

Interreg

Alpine Space

ATLAS

European Regional Development Fund



EUROPEAN UNION

Decision guidance tool: Website draft

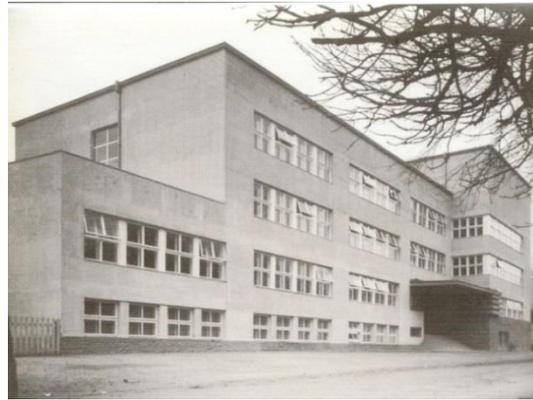
Eleonora Leonardi, Pavel Sevela
University of Innsbruck, Austria

A best-practice database & decision guidance tool

to exemplary energy efficient interventions in historic buildings



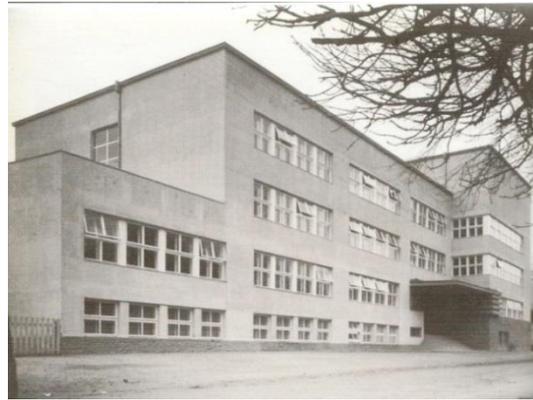
Monumental school NMS Hötting in Innsbruck



Architect Franz Baumann

Planned and built 1929/30

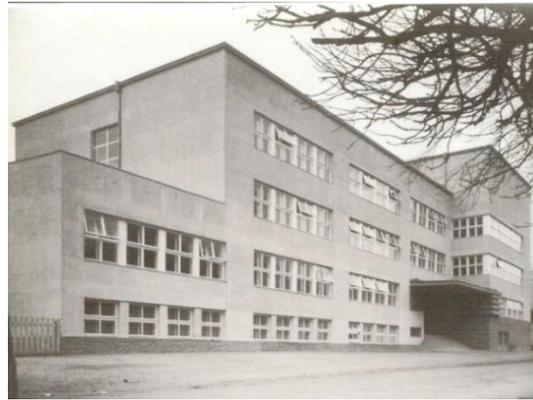
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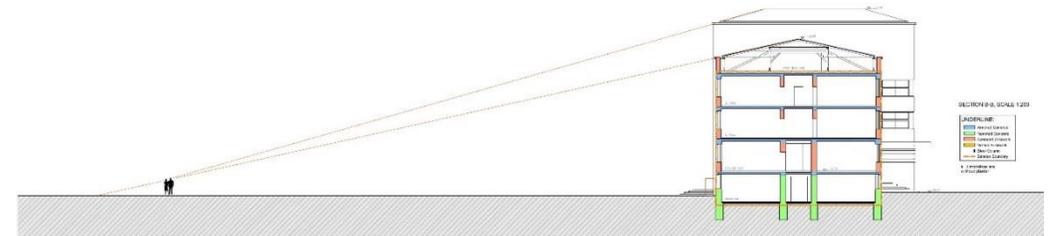
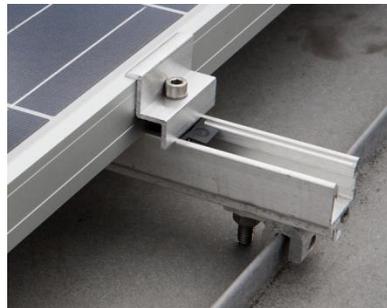
PV array on monumental school in Innsbruck



PV array on monumental school in Innsbruck



PV array on monumental school in Innsbruck



Decision guidance tool: Website draft

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External walls

Windows

Roof

Basement

Heating system

Ventilation system

Solar energy



Decision guidance tool: Website draft

External walls

Windows

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Basement

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Solar energy



Decision tool

Can renewables be installed on the roof?

