

## THE POSITION OF ABANDONED HEATING PLANTS INSIDE THE URBAN LANDSCAPE

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**Abstract:** *Abandoned heating plants built in Romania in the communist period still have an impact upon city life even though they are out of use for years. This happens because of the strategic position they have inside the urban neighbourhoods. The current study has the purpose of providing information about the relationship between abandoned heating plants and the physical context that surrounds them in order to help architects, urban planners and local authorities in the process of revitalizing these areas. It is well known and even proven in numerous case studies that abandoned buildings often have a negative influence in the value of adjacent properties. Considering the fact that there are very few remaining empty sites in city centers and surrounding areas, the land occupied by these heating plants could have an important value.*

**Keywords:** *Abandoned heating plants, city, urban neighbourhoods, empty sites, revitalisation*

### 1. Introduction

In Romania, after the communist period, the desire to have cities with a high quality of lives has begun to grow. This high quality can also be achieved by having safe zones and safe buildings for the inhabitants and the passers-by. The higher the number of abandoned and degraded buildings, the higher the crime rate in that area. Vacant or abandoned properties place a lot of costs on the neighborhoods where they are located.[1]

The current analysis is a step towards trying to stop this phenomenon in communist-era blocks of flats in most cities in the country where the district heating system has disappeared or is extinct.

### 2. Materials and Methods

Next there are presented three methods of cataloguing the thermal heating plants in the urban city blocks, methods that can help both investors and architects to choose the best solution of intervention upon an existing building.

#### 2.1. Construction-land relationship

This criterion is essential in determining the capacity of a building to expand either horizontally or vertically. When it is noticed that the surface of the building occupies the whole lot, in order to obtain a horizontal expansion it is necessary to make a concession for the adjacent land belonging to the public domain.

An important advantage in achieving an adaptive reuse at the expense of a demolition in the condition of a 100% usage of the land is that the land can be used to the maximum. In case of a demolition, the usage of the land according to the urban regulations might be lower than 100%, resulting in a new construction with a smaller area.

Abandoned central heating plants buildings owned by municipalities generally have a 100% occupancy rate of the land.

**2.2. Construction-street relationship**

a. Construction surrounded by 4 car / pedestrian alleys in the block of flats.

This positioning in relation to the neighborhoods is ideal for the location of glazed walls for the new usage of the building.

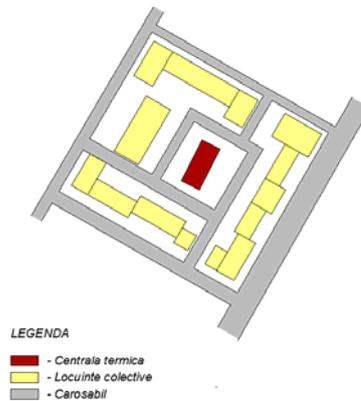


Fig.1: Example of central heating plant location in the quadrant of collective dwellings

b. Construction surrounded by 3 car / pedestrian alleys in the block of flats.

b.1 – Construction with 3-way openings to the streets, with a long side and two short sides

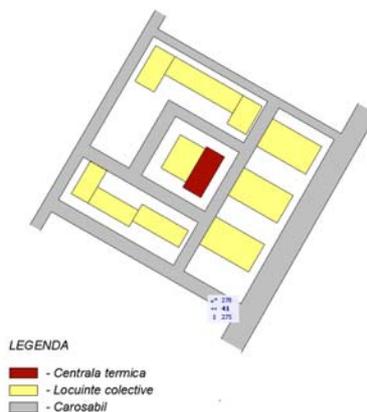


Fig.2: Example of central heating plant location in the quadrant of collective dwellings

b.2 – Construction with 3-way openings to the streets, with two long sides and one short side

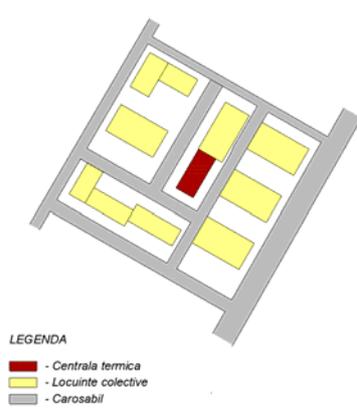


Fig.3: Example of central heating plant location in the quadrant of collective dwellings

In both situations, the main façade is clear, with a public space in the front, making the acces to the interior visible from far. In a possible adaptive reuse intervention, the access can be made after an analysis of the traffic from different sides. Each new function can have different needs so the possibility of having from where to choose where to place the entrance or position windows is ideal.

c. Construction surrounded by 2 car / pedestrian alleys in the block of flats.

