



## Responsible Declaration

Mr. RAMON ALBERTO ABAD MORENO, Industrial Technical Engineer, collegiate n° 6949 of the Official College of Experts and Industrial Technical Engineers of SEVILLE, Technician qualified in staff of the company MONTREL INGENIERIA ELECTRICA S.A., with registered office in SEVILLA, Autovía Sevilla-Cádiz, km 6; I declare, under my responsibility, that:

- MONTREL INGENIERIA ELECTRICA S.A. has its Headquarters in the Polígono Industrial la Palmera, Autovía Sevilla Cádiz km 6, in Seville, where both its offices, the logistics warehouse and the cabinet manufacturing plant are located .
- It has been carried out in the part of the roof corresponding to the offices of the Montrel facilities, a treatment with ceramic extrem elastic coating as thermal insulation based on hollow ceramic microspheres, product of the company REVESTIMIENTOS TECNICOS SOTENIBLES S.L. RTS, in order to improve the indoor environmental conditions of the office area, which although it is conditioned, the interior temperatures that occurred in summer, they were very high and the air conditioning equipment worked continuously without achieving the desired temperature of well-being.
- It has been verified, once the surface of the roof corresponding to the offices has been treated with the indicated coating, that there is a substantial improvement in the interior temperature of the offices, lowering this temperature with respect to that existing before the treatment between 2°C and 6°C, in the office enclosure, a gradient that depends on the outside temperature and increases the higher the outside temperature.
- Data have been taken for 15 days at different times of the day, at different points of the roof, with and without painting and also of the ambient temperature of the offices with respect to the outside, using for the measurements the calibrated instruments, Fluke 175 Polymeter, Thermometer Fluke SOD and Pt100 Resistance Thermometers Precision 1/3DIN, obtaining the results that are attached in the attached tables.
- From the results obtained it can be deduced that the treatment on the roof treated with the aforementioned product, with respect to the cover without coating, improves the interior temperature of the offices between **2°C and 6°C** and that this improvement is linked to the outside temperature, making the gradient greater the higher the external

### **Enviro Thermal Coatings**

Office: 3811 51 Avenue Close, Ponoka Alberta, T4J 1C7

1-780-906-4600

[www.envirothermalcoatings.com](http://www.envirothermalcoatings.com)

[info@envirothermalcoatings.com](mailto:info@envirothermalcoatings.com)



temperature. By solar it is determined that the application of the product on the cover gives the roof insulating properties,

- In the same way, from the treatment of the roof, the ambient temperature of offices remains more stable, being preserved in a much more homogeneous way throughout the office area, obtaining a much more pleasant thermal sensation.

And for this to be recorded and take effect, I issue this certificate in Seville on September 27, 2018

**Theoretical Industrial Engineering Engineer**

A handwritten signature in blue ink, appearing to read 'Ramon Alberto Abad Moreno'. The signature is stylized and fluid.

**Ramon Alberto Abad Moreno**

**Annex:**

Report and data cited

## Economic Analysis - Montrel Case

<u>DETAILS</u>	<u>UNIT</u>	<u>CASE 1</u>	<u>CASE 2</u>
Consumption July 2017 - May 2018	KW-H	97	97
Consumption July 2018 - May 2019	KW-H	88	88
CONSUMPTION REDUCTION 11 MONTHS	KW-H	9	9
CONSUMPTION REDUCTION 12 MONTHS (extrapolated)	KW-H	9.9	9.9
<b>REDUCTION IN CONSUMPTION</b>	<b>%</b>	<b>9.28</b>	<b>9.28</b>
TOTAL COVERED AREA MONTREL	m2	2000	
TREATED COVERED AREA	m2	738	738
PRICE APPLICATION RTS SOLUTION	€/m2	8.5	8.5
THERMAL COATING INVESTMENT	€	6273	6273
IF THE CONSUMPTIONS ARE PRODUCED ACCORDING TO THE MODEL:			
P1	%	60	60
P2	%	30	30
P3	%	10	10
REDUCTION OF CONSUMPTION IN EACH PERIOD:			
P1	KW-H	5940	5940
P2	KW-H	2970	2970
P3	KW-H	990	990
APPLICATION FEE IN EACH PERIOD			
P1	€/KW-H)	0.1120	0.1081
P2	€/KW-H)	0.0976	0.1081
P3	€/KW-H)	0.0691	0.1081
ECONOMIC REDUCTION IN EACH PERIOD			
P1	€	665.18	642.21
P2	€	289.75	321.11
P3	€	68.36	107.04
ECONOMIC REDUCTION FOR CONSUMPTION			
REDUCTION BY ELEC TAX. (5.1127%)	€	52.32	54.72
ANNUAL REDUCTION	€	1075.62	1125.08
<b>INVESTMENT AMORTIZATION PERIOD</b>			
	<b>years</b>	<b>5.83</b>	<b>5.58</b>



## TECHNICAL REPORT

### 1 BACKGROUND

At the Montrel Headquarters in Seville, the offices are integrated into the industrial buildings, together with the Manufacturing and Warehouse Workshop.