 YES NO

Decision tool

Can renewables be installed on the roof?

YES

NO

Decision tool

Can renewables be installed on the roof?

<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
------------------------------	--

Is the facade available for renewables?

<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
------------------------------	--

Decision tool

Can renewables be installed on the roof?

YES NO

Is the facade available for renewables?

YES NO

Would the land be available for renewables?

YES NO

Free-standing renewables & renewables integrated
into landscape

Participation models of renewable
energies via power network

Decision tool

Can renewables be installed on the roof?

YES

NO

Decision tool

Can renewables be installed on the roof?

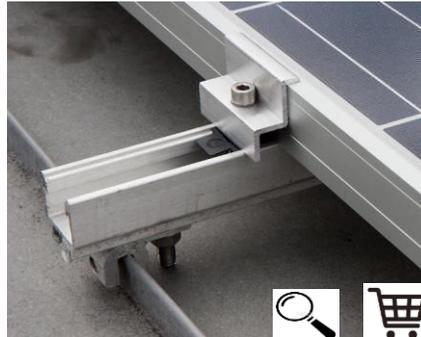
YES

NO

Roof-integrated



Roof-non-integrated



Decision tool

Can renewables be installed on the roof?

YES

NO

Roof-integrated



Roof-non-integrated



Information for selection of solutions / Step 1

Monumental School (NMS Hötting), Innsbruck, Austria (UIBK)

What is the solution?

Info like picture & schema & technology & installed power & location & building type.
 Source of additional information (Article, website, ...)

A PV-system with a size of around 10 by 3 meters with a peak power of 5 kW was installed at the south facing roof of the Monumental School (NMS Hötting), Innsbruck, Austria – a historically protected building in spring of 2014.

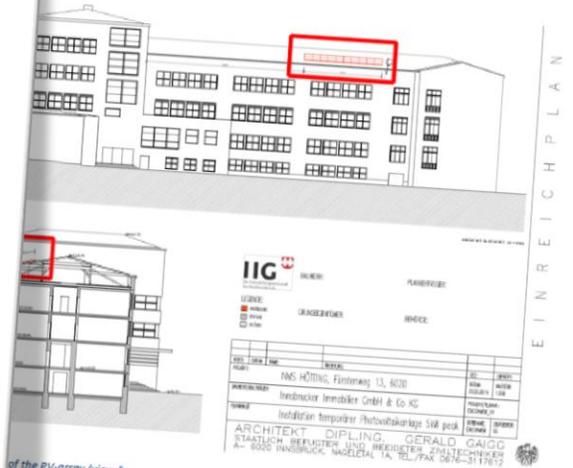
The PV-array is built from 20 pieces of photovoltaic (PV) modules "SOLARWATT Blue P60 250Wp", an inverter "KOSTAL Piko 5.5" and "TIGO - Energy control, monitoring and safety system" including sensors for module temperature and global radiation.



Figure 1 - PV-array on the south-facing roof, reversible mounting by the tin roof fold-clamps



Figure 2 - View from the south at a distance of around 65 m



of the PV-array (view from south-west and cross section)

work?

al point of view: Explain briefly the energy concept & contribution to the the user, ...

and monumental point of view: Compatibility of technology with approach, if known.

of the mounting was restricted to follow the inclination of the roof surface due to the chitectural reasons. The reduction of the solar energy yield (compared to the ideal to the flat inclination of the roof is less than 5%. Technically the mounting was done n roof fold-clamps. This way, the mounting is reversible without any permanent. The total height of the system is around 12 cm (measured from tin roof surface). Electronic MPP-tracking for each module (product name TIGO) makes possible to utilize solar energy yield even in case of partial shading of the PV array. If one or several aded, the TIGO-system is able to choose a different MPP for those modules individually.

ergy yield of the not shaded modules is not reduced.

system allows a system shut-down of the DC-grid in emergency case (e.g. fire) to avoid high voltage (e.g. 480 V in standard PV-arrays).

