

DELIVERABLE T1.3.3

**D.T1.3.3 – Estimation of heating losses from
thermal data / PA3**

03/2020





D.T1.3.3 – Estimation of heating losses from thermal data / PA3

A.T1.3 Estimation of PV potential and heating losses

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1. Introduction and aims

The deliverable T1.3.3 belongs to the activities related to estimation of PV potential and heating losses (A.T1.3). In particular for each Pilot Action, a report has been created reporting some information gathered from onsite thermal acquisitions or data owned by local energy agencies. The overall idea is to report the heating loss situation in the pilot buildings and, if possible, the improvement after the investment activities. According to Application Form, the quantification of D.T1.3.3 is 7 but we created 8 documents corresponding to the 8 locations of the Pilot Actions (one cross-border). The various deliverables reports information and graphical results of thermal analyses in all PAs with (public or internal) and without investments. In this latter case, despite the lack of investment, thermal and energetic analyses were performed in any case to provide useful material to the local municipalities and inform them of possible energy efficiency actions they could undertake to improve the energy performance of buildings. In the following section the activities related to PA3 in the Zlín region, Czech Republic (EAKZ) are reported.

2. Thermal acquisitions in the BOOSTEE-CE pilot action #3

In the following tables, we report the acquired thermal data with some metadata and comments, to facilitate comprehension and understanding of the situation in some public buildings located in the Zlín region (Czech Republic). Thermal images were acquired before and after the BOOSTEE-CE pilot activities in order to show changes in the energy performances of the buildings.