Inside the offices, the Technical Office department is located on the top floor. This apartment has a large glazed area, approximately 35 m and although it has a modular false ceiling, this is under the building's own location, so the energy losses in this area are very high, noticing this situation extremely in the summer months, given the conditions climatological of Seville.

Obviously the technical office area like the rest of the offices, is conditioned, but the cold-heat equipment is not able to maintain the temperature in this area, especially in summer.

Due to the above circumstances, the decision is made to carry out an aislamiento of the roof that can contain in part the transmission of energy, so that the temperature in this area can be stabilized with the existing conditioning equipment. For this, the ZERAMIC EXTREM treatment is used as a thermal tea insulation based on hollow ceramic microspheres, a treatment that is easily applied on the roof itself, without the need to clean it with pressurized water and subsequent coating once cleaned.

### 2 DATA COLLECTION

Once the treatment has been carried out on part of the roof area, it is decided to obtain a series of temperature data in certain singular points both of the roof (below it) and in the office area itself, in order to corroborate that a thermal insulation has occurred, after the treatment executed.



In the plan that is attached 0050-2018, the projection in plan of the roof and a section of the office area are represented, as well as the surface treated with the ceramic coating. The treated roof area corresponds to about 275 m<sup>2</sup> which is the roof itself over the offices, 113 m \* corresponding to the area in height of enclosure on the roof.

In addition to this, the treatment has also been carried out in a strip, adjacent to the offices, along the entire length of the building of about 3 m (153 m<sup>2</sup>), in order to hinder the transmission of heat through the roof sheet itself to the office area. In the same way, 51 m<sup>2</sup> more have been treated on deck that correspond to the warehouse area , but it is thought that in the future it can be converted to offices.

To take the temperature data , it is decided to install PT-100 sensors to 3 wires with precision 1/3 DIN in 4 points, 2 on deck, placing these 15 mm separated from the cover under it, one in an area treated with the coating and another in an untreated area (sensors 1 and 2).

In the same way, two PT100 sensors with identical characteristics to the previous ones are installed in the interior area of offices (sensors 3 and 4). In the plan 0051-2018; the position of each of the sensors described can be observed.

A data collection is established with the following criteria:

- Leave the sensors in their position permanently during the second half of June.

Take the temperature data (resistance) 6 times a day every day except Fridays, at the time of entry 8.00 h; at 10.00 a.m.; at 12 noon; at 2:00 p.m.; at 16.00 h and at 18.00 h.

- Write down the data in a table to record it.



- Put the air conditioning into service from 9.30 am.

### 3 DATA OBTAINED

The data reflected in the 2 attached tables are obtained:

- TEMPERATURE MEASUREMENT AT DECK POINTS.
- AMBIENT TEMPERATURE MEASUREMENT IN OFFICES.

### 4 CONCLUSIONS

By the temperature measurements obtained, it can be confirmed that the treatment carried out with the ZERAMIC EXTREM elastic coating acts as a thermal insulator, obtaining a real temperature drop of at least 4°C on average with respect to the areas not treated with the coating. cited.

The interior temperature of offices behaves more homogeneously, promoting a better operation of the air conditioning machine and reporting energy savings.

Once the air conditioning equipment is put into operation, the temperature manages to stabilize despite the outside temperatures, achieving a homogeneity of the internal temperature and with it a feeling of well-being, which makes office work more pleasant .

The thermal insulation effect is accentuated at a higher temperature, this is at higher external temperatures, the temperature difference increases .

Therefore, the application of the product on the roof gives the roof insulating properties with respect to temperature, so the treatment is considered adequate and efficient as thermal insulation of the roof.

In addition to the above benefits, the treatment achieves a greater waterproofing of the cover.

Seville, September 27, 2018

The Industrial Technical Engineering



**Enviro Thermal Coatings**

Office: 3811 51 Avenue Close, Ponoka Alberta, T4J 1C7

1-780-906-4600

[www.enviothermalcoatings.com](http://www.enviothermalcoatings.com)

[info@enviothermalcoatings.com](mailto:info@enviothermalcoatings.com)



