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Tiles & Bricks Europe
Ceramics, quality for life

PITCHED ROOFS: ADDING VALUE TO BUILDINGS

Architect: OSAR Architects - Antwerpen

1

INTRODUCTION

3

ENVIRONMENTAL VALUE

5

ECONOMIC VALUE

2

AESTHETIC VALUE

4

THE SUSTAINABILITY FACTOR

6

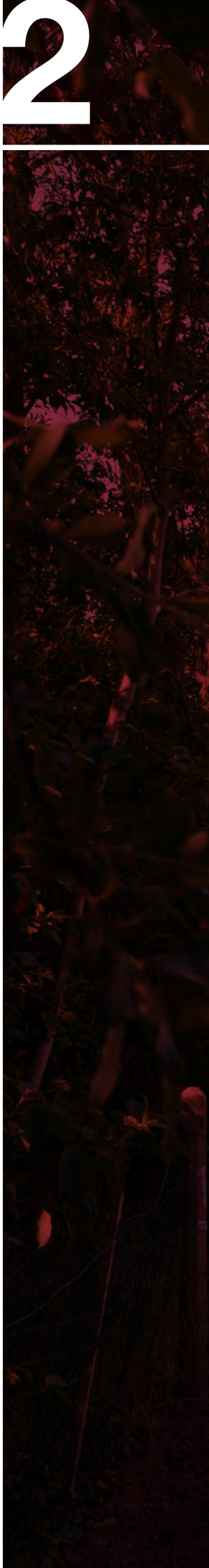
TECHNICAL VALUE

1

INTRODUCTION

The roof is the symbol of a healthy and protective environment, the symbol of comfort and architectural humanisation of ancient and modern cities.

Through these pages, we show the modern and innovative character of sloping roofs that also meet high technical performances.



AESTHETIC VALUE

The pitched roof is architecturally diverse with many possible shapes, textures and colours, it is actually the fifth front of the building. This is supported by a range of clay tiles of formats and colours for all architectural audacities.

The pitched roof firmly has its place in modern architecture. Their versatility makes them ideally suited to create innovative design solutions, resulting where desired in futuristic-looking rooftops that reflect the modern world.

3 ENVIRONMENTAL VALUE

Architect: Vanden Eeckhoudt - Creyf Architectes - Brussel / Bruxelles

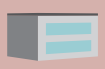
In today's world, where the environmental behaviour of a house is of increasing concern, the pitched roof has an important part to play. Depending on the design of a building, it can bring many environmental benefits.

STUDIES PROVE IT

A recent study has compared the environmental performance of single family houses with different roof solutions on the basis of the most commonly used indicators for building assessment (standard EN 15804).

Using the tool GPRBouwbesluit and the Environmental product database of the Netherlands, the study showed that a pitched roof house with clay tiles performs much better than comparable flat roof houses, notably:

· 41% better than a 2 storeys house with a concrete flat roof;
· 21% better than a 3 storeys house with a concrete flat roof;
· 25% better than a 3 storeys house with a green flat roof.

	Pitched (45°)	Flat	Flat	Flat green
				
Number of storeys	3	2	3	3
Gross floor area (m2)	139.2	93	139.2	139.2
Structure of the roof	wood/clay tiles	concrete	concrete	concrete/ sedum
Environmental score (in comparison to pitched roof)		+41%	+21%	+25%
Contribution of the roof to the overall impact of the building	7.7%	14.2%	11.1%	14.6%

Source: Environmental assessment of flat and pitched roof, KNB, the Netherlands, 2015.

COMPACT AND INSULATED

A house with a pitched roof is 12.5% more compact than a house with a flat-roof for the same living space. This makes the building more effective thermally, as it reduces the surface of the walls in contact with the outside world.

WARM IN WINTER, COOL IN SUMMER

A pitched roof protects a house's facade from solar radiation in summer, thus avoiding overheating, in winter it lets the sun heat the inside and protects against wind-driven rain.

A pitched roof significantly improves the thermal efficiency of the building thanks to the natural ventilation present underneath the top roof layer. This ensures maximum home comfort both in winter and summer.

REUSING RAINWATER

With a pitched roof, water collection comes easily. By installing drainage systems outside of a building, it's also possible to avoid the problems that can be brought about by having a drainage system inside the building that could cause considerable damage if the system becomes blocked.

A pitched roof enables the owner to reuse substantially more rainwater than a flat roof.

The benefits of a pitched roof in the rain don't stop there. Clay roof tiles have no impact on the quality of the rain water; one can collect water from the sloped roof for various non-potable uses.

