

# Thermography report



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<b>Company</b>	Heatsaver Ltd 27 Wellesford Road, Banstead, Surrey, SM7 2HL	<b>Tester:</b> Andy McGrath - Testo Phone: +44(0)1737 271879 E-Mail: info@heatsaver.co.uk
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<b>Device</b>	Testo 882	<b>Serial No.:</b> 01906938 <b>Lens:</b> 32 degree, Wide Angle Lens
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<b>Customer</b>	Heatsaver Ltd 27 Wellesford Road Banstead	<b>Measuring Site:</b> Catalina Spas Gomeldon Salisbury <b>Measuring Date:</b> 15th March 2011
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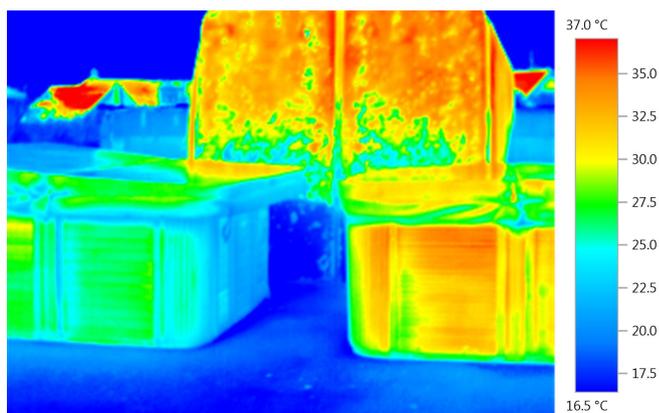
<b>Task</b>	Thermography Report for Heatsaver Ltd, for a Product Performance Verification on the "Heatsavr Liquid Pool Cover" product.
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# Thermography report

**File:**  
IV\_00482.BMT

**Date:**  
15/03/2011

**Measuring Time:**  
13:37:09



**Picture parameters:**

**Emissivity:** 0.95

**Refl. temp. [°C]:** 20.0

**Remarks:**

Thermal Images were taken over a period of time to show the surface temperature of the water in two comparable heated spas, one of which was dosed with " Heatsavr Liquid Pool Cover".

Spas were used in the test as they are of a convenient size to enable a treated and an untreated water area, to be monitored side by side under exactly the same conditions.

The Thermal Images are displayed in the " Hot / Cold " Palette.

The thermal images graphically highlight the temperature differential between the two spas over a period of time, in order to demonstrate the performance of the " Heatsavr Liquid Pool Cover "in reducing heat loss due to evaporation.

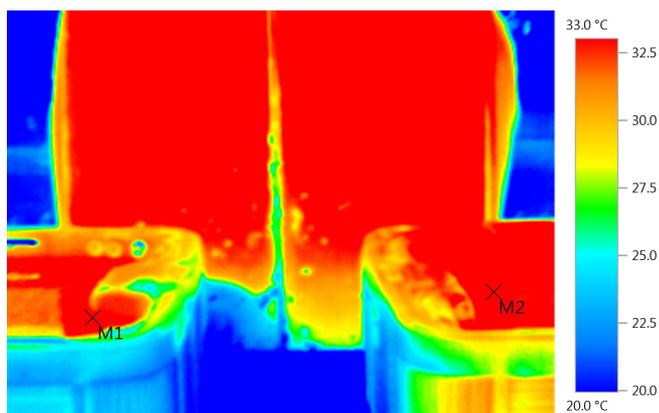
These images are an initial view of the two Spas, still with the covers still in place.

# Thermography report

**File:**  
IV\_00494.BMT

**Date:**  
15/03/2011

**Measuring Time:**  
13:48:24



**Picture parameters:**

**Emissivity:** 0.95  
**Refl. temp. [°C]:** 20.0

**Picture markings:**

Measurement Objects	Temp. [°C]	Emiss.	Refl. temp. [°C]	Remarks
Measure point 1	34.2	0.95	20.0	No Heatsavr
Measure point 2	34.6	0.95	20.0	With Heatsavr

**Remarks:**

Set up:

Two identical moulded spas were set up side by side, filled with water and then heated with their thermostats set at 35 degrees C

At the start of the test, the heater in each spa was switched off.

This page shows the thermal image and the standard visual image of the spas at the start of the test and immediately after the "Heatsavr" product had been added to the right hand spa.

