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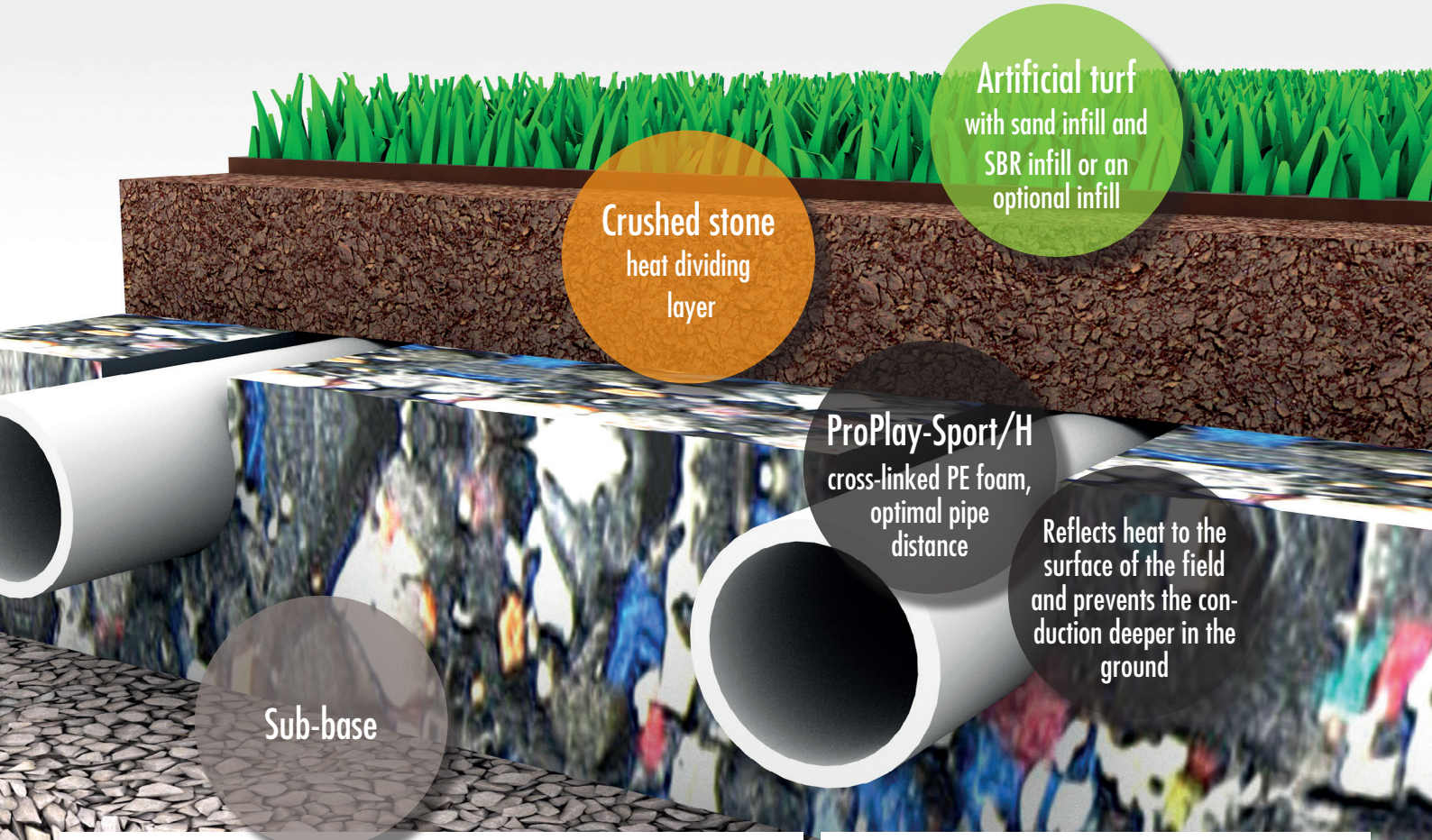
Artificial grass for sports and landscaping purposes, athletic track surfaces, playground safety surfaces

HEATED SYNTHETIC GRASS FIELDS

ACCELERATE YOUR RETURN-ON-INVESTMENT !



PROPLAY-SPORT/H HEATING AND SPORT PAD

The investments for synthetic grass sport fields are considerably higher than natural grass fields. One of the possibilities to speed up the payback time, is to play on the field as long as possible. An efficient heating system is a perfect solution. You can warm up the field and use it as long as needed.

ProPlay-Sport/H sport pad combines excellent sport technical characteristics with a high efficient heating value.