Architect: Herman Adriaensens - Olen

4 THE SUSTAINABILITY FACTOR

LONG-LASTING MATERIALS

Building a property with a pitched roof covered in clay tiles is one way of minimising the property's long-term effect on the environment. Clay tiles are a natural product known for their durability. There are numerous examples of clay-tiled pitched roofs that have lasted over a hundred years. This keeps the environmental impact of the roof to a minimum and over a long period of time. Look around and you will see clay-tiled roofs dating back to pre-1900.

The combination of pitched roofs and clay tiles is a symbol of European culture. The large variety of shapes, formats and colours of clay roofing products reflects traditional craftmanship skills and helps preserve regional architectural heritage across Europe.

AS NATURE INTENDED

A building that is constructed using natural materials such as clay tiles and other clay masonry products will automatically reduce its environmental footprint. Not only are clay products made using natural materials - earth, fire and water - there's also no need to go long distances in search for materials. They can be found locally and transported to building sites with minimum fuss. This proximity keeps transport emissions down, thus making construction of a pitched roof an environmentally friendly undertaking.

RE-USE AND RECYCLABILITY

Should a building using natural resources have to come down or is no longer needed, it still forms part of the sustainability cycle. Clay tiles and masonry products can be reused or recycled into the production process for further use or for other purposes.

Architect Rui Pereira – Lisboa

5 ECONOMIC VALUE

MORE ROOM, LESS MONEY

On an economic level pitched roofs provide particularly high value as they offer more living space compared to similarly-priced flat-roofed houses. Attic conversion is a perfect opportunity to create additional living space and it is cheaper than building an extension.

LONG LIFESPAN, MINIMUM MAINTENANCE

A well-designed pitched roof will last a lifetime and longer. This lengthy lifespan translates into economic savings for its owner, who will not be obliged to regularly pay for roof maintenance over the years.

When maintenance is necessary, it is easy and requires only quick maintenance checks. Replacement of clay tiles is simple too.

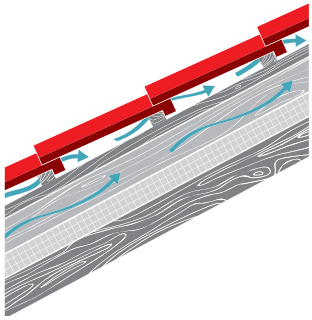
ENERGY SAVING

Buildings with clay-tiled pitched roofs offer numerous natural functionalities that will help to bring down costs related to energy expenditure. Compact and thermally insulated with in-built ventilation, the pitched roof ensures that minimum energy is lost through the roof.

6 TECHNICAL VALUE

GOOD VENTILATION

The ventilated cavity present in a pitched roof helps to evacuate moisture from the roof and prevents condensation from accumulating.



FIRE RESISTANCE

With a clay-tiled pitched roof, the damage caused by fire is greatly mitigated due to the clay tiles' strong resistance to very high temperatures. Clay roof tiles are classified A1 by the European Commission which is the best existing class of fire resistance.

WIND RESISTANCE

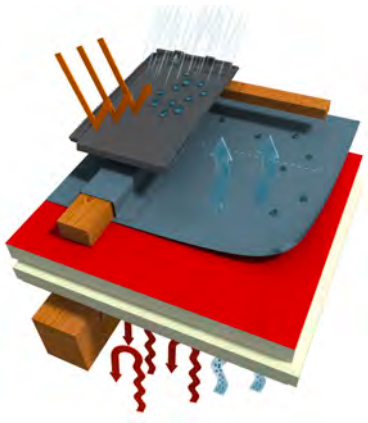
The resistance of a pitched roof covered with clay tiles is also exhibited in high winds. A pitched roof presents a good way of protecting against damage.

EASY TO MAINTAIN

A house with a pitched roof is durable and easy to maintain. Occasionally, components of a house will need updating. With a pitched roof, replacing building elements is easy to undertake. An external drainage system is also simple to maintain with any defects readily identifiable.

ACOUSTIC INSULATION

Noise has a fundamental impact on comfort in buildings. Even more so in urban areas, where traffic can be dense. A well-designed and executed pitched roof provides excellent acoustic insulation thanks to its combination of sound-absorbing materials. A pitched roof allows the owners to sleep soundly even during heavy rainfall.



A summary of all technical properties of a pitched roof.

PERFECTLY PRACTICAL

The structural design of a pitched roof brings with it many practical advantages that will help to keep damage and costs down. Unlike a flat roof, with a pitched roof, there is no place for stagnant water to collect and seep through the building's walls. Similarly, any waterproof insulation in a pitched roof is not vulnerable to damage caused by stagnant water, moisture or vegetation with roots that can be prevalent on a flat roof.