Decision guidance tool: Website draft

External walls

Windows

Roof

Basement

Heating system

Ventilation system

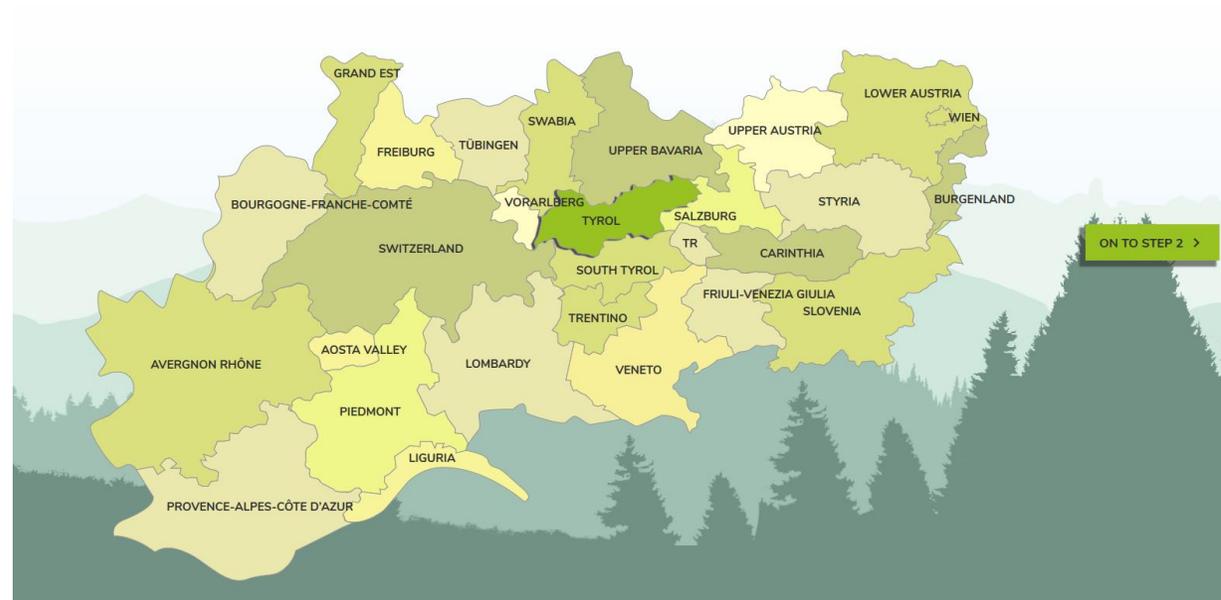
Solar energy



Selection through map

For the alpine space

With possibility to SKIP



Connection with building typology

Blockbau (Architype Blockbau)



Natural stone (Architype Innsalzachbauweise)



Decorated Wood (Architype Bundwerkbau)



Wood and natural stone (Architype Salzburger Flachgauhof)



Connection with building typology

Blockbau (Architype Blockbau)



Natural stone (Architype Innsalzachbauweise)



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Wood and natural stone (Architype Salzburger Flachgauhof)



Which wall do you have?

Solid timber wall



Stone/Brick/Concrete masonry wall



Concrete/Steel frame Wall/Timber frame



Rammed Earth Wall



Half Timber Framing



Cavity Wall



Which wall do you have?

Solid timber wall



Stone/Brick/Concrete masonry wall



Concrete/Steel frame Wall/Timber frame



Rammed Earth Wall



Half Timber Framing



Cavity Wall



Protection of external?

YES for appearance
(frescos, not plastered wood/bricks)

YES for proportions
(volumes)

NO

Which wall do you have?

Solid timber wall



Stone/Brick/Concrete masonry wall



Concrete/Steel frame Wall/Timber frame



Rammed Earth Wall



Half Timber Framing



Cavity Wall



Protection of external?

YES for appearance
(frescos, not plastered wood/bricks)

YES for proportions
(volumes)

NO

Do you have a strategy for driving rain protection?

YES

NO

Which wall do you have?

Solid timber wall



Stone/Brick/Concrete masonry wall



Concrete/Steel frame Wall/Timber frame



Rammed Earth Wall



Half Timber Framing



Cavity Wall



Protection of external?

YES for appearance
(frescos, not plastered wood/bricks)

YES for proportions
(volumes)

NO

Do you have a strategy for driving rain protection?

YES

NO

Protection of internal?