PROPLAY-SPORT/H FACTS AND FIGURES

- Construction : Artificial grass with 40mm pile height, ProPlay-Sport/H heating & sport pad, infill (rubber and sand)
- save operating costs up to 50%
- easy to install
- made of XPE, a closed cell synthetic that doesn't absorb water or moisture; no freezing when the heating is switched off- sustainable
- environmental friendly
- ProPlay-Sport/H is a cradle-to-cradle product.

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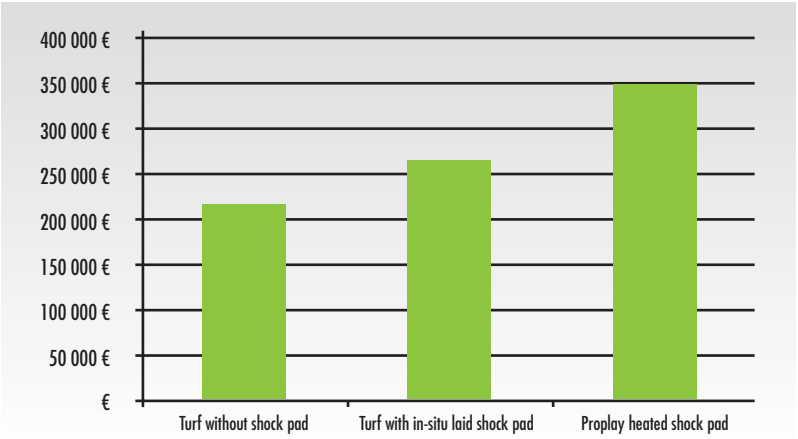
COMPARISON OF HEATING SYSTEMS

CONSTRUCTION COSTS

Mere surface materials and heating system.
All brands FIFA Star 2 quality.

Turf without shock pad
Turf with in-situ laid shock pad
Turf with Proplay heated shock pad

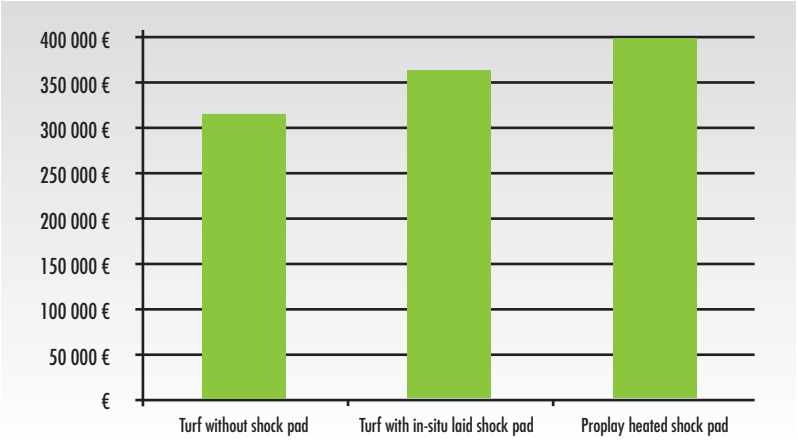


CONSTRUCTION COSTS

Including foundation costs.

Because Proplay shock pad insulates it allows 200 mm thinner gravel layers.

The shock pad has also underground draining qualities hence traditional underdrain can be left out.

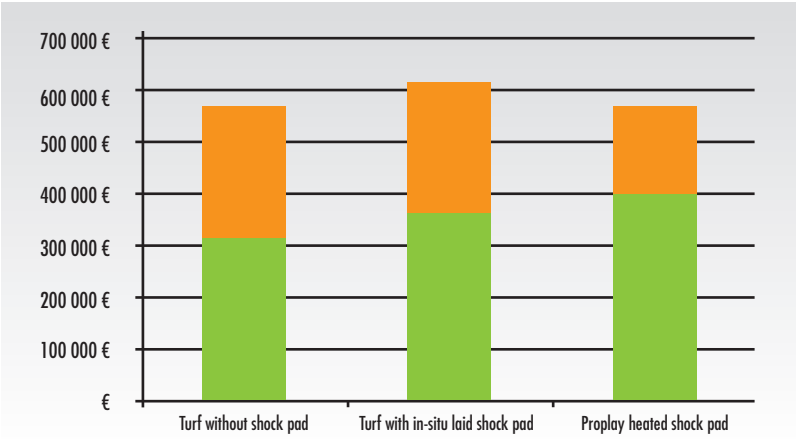


OPERATING COSTS

With foundations and five year heating costs.