**Ramon A. Abad Moreno**

DATE	Temperature in °C on deck at 8.00 on the		Temperature in °C on deck at 10.00 on the		Temperature in °C on deck at 12.00 pm		Temperature in °C on deck at 14.00		Temperature in °C on deck at 16.00 h		Temperature in °C on deck at 18.00 h		ΔTm
	1	2	1	2	1	2	1	2	1	2	1	2	
13/06/2018	17,00	18,50	21,00	23,50	30,00	34,00	35,00	40,50	36,00	43,00	33,00	36,00	3,92
14/06/2018	17,00	18,50	23,00	25,00	33,00	37,00	37,50	41,50	37,00	44,50	35,00	39,00	3,83
15/06/2018	19,50	21,50	28,00	29,50	34,50	38,50	37,50	46,50					4,13
18/06/2018	22,00	25,00	30,00	31,00	37,00	39,50	46,00	52,00	43,50	51,50	37,00	40,00	3,92
19/06/2018	19,50	23,00	28,00	29,50	37,00	43,00	41,00	46,00	41,00	46,50	40,00	45,00	4,42
20/06/2018	18,00	20,50	28,50	28,50	30,00	38,00	38,50	42,00	38,00	44,00	35,00	39,00	4,00
21/06/2018	19,00	21,00	27,50	29,00	34,00	38,00	38,00	46,00	42,00	46,50	40,00	45,00	4,17
22/06/2018	20,50	23,00	28,00	29,50	36,50	43,00	43,50	47,00					3,50
25/06/2018	18,50	21,00	29,00	30,00	35,00	41,00	41,50	46,00	41,00	45,00	39,00	44,00	3,83
26/06/2018	19,00	23,00	27,00	29,00	38,00	44,00	41,50	47,00	39,00	44,50	38,00	43,50	4,75
27/06/2018	18,00	20,50	28,00	29,00	37,00	43,00	41,00	47,50	40,00	44,00	38,00	44,00	4,33
28/06/2018	19,00	21,50	29,00	31,00	36,50	40,50	42,00	48,00	41,00	45,00	39,00	44,50	4,00
29/06/2018	17,00	18,50	26,50	31,50	38,00	44,00	42,00	47,00					4,38
Media of Degrees of Decent Temperature													4,09

TEMPERATURE MEASUREMENT WITH PT100 UNDER COVER **TREATED** WITH ZERAMIC EXTREM. TEMPERATURE MEASUREMENT WITH PT100 UNDER COVER UNTREATED

### AMBIENT TEMPERATURE MEASUREMENT IN OFFICES

DATE	Temperature in °C interior offices at 8.00 am		Temperature in °C interior offices at 10.00 am		Temperature in °C interior offices at 12.00 h		Temperature in °C interior offices at 14.00 h		Temperature in °C interior offices to the 16.00 h		Temperature °C interior offices at		media	with A/A
	3	4	3	4	3	4	3	4	3	4	3	4		
13/06/2018	29,00	29,00	30,00	29,00	27,50	27,00	26,00	25,00	25,00	25,50	25,00	25,50	26,96	26,55
14/06/2018	28,00	28,00	29,00	28,00	28,00	27,50	26,00	26,50	24,50	26,00	25,00	26,00	26,88	26,65
15/06/2018	26,50	26,50	26,50	26,50	27,00	25,50	24,50	25,50					26,06	25,92
18/06/2018	31,50	30,50	29,00	27,00	25,00	25,50	26,00	26,50	26,50	27,50	26,00	28,00	27,42	26,70
19/06/2018	27,50	28,50	26,00	26,00	26,50	26,50	25,00	26,50	25,50	26,50	26,50	27,00	26,50	26,20
20/06/2018	27,00	27,00	29,00	28,50	27,50	28,50	27,00	28,00	26,50	27,00	26,50	27,00	27,46	27,55
21/06/2018	28,50	29,00	27,50	28,00	27,50	28,50	27,50	29,00	26,50	27,00	26,50	27,00	27,71	27,50
22/06/2018	30,50	31,00	28,00	29,00	24,00	25,50	25,00	26,50					27,44	26,33
25/06/2018	27,50	28,50	28,00	28,00	26,00	27,50	26,50	27,00	26,00	26,50	26,50	27,00	27,08	26,90
26/06/2018	31,00	32,00	27,50	28,00	26,50	27,00	26,00	26,50	26,00	27,00	26,50	27,00	27,58	26,80
27/06/2018	28,00	30,00	27,00	28,00	26,00	26,50	26,00	26,00	25,50	26,00	26,00	26,50	26,79	26,35
28/06/2018	27,00	28,00	26,00	26,50	26,00	26,00	26,50	26,50	26,00	27,00	26,50	27,50	26,63	26,45
29/06/2018	27,50	29,00	27,00	28,50	26,50	27,00	26,50	27,50	26,00	26,50	26,00	26,50	27,04	26,80

TEMPERATURE MEASUREMENT WITH PT100 IN TECHNICAL OFFICE NEXT TO WINDOW AREA DIRECTION WORKS. TEMPERATURE MEASUREMENT WITH PT100 IN TECHNICAL OFFICE NEXT TO WINDOW AREA OFFERS