

<b><u>Site visit assessment report</u></b>
<b><u>Gerontologic institution "13 Noembri" (Sue Ryder)</u></b>
<b><u>Location: Skopje</u></b>
<b><u>Date of visit: 05.10.2023</u></b>
<b><u>Prepared by: Petar Grncarovski, Darko Todorovic</u></b>

The building of the Gerontological Center 13 November is supplied with thermal energy from the boiler room on liquid fuel - oil, which is located within the complex in a separate building.



The boilers are identical, both are Italian-made with a capacity of 930kW each. The boilers are outdated and generally in solid condition. Within the boiler room, there are a distributor, a manifold, outlets for pipeline branches with circulation pumps. Fittings, circulation pumps and insulation in the boiler room are in poor condition.

The boiler room supplies three buildings within the complex with hot water for heating. The hospital has heating 24 hours a day, due to bedridden patients receiving care. Approximately 275 patients stay in the hospital.

Approximate annual consumption is 130t of light oil.

The building of the boiler room is adequate, it is well laid out and has sufficient surface area for its 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 have been replaced, they are PVC, except in the administration area where the replacement was not carried out. The facility is not insulated. There is a plan for the isolation of the building according to the new project, the realization of which is uncertain.

The facility consumes a lot of domestic hot water for kitchen, laundry and bathroom needs. Heating of DHW is by means of electrical heaters 16pcs.x12kW which cause electricity bills, in which the largest part is spent on heating hot water, to be extremely large, approximately €20,000 per month. There is a lot of room for savings in that field by installing solar panels (not part of EU for Clean Air project) and connecting to a hot water system. Existing boiler with capacity of 3000l fulfills DHW demands.

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 existing boiler house can be accommodating new equipment for LPG or CNG usage. Also there is a possibility to install gas generators for external installation on the facade of the building or inside the boiler room itself if the existing boilers were to be dismantled. Third option is installing combined LPG and liquid fuel burners.

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	6-SK cor	SUE RYDER		
Location:		Skopje	Date visited:	05/10/2023
Activity:	HTH	Gerontologic Center	By:	Petar Grncharovski
No.of objects within:		4		Darko Todorovic
Area, TOTAL [m2]:		9120	Property list:	no. 94700 (G.Petrov 3) 4468
Dist.from gas network:		2400m	Estim.cost:	200000
Dist.from district heating:		2700m	Estim.cost:	245000
Estim.heat demand [kW]:		1459		
Contact:		dr.Salija Ljatif Pertrusovska, director	078/876-900;	
		Goran Andreski MEng, tech.maintenance	070/350-758;	
CURRENT CONDITION				
General:		Old facade w/o insulation; PVC windows except in administration part		
Heating system:				
- Boiler room position:		ground level, separate object		
- Neighbouring facade:		available	(for possible installation of outdoor gas boilers)	
- Boiler:	year	manufacturer	capacity [kW]	burner
unit 1	1995	Eurowarm PREX800, Italy	930	Ecoflam Italy Maior P120ABTC-70-120kg/h
unit 2	1995	Eurowarm PREX800, Italy	930	Ventilator Venterm Croatia 60-120kg/h
unit 3				
- Fuel/Consumption [l/y]:		light oil (EL)	/ 120000-140000	
- Regulation:		manual		
- Heating units/ number:		cast iron radiators	/ 760, apx	
- Heating units valves:		standard - manual	(w/o temperature regulation)	
Altern.energy source:		CNG / space for CNG supply station in the part of yard, need for reorganizing outdoor (to be checked)		
Remarks:		Boilers 2pcs. main+spare; Substation in Sue Ryder; DHW heater 3000lt - 16x12kW		
RECOMMENDATIONS				
General:		Energy efficiency measures on the facade, roof, windows and DHW production (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 in case od outdoor boiler type; 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 vallves to be implemented		
- Pipe network:		spaces where heating not necessary, pipes to be adequately insulated		
Option 3				
- New boiler installation measures				
- New boiler:		installation of gas boilers with dual burner gas/oil alternatively outdoor gas boilers on facade wall		
- Back-up heating:		existing light oil (EL) boilers remain as spare		
Remarks:		possibility if existing boiler room fulfills the condition for usage as gas boiler room to be checked, altern. outdoor gas boilers that are to be installed on outdoor wall are recommended and existing light oil boilers are to be utilized in exceptional cases ex.gas supply interruption, failure on the gas boilers etc.		