mortar in the hose swells and thus changes its consistency. This can lead to irregularities until the mortar hose is refilled with fresh wet mortar when the plaster is applied to the wall. If the interruptions are longer, the machine should be started up occasionally and the mortar hose filled with fresh wet mortar. In general, however, it is necessary to empty and clean the machine and the mortar hose during long, unscheduled interruptions.

quick-mix

Hotline Technical advice

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SCHRÖDER PUTZSYSTEME

WAB-ACE EXTERNAL RENDER

WAB-ACE EXTERNAL RENDER

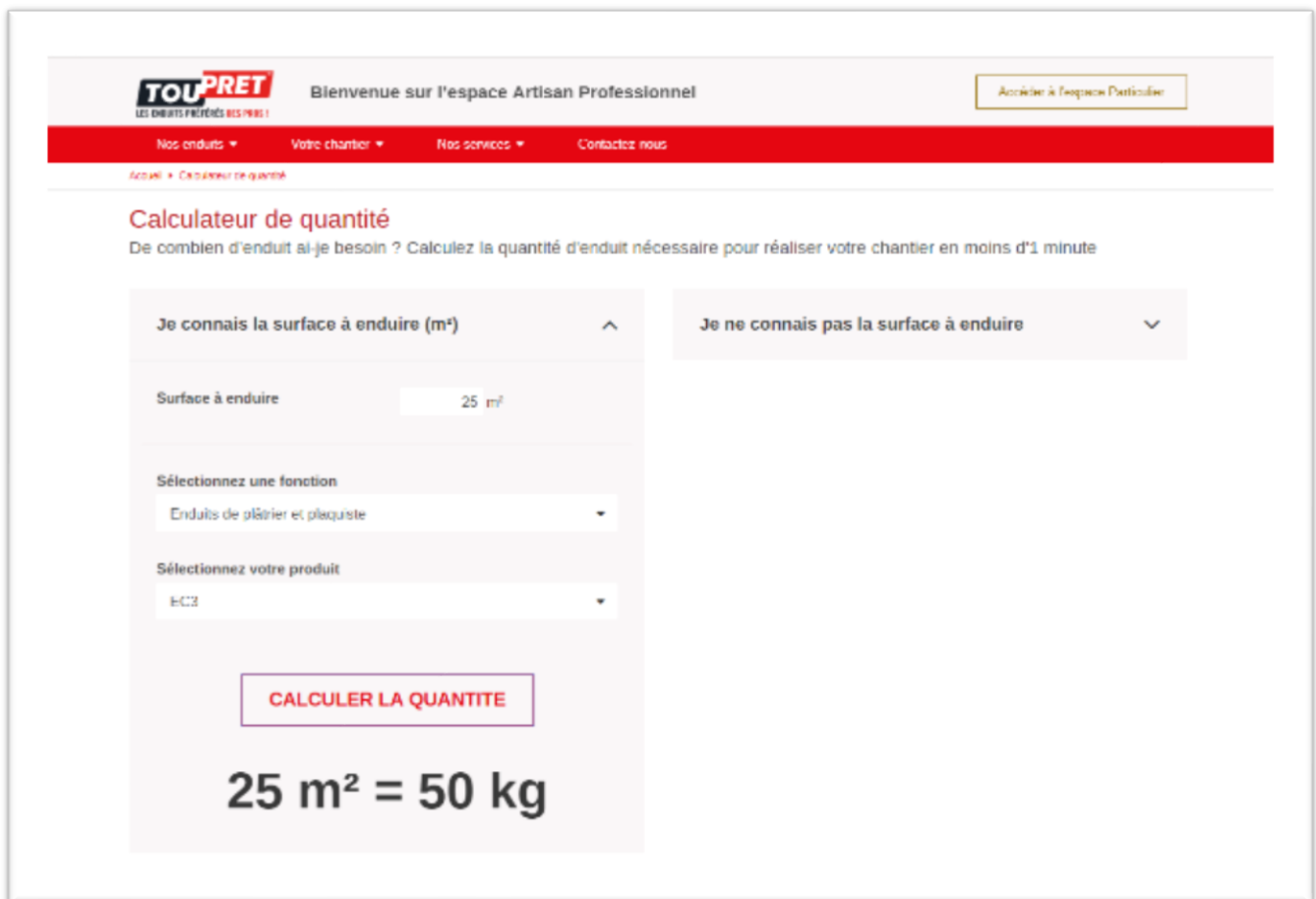
SCHRÖDER PUTZSYSTEME

7. Digital Tools

A benchmark of possible solution has been initiated in order to define if an application could be useful or not for our project (ie. Isover app, Weber app...) or if we have to focus our effort on the website. Conclusion will be given on the deliverable month 36 on communication plan.

A tool that has been already identified as interesting to help our customers is the “calculator of quantities” in order to help the craftsmen selecting the product and ordering the right quantities.

TOUPRET example:



The screenshot shows the TOUPRET website's 'Calculateur de quantité' (Quantity Calculator) interface. The header includes the TOUPRET logo, the text 'Bienvenue sur l'espace Artisan Professionnel', and a button 'Accéder à l'espace Particulier'. A red navigation bar contains links: 'Nos enduits', 'Votre chantier', 'Nos services', and 'Contactez nous'. Below the navigation bar, the page title is 'Calculateur de quantité' with the subtitle 'De combien d'enduit ai-je besoin ? Calculez la quantité d'enduit nécessaire pour réaliser votre chantier en moins d'1 minute'. The main content area has two tabs: 'Je connais la surface à enduire (m²)' (selected) and 'Je ne connais pas la surface à enduire'. Under the selected tab, there is a form with the following fields: 'Surface à enduire' (input field with '25 m²'), 'Sélectionnez une fonction' (dropdown menu with 'Enduits de plâtrier et plaquiste'), and 'Sélectionnez votre produit' (dropdown menu with 'E-C3'). A red button labeled 'CALCULER LA QUANTITE' is positioned below the form. The result is displayed as '25 m² = 50 kg'.

8. Conclusion

Different brochures, document have already been designed in order to support our product commercialization. This launch package will continue to be enrich with additional content to fulfill customer's needs.

We continue to investigate other communication, training approach using digital media. That will also be part of the deliverable concerning communication plan.