

Site visit assessment report

Policlinic Bitpazar

Location: Skopje

Date of visit: 04.10.2023

Prepared by: Petar Grncarovski, Darko Todorovic

The hospital in Bit Pazar is supplied with thermal energy from the boiler room on liquid fuel - oil, which is located in the basement of the building.

The boilers are different, both are of Greek production, the first is Ecotherm, with a nominal capacity of 581.2kW, while the second is Radioland, with a capacity of 697kW. The boilers are outdated and generally in poor condition. Within the boiler room, there are two headers for supply and return water, connections for



the pipe's branches, pipe lines with circulation pumps. Valves, circulation pumps and insulation in the boiler room are in bad condition and should be replaced.

The boiler room supplies only the subject object of the polyclinic. In the hospital, the heating stops at 5 pm, there are no bed patients. Approximate annual consumption amounts to 55t of oil.

The boiler room is adequately set up and has sufficient surface area for the intended purpose.

The building has a classic two-pipe hot water heating system with lower distribution. Cast iron radiators

with radiator valves and radiator screws have been installed in the rooms of the hospital.

The windows at the hospital were changed about 10 years ago, the fitment is poor so the user faces problems with drafts during bad weather. Last year there was an incident in which a glass portal fell off the wall. The hospital facility facade has no insulation.

The heat pipe is far away from the building, so that option is not realistic, as is the supply of the gas network that would deliver natural gas. The building is located on a plot of land where there is no space to accommodate a new LPG equipment.

From the initially planned measures, it is proposed to replace radiator valves with new ones that have the possibility of installing thermostatic heads in an anti-vandal version, new radiator screws, replacement of insulation on pipelines within the boiler room, replacement of circulation pumps with new frequency-regulated ones (variable flow), as well as the installation of a connection for future installation of natural gas boilers or district heating network. It is also recommended actions on automatic controls in connection with the regulation of the temperature of the supply heating water in accordance with the outside air temperature.

| OBJECT | 1-SK cor | POLIKLINIKA BIT PAZAR | | |
|---|---|-----------------------------------|--|----------------------|
| Location: | | Skopje | Date visited: | 04/10/2023 |
| Activity: | HTH | Polyclinic | By: | Petar Grncharovski |
| No. of objects within: | | 1 | | Darko Todorovic |
| Area, TOTAL [m2]: | | 8000 | Property list: | no.102488 (Center 1) |
| Dist. from gas network: | | 1300m | Estim. cost: | 110000 |
| Dist. from district heating: | | 300m | Estim. cost: | 27000 |
| Estim. heat demand [kW]: | | 1280 | | |
| Contact: | | Zoran Lekic, technical supervisor | 075/358-847; | |
| CURRENT CONDITION | | | | |
| General: | Old facade w/o insulation; new PVC windows | | | |
| Heating system: | | | | |
| - Boiler room position: | underground | | | |
| - Neighbouring facade: | available | | (for possible installation of outdoor gas boilers) | |
| - Boiler: | <i>year</i> | <i>manufacturer</i> | <i>capacity [kW]</i> | <i>burner</i> |
| unit 1 | 2003 | Ecotherm EC-500, Greece | 581 | n/a |
| unit 2 | n/a | Radialand-AR-600, Greece | 697 | n/a |
| unit 3 | | | | |
| - Fuel/Consumption [l/y]: | light oil (EL) | | / 55000-60000 | |
| - Regulation: | manual | | | |
| - Heating units/ number: | cast iron radiators | | / 400, apx | |
| - Heating units valves: | standard - manual | | (w/o temperature regulation) | |
| Altern. energy source: | n/a | | / not sufficient space for LPG equipment in the yard | |
| Remarks: | | | | |
| RECOMMENDATIONS | | | | |
| General: | Energy efficiency measures on the facade and roof (not part of this project) | | | |
| Heating system: | | | | |
| Option 1 | | | | |
| - Boiler room measures | | | | |
| - Boiler room position: | remains same | | | |
| - Boiler room installation: | complete refurbishment of installation with implementation of frequent regulated pumps, new valves and temperature/pressure measuring devices, balancing and control valves, pipes insulation | | | |
| - Regulation: | automatic depending on external/internal temperatures | | | |
| - Preparational works for new boilers installation: | connections for new boilers to be implemented in the boiler room design; existing light oil (EL) boilers remain as main heating source until new boilers are installed | | | |
| Option 2 | | | | |
| - Secondary heating network measures | | | | |
| - Heating units: | dismantle from pipe network, adequately clean and install back | | | |
| | existing manual radiator valves to be replaced with thermostatic valves | | | |
| - Raiser: | valves replacement, balancing and drainage valves to be implemented | | | |
| - Pipe network: | spaces where heating not necessary, pipes to be adequately insulated | | | |
| Option 3 | | | | |
| - New boiler installation measures | | | | |
| - New boiler: | heating substation connected to the district heating system | | | |
| - Back-up heating: | existing light oil (EL) boilers remain as spare | | | |
| Remarks: | in existing boiler room enough space for elements for district heating substation; in case of approach to gas distribution network, possibility of reconstruction of existing boiler room to fulfill the criteria of gas boiler room to be checked. | | | |