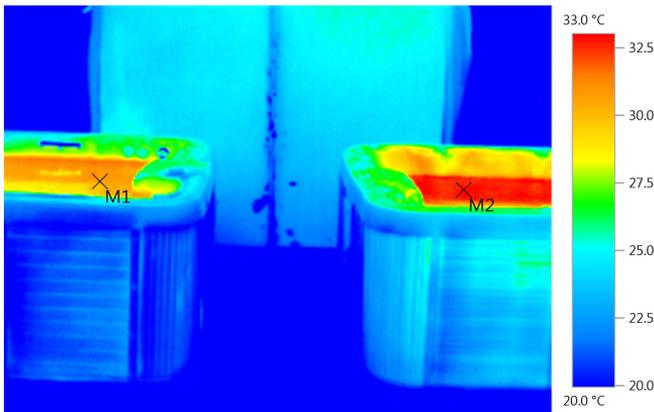
Temperatures of each spa, as recorded by the thermal imaging camera, are very similar, one at 34.2 degrees C (M1) and the other at 34.6 degrees C (M2). Small variations in the surface temperature of the water are to be expected, due to the reflective variations in the water.  
The Thermal Image is Displayed in " Hot / Cold " Palette.

# Thermography report

**File:**  
IV\_00496.BMT

**Date:**  
15/03/2011

**Measuring Time:**  
14:11:28



**Picture parameters:**

**Emissivity:** 0.95  
**Refl. temp. [°C]:** 20.0

**Picture markings:**

Measurement Objects	Temp. [°C]	Emiss.	Refl. temp. [°C]	Remarks
Measure point 1	30.8	0.95	20.0	No Heatsavr
Measure point 2	33.0	0.95	20.0	With Heatsavr

**Remarks:**

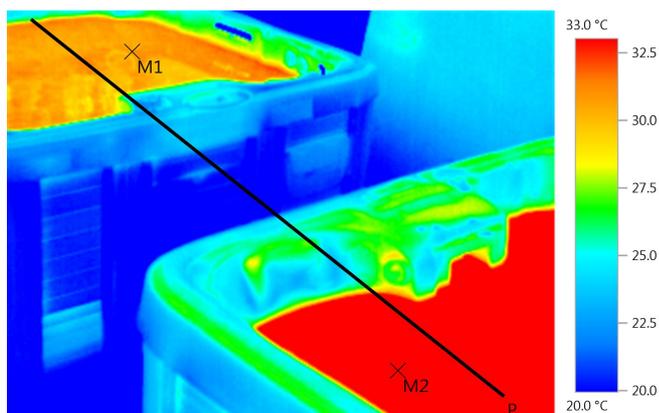
The above thermal image and readings were taken approximately 23 minutes after the start of the test. They clearly highlight the difference in temperature between the two spas and it can be seen that the right hand spa with the "Heatsavr", has retained considerably more heat.

# Thermography report

**File:**  
IV\_00500.BMT

**Date:**  
15/03/2011

**Measuring Time:**  
14:12:30



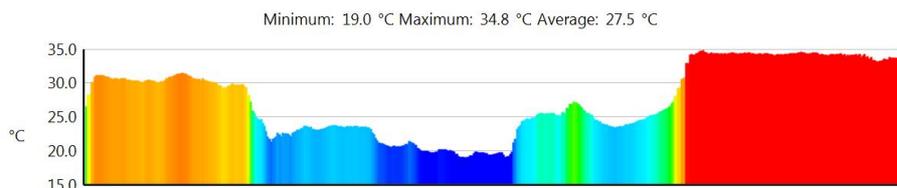
**Picture parameters:**

**Emissivity:** 0.95  
**Refl. temp. [°C]:** 20.0

**Picture markings:**

Measurement Objects	Temp. [°C]	Emiss.	Refl. temp. [°C]	Remarks
Measure point 1	30.6	0.95	20.0	No Heatsavr
Measure point 2	34.0	0.95	20.0	With Heatsavr

**Profile line:**



**Remarks:**

The above thermal image and readings, were taken approximately 24 minutes after the start of the test, in order to apply a Temperature Profile Line Graph, to further highlight the temperature differential between the surface temperature of the water in the two spas.

(with reference to the Temperature Profile Line Graph, the yellow column on the left relates to the temperature of the spa without Heatsavr and the red section on the right of the graph relates to the temperature of the spa with Heatsavr).