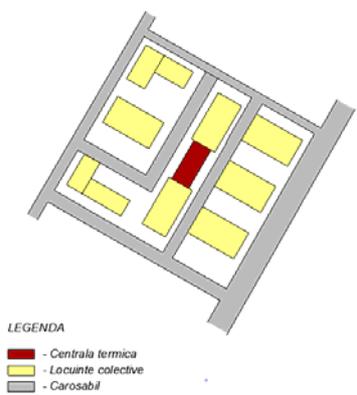


Fig.4: Example of central heating plant location in the quadrant of collective dwellings

d. Construction surrounded by 1 car / pedestrian alleys in the block of flats.



Fig.5: Example of central heating plant location in the quadrant of collective dwellings

This situation is most unfavorable as access to the building and windows can only be placed on one side (on the side with access to the street).

### 2.3. Construction-construction relationship

a. Central heating plant – as an independent construction, with no connection to another building. These buildings have 4 facades, which helps to easily divide the interior spaces.

Access can be easily accomplished on any of the 4 sides of the building, simplifying the design theme quite a bit, but also the process of obtaining the building permit and subsequently the execution process. You can safely choose for partial demolitions or for creating voids without affecting neighbors. Also, in this case it is not necessary to obtain the agreement of the neighbors for the purpose of the change of destination.

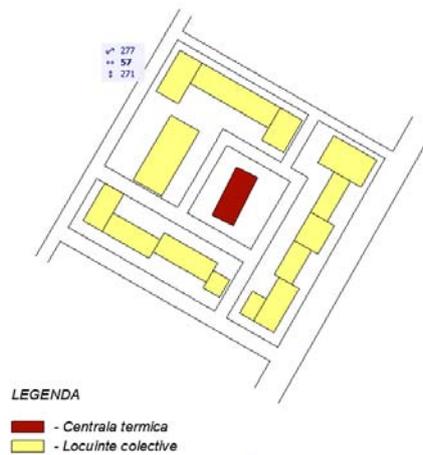


Fig.6: Example of central heating plant location in the quadrant of collective dwellings

b. Central heating plant – partially linked to a building block - the initial project. In most cases of central heating plant linked to a block of flats, the chimney is the one found at the intersection of the two buildings.

b1. Central heating plant – partially linked to a building block on the short side with a chimney.

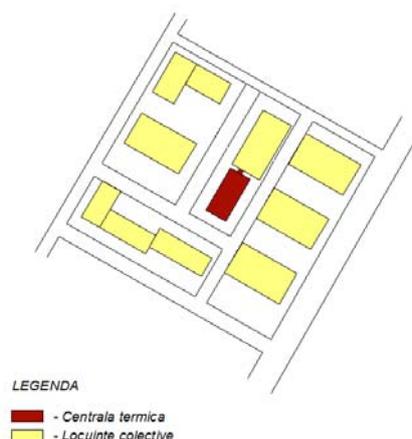


Fig.7: Example of central heating plant location in the quadrant of collective dwellings

b2. Central heating plant – partially linked to a building block on the long side with a chimney.

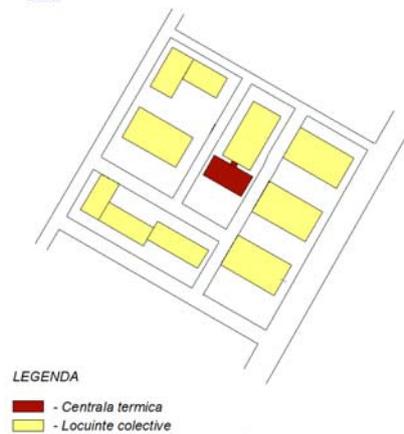


Fig.8: Example of central heating plant location in the quadrant of collective dwellings

c. Central heating plant – totally linked to a building block on one side - the initial project.

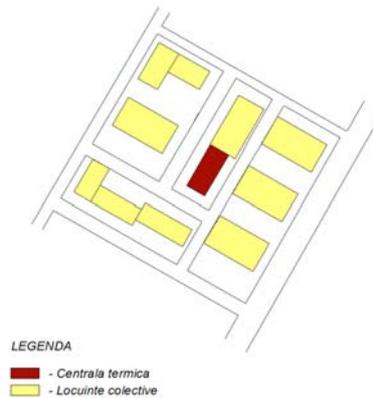


Fig.9: Example of central heating plant location in the quadrant of collective dwellings

d. Central heating plant – totally linked to a building block on two sides - the initial project

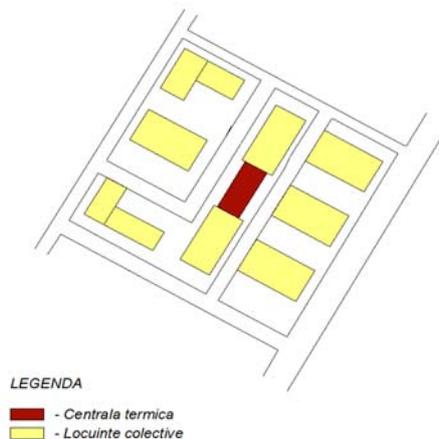


Fig.10: Example of central heating plant location in the quadrant of collective dwellings