LET THERE BE LIGHT

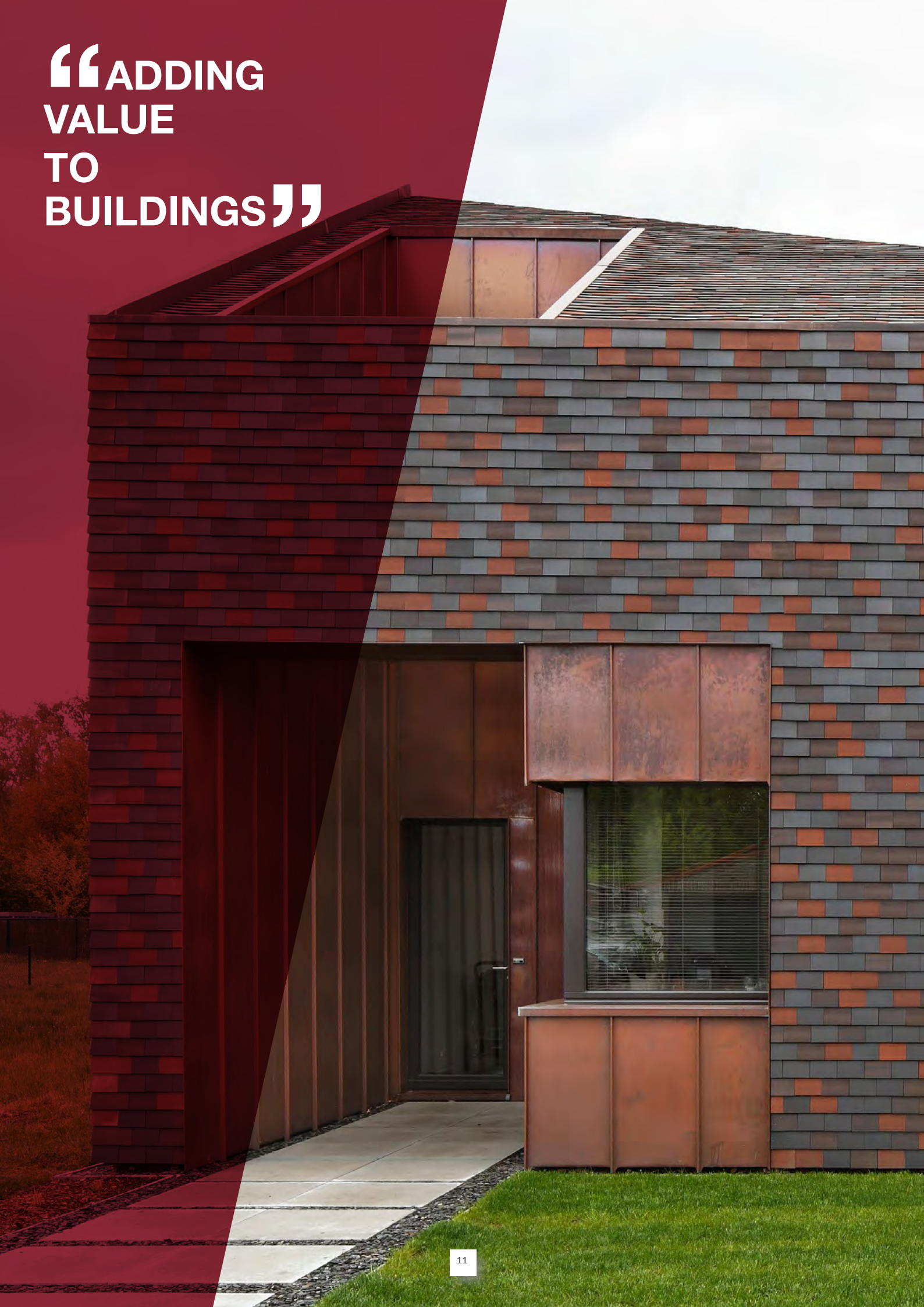
A pitched roof is a natural collector of sunlight. It also presents an excellent base on which to install photovoltaic modules. With a pitched roof, it will not be necessary to employ cumbersome mounting elements as they will fit snugly onto the roof without them.

By fitting skylights into a pitched roof, it will also be possible to let the sunlight flood in and create a warm and light-filled living space under the roof.

STRONG UNDER SNOW

Steep pitched roofs are not only able to withstand a heavy snowfall, their shape also creates a natural snow clearance system, with snow sliding and melting down their sides. For the owner, this means there'll be no need come the depths of winter to climb onto the roof to clear snow or hail manually.

“ADDING VALUE TO BUILDINGS”



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