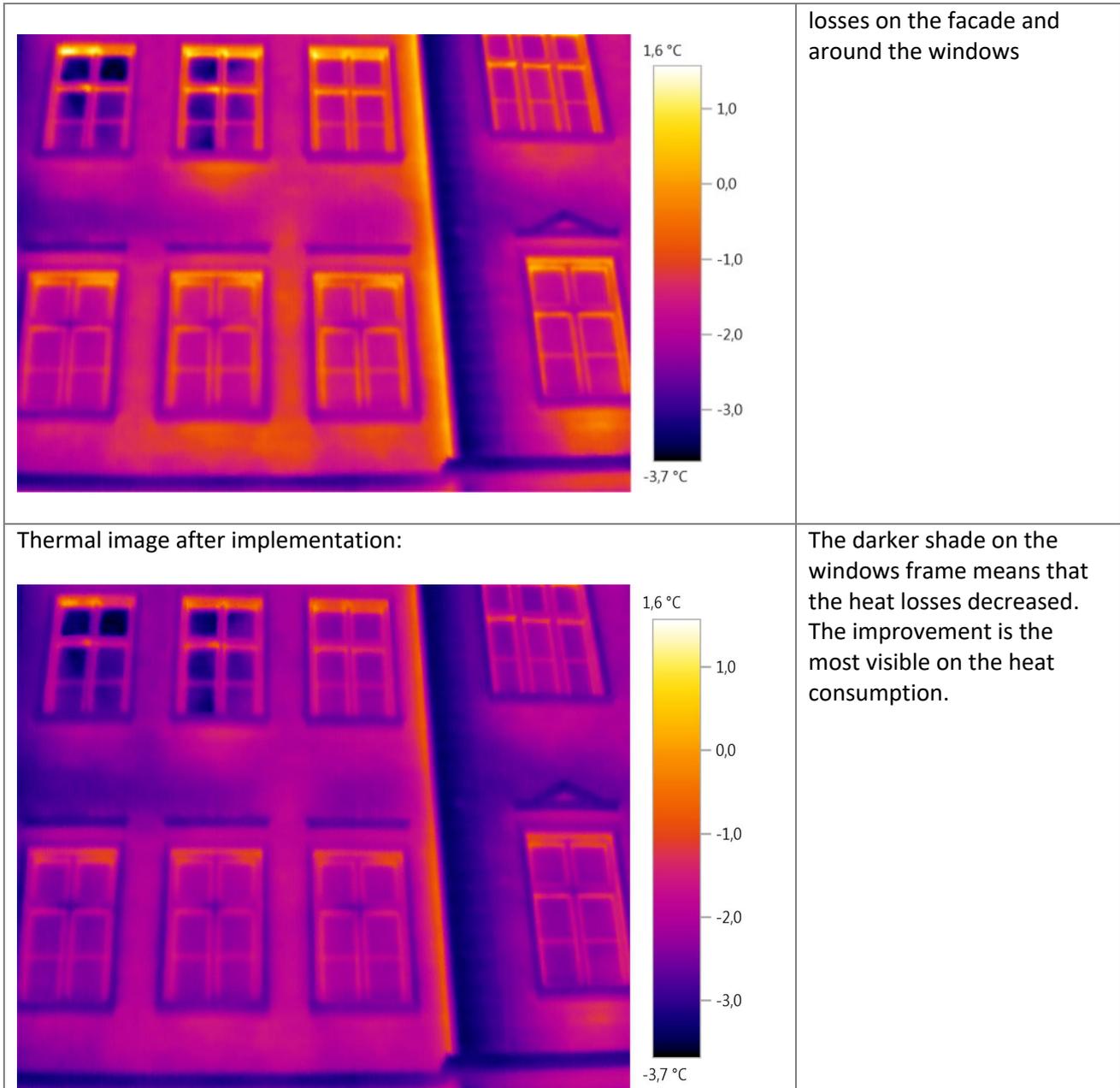
Grammar school Valaske Klobouky

Acquisition date – before PA implementation	3.2.2015
Time and ext. temperature– before PA implementation	6:00, -4 °C
Acquisition date – after PA implementation	7.2.2018
Time and ext. temperature– after PA implementation	6:30, -3 °C
Type of building	Grammar School
Owner	Zlín region
Materials of the facades	Full bricks



Thermal image before implementation:

You can see the a lot heating



Grammar school Holesov

Acquisition date – before PA implementation	4.2.2015
Time and ext. temperature– before PA implementation	6:00, -13 °C
Acquisition date – after PA implementation	11.4.2019
Time and ext. temperature– after PA implementation	6:20, -3 °C
Type of building	Grammar School
Owner	Zlín region
Materials of the facades	Full brick



Thermal image before implementation:



Due to the historic preservation of the building are the heat losses significant.

Thermal image after implementation:



The only possible improvement was the windows change. You can see on the image that the heat losses through the windows decreased

Hospital Uherske Hradiste – pathology

Acquisition date – before PA implementation	1.2.2018
Time and ext. temperature– before PA implementation	7:00, -1 °C
Acquisition date – after PA implementation	23.1.2019
Time and ext. temperature– after PA implementation	10:00, 0 °C, cloudy. Sun doesn't affect the measuring
Type of building	Hospital
Owner	Uherskohradistska hospital a.s.
Materials of the facades	Brick with air spaces

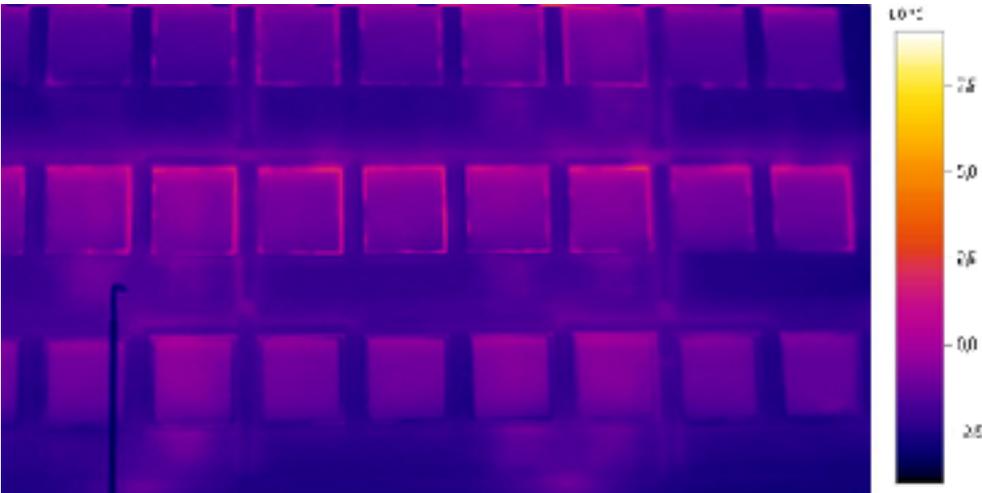


<p>Thermal image before implementation:</p>	<p>Heat losses around the windows due to heat bridges.</p>
<p>Thermal image after implementation:</p>	<p>Thermal losses were eliminated by the complex heat insulation of the building.</p>

Hospital Uherske Hradiste – dormitory

Acquisition date – before PA implementation	1.2.2018
Time and ext. temperature– before PA implementation	7:30, -3 °C
Acquisition date – after PA implementation	23.1.2019
Time and ext. temperature– after PA implementation	10:30, -3 °C, cloudy. Sun doesn't affect the measuring
Type of building	Hospital
Owner	Uherskohradistska hospital a.s.
Materials of the facades	Concrete from slag