The design theme is conditioned by the common walls of the two buildings on which you can not intervene to create voids. The building permit is also conditional upon obtaining the agreement of the neighbors for the purpose of the change of destination.

e. Central heating plant –linked to a private propriety on three sides - the initial project



Fig.11: Example of central heating plant location in the quadrant of collective dwellings

The proposed new function should be chosen taking into account a possible lack of natural light. Also, in this case it is necessary to obtain the neighbors' agreement for the purpose of the change of destination.

f. Central heating plant – linked to a building block by parasitic buildings.

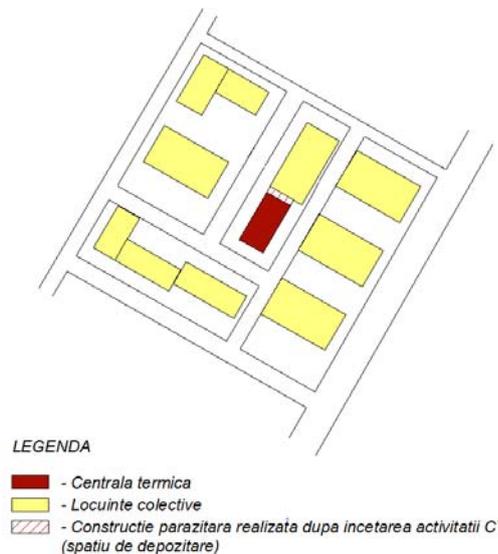


Fig.12: Example of central heating plant location in the quadrant of collective dwellings

The abandonment of buildings inside blocks of flats produces numerous effects, including the sense of lack of ownership that can lead to "self-appropriation". An eloquent example is the case of a thermal power plant in Alba Iulia, where a parasitic closure was built

between the neighboring block of flats and the central heating plant building that blocked a pedestrian alley.



Fig 13:CT10, Alba Iulia, Photo source- personal gallery.

### **3. Results and Discussion**

The potential of a building to have another function, to be transformed to meet current society requirements, can be determined by looking at the methods outlined above and the criteria presented by James Douglas:

- a. The ability to change its function (legally, economically and technically)
- b. The ability to be demolished safely
- c. Expansion capability- horizontally, vertically of within the existing volume
- d. The ability of the interior space to be flexible.[2]

Since these are industrial buildings that are not historical monuments, the criteria presented are essential in establishing the methods of intervention. In choosing the right solution (change of destination or demolition) the advantages and disadvantages of each solution must be analyzed.

Destination exchange has certain advantages as opposed to demolition. Among these advantages are the time until the completion of the works (generally the duration of the interventions on an existing building is shorter than the demolition and the construction of a new building), economic or architectural advantages (maintaining a certain character of the area by maintaining some elements of the old building).

Changing the function of an existing building involves following important critical steps in building a successful project: building analysis, building evaluation and design. This also applies to the transformation of the buildings of the former central district heating stations, in which case each step is decisive in obtaining the best solution from a technical, economic and functional point of view. One can speak of a successful intervention when the new function produces social, economic and physical benefits.[3]

We can also list disadvantages such as structural and functional limitation, economic disadvantages (if the building is badly damaged).

In order to determine the potential of the abandoned buildings belonging to the centralized district heating system to change its function, it is important to analyze the

existing buildings by following certain criteria of essential classification, and the criterion presented in the present paper is urbanistic.

The relationship between the thermal power plants and neighboring lands, as well as the existing buildings in the area, is being studied.

By creating an analysis standard, based on the classification methods of the thermal power plants from the urban point of view, the potential for their conversion can be determined. They may have the ability to change their function (legally, economically and technically), have the ability to be safely demolished (if placed at appropriate distances), they can have the ability to expand - horizontally, vertically, or within the existing volume, or have the ability to be flexible.

#### 4. Conclusions

The main reasons behind the decision to change the destination of a building are financial reasons, historic value, urbanistic indices. In the case of district thermal power plants, the main reasons are financial and urban planning, while the historical value is neglected.

Urban analysis of abandoned district heating stations provides important clues and guides architects and investors in choosing the best intervention solutions.

If there is a need for partial demolition of a wall or chimneys, the situation in which district heating stations buildings are affixed to blocks is one that may pose safety problems.

From an economic point of view, the reduction of the investment costs for the finishing of the facades joining the building blocks is observed. From a legal point of view, it is necessary to obtain the neighbors agreement in order to change the function of a building.

#### 5. References

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