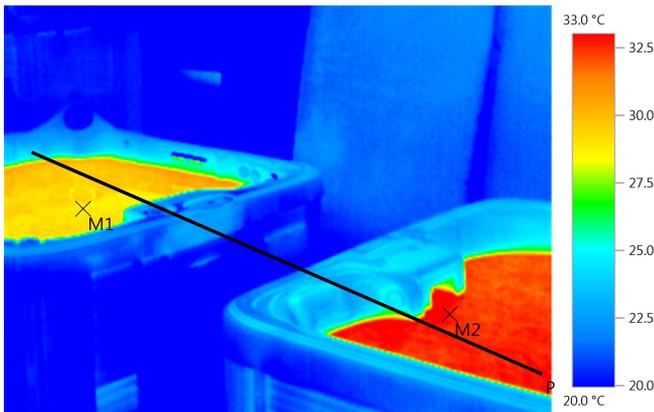
The profile graph clearly shows that the Right Hand spa containing Heatsavr (as depicted by the red section), is considerably warmer than the Left Hand spa without Heatsavr, (as depicted by the yellow section). Furthermore, the surface profile of the Heatsavr spa is considerably more stable than the spa without the product.

# Thermography report

**File:**  
IV\_00539.BMT

**Date:**  
15/03/2011

**Measuring Time:**  
15:12:08



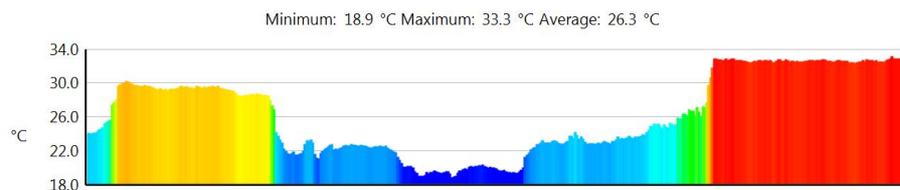
**Picture parameters:**

**Emissivity:** 0.95  
**Refl. temp. [°C]:** 20.0

**Picture markings:**

Measurement Objects	Temp. [°C]	Emiss.	Refl. temp. [°C]	Remarks
Measure point 1	28.8	0.95	20.0	No Heatsavr
Measure point 2	33.0	0.95	20.0	With Heatsavr

**Profile line:**



**Remarks:**

The above thermal image and readings were taken approximately 1 hour, 24 minutes after the start of the test.

The results clearly show, that the surface temperature of the spa containing Heatsavr, has only dropped by 1.5 degrees C, whereas the temperature in the spa without Heatsavr, has dropped by approximately 5.5 degrees C, a difference of 4 degrees C.

(with reference to the Temperature Profile Line Graph, the yellow column on the left relates to the temperature of the spa without Heatsavr and the red section on the right of the graph relates to the temperature of the spa with Heatsavr).

Furthermore, the surface profile of the Heatsavr spa is considerably more stable than the spa without the product.

**Review:**

Thermography Report compiled for Heatsaver Ltd in respect of a Product Performance Verification Exercise, to highlight the Thermal capabilities of the "Heatsavr Liquid Pool Cover".

The report format is using the "Standard" report template from the selection of Report Templates available in the Testo IR software.

The images were taken over a period of time on the afternoon of Tuesday March 15th, please refer to each



## Thermography report

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image for the time it was recorded.

The images were taken to demonstrate the Thermal/Temperature differences between the water surface temperatures of each Spa for the purpose of verifying the operation / performance of the Heatsavr Liquid Pool Cover.

The Thermal Images show the Temperature changes to the Water Surface Temperatures in two comparable Spa units, where one of the units has the "Liquid Pool Cover " product installed.

Please note that any temperatures shown on the images are "Apparent Temperatures" and are for indication purposes only. An overall emissivity value has been used in the images for this Report. For more accurate temperature measurement, the relevant emissivity value to the specific material to be measured, would have to be established. For the purpose of this Report, where the main requirement is to highlight Temperature Difference, it was not deemed necessary to adjust the Emissivity value. It should also be noted, that there will be some inaccuracy/inconsistency for the temperatures indicated, due to the reflective properties of the water.

It should be noted that Testo do not provide a Thermography Consultancy Service, the images are purely for the purpose of highlighting the capabilities of the Heatsavr product during the course of the Product Performance Verification Exercise.

It is not the purpose of the images/report to specifically identify/highlight any faults or Thermal Anomalies, or to provide comment/observation relating to any anomalies.

Some of the features of the camera and software have also been applied to the Thermal images.

**Spot Temperature markers** have been added to the thermal images to indicate temperatures.

**Auto Hot / Cold Spot Indicator** has been applied, which automatically highlights the Hottest or Coldest point in the defined area.

**Temperature Profile Line Graph** shows the temperature variation in graph form across the subject.

**Palettes** a variety of palettes have been used for the thermal images. Eight palettes are available on the camera and in the software.

The images are automatically Time and Date Stamped to verify the time and date when the images were taken.

The report also details the Emissivity value relating to the image taken.

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16/03/2011 ,

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Andy McGrath - Testo