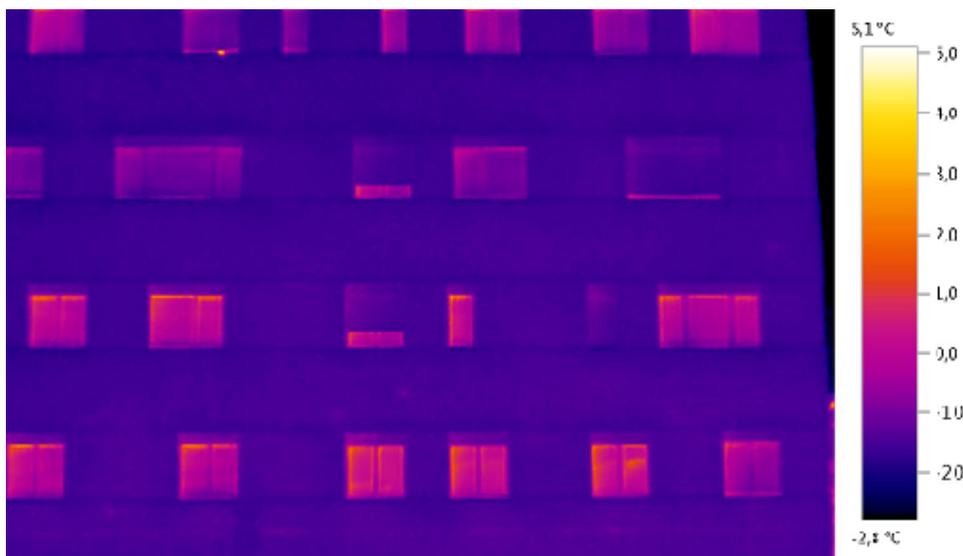
<p>Thermal image before implementation:</p> 	<p>Significant heat losses through the facade and windows.</p>
<p>Thermal image after implementation:</p> 	<p>Overall heat insulation of façade and roof and windows change positively improve the heat losses and energy consumption.</p>

Hospital Uherske Hradiste – New building

Acquisition date – after PA implementation	23.1.2020
Time and ext. temperature– after PA implementation	6:00, -3 °C
Type of building	Hospital
Owner	Uherskohradistska hospital a.s.
Materials of the facades	Concrete, bricks and heat insulation



Thermal image after implementation:



Building is completely insulated with no visible heat losses. The windows are warmer because of the artificial light inside. It wasn't possible to switch off all lights in the hospital.

Secondary medical school Vsetín

Acquisition date – before PA implementation	5.2.2016
Time and ext. temperature– before PA implementation	6:00, -3 °C
Acquisition date – after PA implementation	7.2.2019
Time and ext. temperature– after PA implementation	9:00, -3 °C, cloudy. Sun doesn't affect the measuring
Type of building	Secondary school
Owner	Zlín region
Materials of the facades	Bricks with air spaces

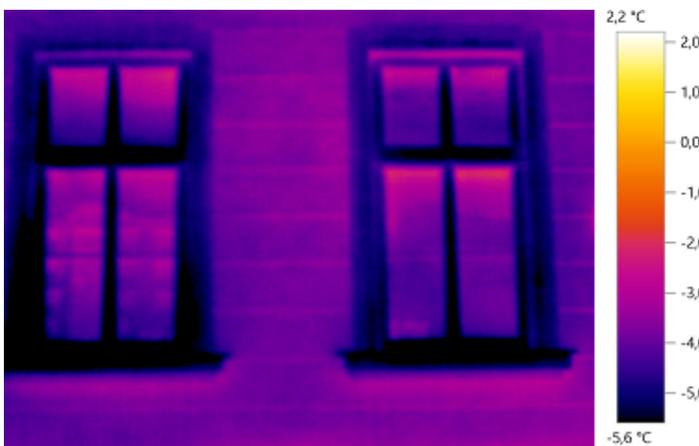


Thermal image before implementation:



Focus is mostly on the windows because the change is most visible on them.

Thermal image after implementation:



You can see that the temperature of the windows are almost the temperature of the outside air which means that windows are not causing any heat losses.

Secondary pedagogical school Kromeriz

Acquisition date – before PA implementation	4.2.2015
Time and ext. temperature– before PA implementation	7:00, -4 °C
Acquisition date – after PA implementation	16.1.2018
Time and ext. temperature– after PA implementation	6:50, -5 °C
Type of building	Secondary school
Owner	Zlín region
Materials of the facades	Full brick



Thermal image before implementation:



A lot of energy is wasted due to the historic facade and almost original windows.

Thermal image after implementation:



Heat losses through the windows were mostly eliminated.



Special primary school Kromeriz

Acquisition date – before PA implementation		4.2.2015
Time and ext. temperature– before PA implementation		6:30, -6 °C
Acquisition date – after PA implementation		16.1.2018
Time and ext. temperature– after PA implementation		6:20, -5 °C
Type of building	Special primary school	
Owner	Zlín region	
Materials of the facades	Full brick	
<p>Thermal image before implementation:</p> 		<p>After the implementation of energy management and EAZK suggest to lower the night temperature.</p>
<p>Thermal image after implementation:</p> 		<p>After the lowering the night temperature and change of the windows the heat losses decreased and the frames of the windows are much colder.</p>