Proplay heating costs are 35 % lower in this comparison.
(According a study costs are up to 50 % lower.)

Proplay shock pad saves heating costs and earth construction costs.
The investment will pay itself back in five years compared to a field without schock pad and with a traditional heating system.



OTHER BENEFITS:

The renewal of the turf on a field with the shock pad costs 15-20 % less when the time comes to renew the turf.
A field that has a shock pad keeps its resilience better and is more user friendly.
An underdraining on the surface of the field integrated in shock pad works faster and in particular after a long period of rain more efficiently (no saturation of ground with water).
Since the pipes are on the surface and the mass to be heated is smaller the changes in the heating system show faster.
A research on different turf structures showed that Proplay shock pad has 200 % higher relative heating effect which makes it twice as affective as traditional. Yet this comparison was made by using about 35 % savings on heating costs at calculations.

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THE RESEARCH RESULTS CONCERNING TECHNICAL QUALITIES

INTRODUCTION

SGS INTRON performed a research for Schmitz Foam Products BV (further designated as: Schmitz) on the relative heating performance of four different types of heating systems for artificial turf pitches.

The four different heating systems in this research are:
a traditional heating system;
a traditional based system including a ProPlay-Sport20 shock pad;
a traditional based system including an open cell PU-foam layer;
the ProPlay heating pad system (ProPlay-Sport/H).

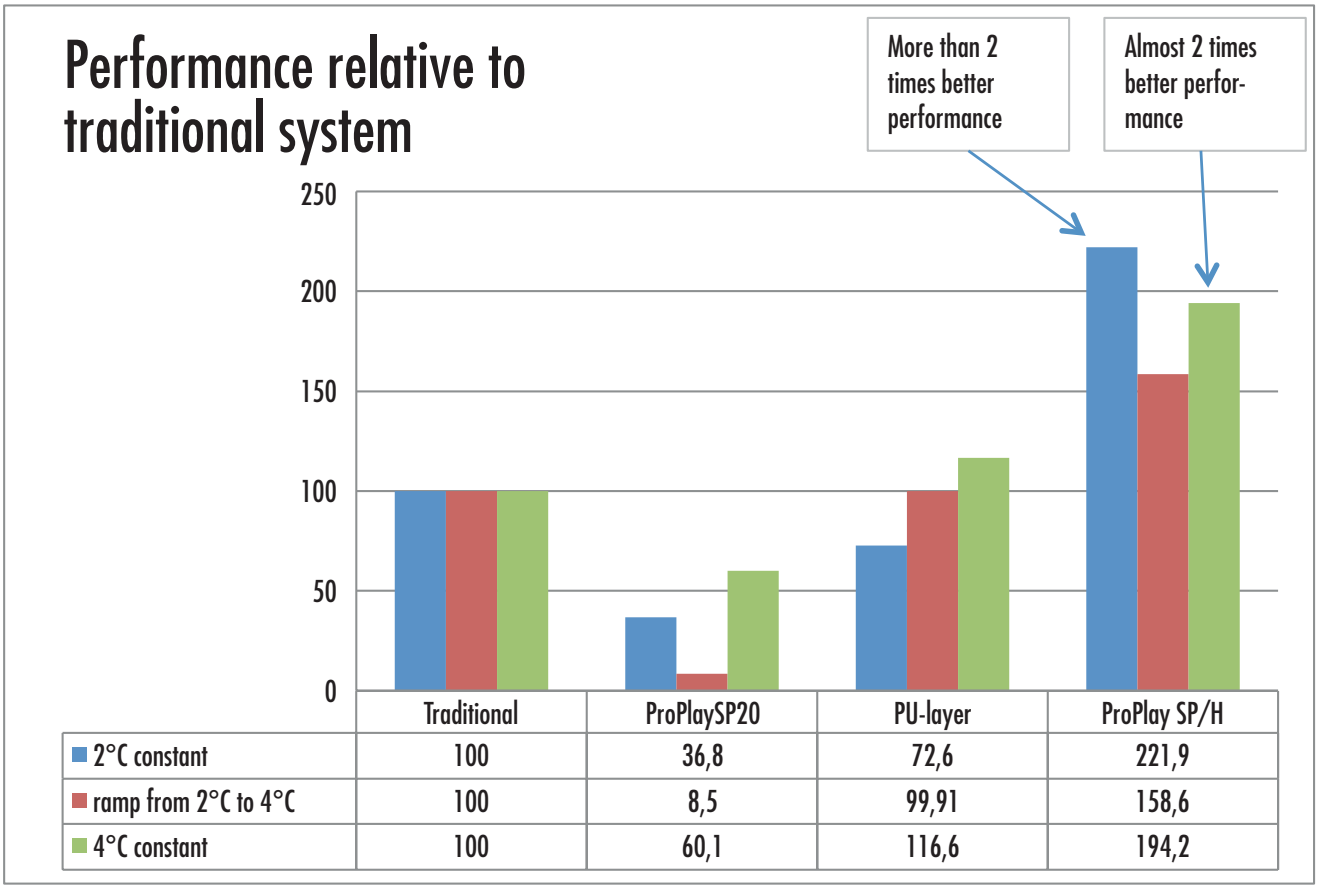
Both the traditional systems with a ProPlay-Sport20 and the ProPlay-Sport/H shockpad system meet the FIFA 1 and 2 star criteria.