YES for appearance

YES for proportions

NO

PRINCIPLES

Internal insulation
Capillary active



Internal insulation
Condensate limiting



External removable
facade



EXAMPLES

Dense Wood fiber
Internal insulation
Capillary active



Calcium Silicate
Internal insulation
Capillary active



Mineral wool
Internal insulation
Condensate limiting



Facade with cellulose
insulation
External removable facade



See also solutions for WINDOWS

PRINCIPLES

Internal insulation
Capillary active



EXAMPLES

Dense Wood fiber
Internal insulation
Capillary active



See also solution

REMOVABLE EXTERNAL INSULATED FAÇADE

What is the solution?

The solution is a removable external insulated façade inclusive windows. The insulation is made of blown cellulose. The façade is prefabricated, also the windows are assembled in the factory. The connection is ensured by steel console mounted on the existing wall and a steel counter piece on the new façade. A wooden distance beam ensures the positioning of the façade although irregularity of the existing one. The existing façade is measured with a laser. Some details can be finished in the building site, such as the adjustment layer in the window reveal and the plaster layer.



Why does it work?

This solution gives the possibility to refurbish (with energy improvement) the existing façade of buildings with small building site's effort and high quality. The solution fits to historical building because it is reversible. The thermal bridges (window-wall) are also optimized, thanks to the prefabrication. The moisture safety is ensured by the plates of the façade.



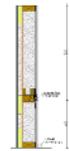
Description of the context:

The building where the solution was built is an old not listed farmer building. The wish of the building owner was to refurbish the building energetically. The old façade hasn't particular historical value apart from one painting. This was covered with the façade and in future will be available again.



Pros and Cons:

The biggest pros are the small building site's effort and the high quality reached thanks to the prefabrication. One con is the covering of the existing façade, especially in case of historical value of it. The change of the outside volume of the building can also be considered as a con for the conservation compatibility.



Discover more about the building where this solution was built in!

ade with cellulose
Insulation



nal removable facade



Removable Facade

WALLS



Active Overflow

HVAC



Internal insulation

WALLS



Integrated PV

SOLAR



Adding Glass from
inside

WINDOWS





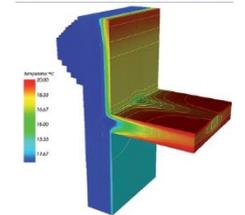
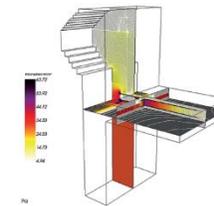
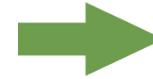
Summary:

- Define the renovation measure (PROBLEM)



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- Associating the architypes & GUIDE users to the appropriate renovation approach to find SOLUTION



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- Associating the architypes & GUIDE users to the appropriate renovation approach to find SOLUTION
- **DEMONSTRATE** on real cases

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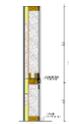
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Discover more about the building where this solution was built in!



Summary:

- Define the renovation measure (PROBLEM)
- Associating the architypes & GUIDE users to the appropriate renovation approach to find SOLUTION
- DEMONSTRATE on real cases
- „Inspire users to renovate, not to rebuild, by demonstrating real solutions“



HiBER ATLAS platform

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Contact

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pavel.sevela@uibk.ac.at

The screenshot shows the HiBER ATLAS platform interface. At the top, there are logos for the European Union, Interreg Alpine Space ATLAS, and TASK 59 SHC EBC. Navigation links include Home, Login/Registration, About ATLAS, and Contact. A 'FILTER' section is visible on the left. A notice states: 'Please note that this is a beta version of the HiBER ATLAS platform which is still undergoing final testing. Many more projects will be included in the next few weeks. Please check again later! Should you encounter any bugs, glitches, lack of functionality or other problems on the website, please let us know immediately so we can rectify these accordingly. Your help in this regard is greatly appreciated! You can write to us at this address atlas@eurac.edu'.

Historic Building Energy Retrofit Atlas

- 2019.02.22
Osramhuset (The Osram Building)
Land: IT
Sprachen: en,de,it
- 2019.03.04
Rainhof
Land: IT
Sprachen: en,de
- 2019.03.11
Villa Castelli
Land: IT
Sprachen: en,de,it
-
-
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