The different heating systems in this study are commonly used in artificial turf pitches today in countries with long and cold winters. The objective of this research/study is to establish the relative heating performance of the different heating systems under equal research conditions. The outcome of this study indicates which heating system performs best in terms of energy use when heating an artificial turf pitch under cold conditions.

In all four researched heating systems the same heating principle is used, namely a regular spread water tubing which carries warm water. The water is heated by a boiler system and circulating through the tubing by means of a pump.

For the research, all of the four heating systems are scaled to fit into a climatic chamber.

SUMMARY TEST RESULTS



	Traditional	ProPlaySP20	PU-layer	ProPlay SP/H
2°C constant	100	36,8	72,6	221,9
ramp from 2°C to 4°C	100	8,5	99,91	158,6
4°C constant	100	60,1	116,6	194,2

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The heating performance of the traditional heating system is set as a reference at 100%. Systems that perform better than the reference, have a heating performances of more than 100%. Systems that perform less than the reference, have a heating performance of less than 100%.

The figure shows the relative heating performance of the different heating systems in which the traditional heating system is set as the reference system (= 100% in all circumstances). The figure shows the relative heating performance of the different heating systems in three conditions:

1. maintaining a constant infill temperature of 2°C at an ambient temperature of -8°C;
2. heating the infill temperature from 2°C up to 4°C at an ambient temperature of -8°C;
3. maintaining a constant infill temperature of 2°C at an ambient temperature of -8°C.

The overall outcome of this research shows that the heating system Proplay-Sport/H has the best overall heating performance.

This means that the Proplay-Sport/H-system is the most efficient way of heating an artificial turf pitch in respect to the other investigated heating systems. More efficient means less energy is needed to maintain a certain temperature of the artificial turf pitch (the temperature of the infill system).

The reason that the Proplay-Sport/H-system is so efficient, is determined by its design. The water tubing is incorporated into the thermally insulated shockpad. Therefore all heat mainly dissipates upwards.

Furthermore the construction is set up to have a minimum layer thickness of crushed stone between the Proplay-Sport/H and the artificial turf layer (see System Constructions). In this way less material is to be heated resulting in less energy consumption.

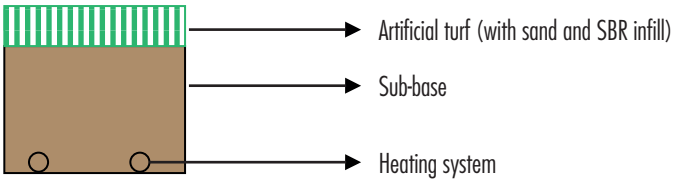
In the heating system with the closed cell PE-foam shock pad, ProPlay-Sport20, heat dissipation is hindered in the upward direction by the (insulating) foam layer. Furthermore there is more material present that needs to be heated. Therefore the heating performance of this system is less efficient in respect to the traditional system.

The open cell PU-foam shock pad retains water in practice due to its open cell structure (acts as a sponge). Because it retains water, the heating up of this system is likely to perform equal to the traditional system, as the mass of the water in the foam layer acts as a heat buffer: heat is slowly dissipated under cold exterior conditions and heat is accumulated under warm exterior conditions. The wet open cell PU-foam shock pad has little insulating properties and therefore heats up more easily then than the dry closed cell PE-foam shock pad (which has higher insulating properties). It therefore performs more or less equal to a traditional system.

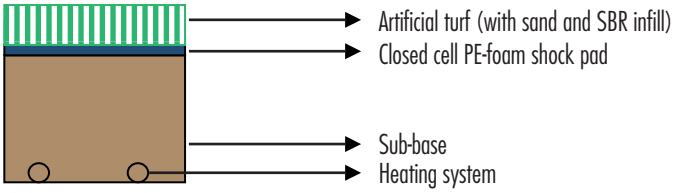
SYSTEM CONSTRUCTIONS

The four different heating systems are different in the way they are constructed. The heating systems in this research are all being used today as a way of heating an artificial turf pitch during long and cold winters. The constructions of the different heating systems are explained below:

Traditional heating system
The heating system is lying in a (100 mm) layer of sand at the bottom of the sub-base of an artificial turf field. Heating means that the complete structure has to be heated, heat dissipates in all directions and is therefore not efficient.

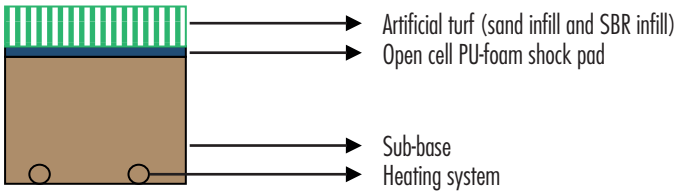


ProPlay-Sport20 heating system
A ProPlay-Sport20 shockpad is placed on top of a traditional heating system. The ProPlay-Sport20 is a 20mm thick shock pad made of closed cell cross-linked PE-foam. Heating the construction means heating the complete structure in which there is also an insulating barrier (shockpad) is to be overcome. Again heat from the water tubing is dissipating in all directions. This is a very inefficient way of heating an artificial turf pitch.



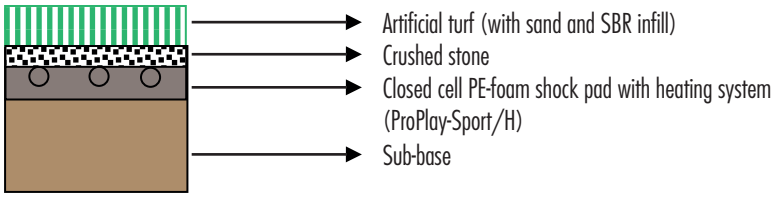
PU-foam layer heating system

This heating system is a traditional system with a 12 mm open cell PU-foam layer on top. Because this systems contains an open cell PU-foam (which will always contain water), the system is therefore tested with a wet PU-foam layer. Due to the fact that water (present in the PU foam layer) accumulates heat very easily, this system performs almost equal to a traditional system. In heating up an artificial turf pitch, it slightly performs better (due to accumulation of heat by the water present in the PU foam layer).



ProPlay-Sport/H heating system

In this system, the heating pipes are incorporated into the ProPlay-Sport/H, a shock pad made of closed cell cross-linked PE-foam. The shock pad with heating system is covered with a small layer of crushed stone. Heat dissipation is therefore mainly directed upwards. The amount of construction (the total mass) to be heated is also reduced, resulting in a very efficient way of heating an artificial turf pitch.



BRIEF TEST EXPLANATION

The research is designed to determine the relative heating performance of the different systems; it is not possible to calculate or derive the absolute energy consumption of a heating system from this research.

A good heating performance in this research is defined as a heating systems which consumes the least energy in respect to the compared reference (traditional) heating system. So a relative heating performance of 200% means that the system will use half of the energy of the traditional system in maintaining (or heat ramp, whichever is applicable) a set infill temperature under the same climatic conditions.

In this research a central heating system, comprising of a boiler, pump and thermostat, is used to determine the relative heating performance.

Optimum heating performance of a system results in short switch-on times of the central heating system. A short switch-on time means that little heating time is needed to maintain a certain temperature.

In this research the energy consumption of the pump is measured to determine the relative heating performance. Since the conditions are exactly the same during the research of the different heating systems (ambient room temperature, boiler temperature and pump flow capacity), the difference in energy consumption of the pump in the different heating systems, can be used to determine a relative heating performance. The energy consumption measured under all test conditions of the traditional heating system, is set as the reference at 100%. All measurements are performed under the same climatic conditions of -8°C.

The set temperatures of the infill of the artificial turf pitches in this research are +2 °C and +4 °C, also a ramp up of the infill temperature from +2 to +4°C is researched. The boiler temperature is set at a constant temperature of + 35°C.

All of the heating systems are build into separate containers; the containers (with dimensions 200 x 1340 x 370 mm) are insulated on all sides, except for the top side. The containers were placed and tested separately in a climatic chamber, acclimatized until a 'steady state' situation was reached, and then tested.