

ANNEX2- GALKAYO HOSPITAL ENERGY ASSESSMENT REPORT PUNTLAND, SOMALIA

1. General View of Galkayo Regional Hospital

Galkayo Hospital was founded by the Italians in 1935 and is located at the Centre of Somalia, and on the main road of Galkayo town. The hospital treats generously patients from all the regions of Somalia and some parts of Ethiopia and even as far as Kenya's northeastern province. Galkayo general hospital is a large and complex hospital consisting of different medical and clinical departments, the hospital provides free medical services to a large number of patients from different corners of the town. The hospital also provides a free service to the IDPs, returnees, pastoralist, Ethiopian refugees and minority marginalized clans within the town and its vicinity. The hospital has 500 beds and employs 314 staff comprising nurses, paramedical, internship medical students, guards, cooks, cleaners, etc. The total qualified medical doctors operating in the hospital are 27 doctors. The hospital has emergency ward, OPD, MCH, Maternity, TB section, X-Ray department, surgical, laboratory and 6 rooms for COVID-19 in ground floor of the Isolation wing. The isolation Centre for COVID-19 and other infectious diseases has 90 rooms but it needs to be rehabilitated and connected to electricity. This COVID-19 isolation wing/Centre is a community initiative project, whilst the collected funding was drained off and till today it remains priority number one for the hospital and for the community.



Figure 1: General map of Mudug Regional Hospital (Lat: 6.770388°, Long: 47.427146°)

2. Existing Electrical Infrastructure

In terms of electricity, the hospital solely relies on the local grid and a solar on-grid system of 36.72kWp and a storage of 135.84kWh that was installed in 2014. The hospital receives 4 separate lines from 4 different poles around the hospital that goes to different sections. The solar system currently has some errors, and it was not properly maintained. The system was intended to work in a manner that the power generated from the solar system is coupled with the power from the local grid so that less electricity is consumed from the grid. The hospital has a section that is being managed and controlled by MSF and its electricity bill for that section is fully covered by the said organization. Since NIS team were concerned and interested in the section of the hospital that deals with Covid-19 patients, the team focused on that section. This section has 5 blocks that solely deals with corona patients.

Currently, this section of the hospital receives power from the local grid, coupled with the existing solar system, although the solar produces little amount of power as it needs maintenance and the batteries, which are lead acid type, are dead and needs to be replaced/removed.

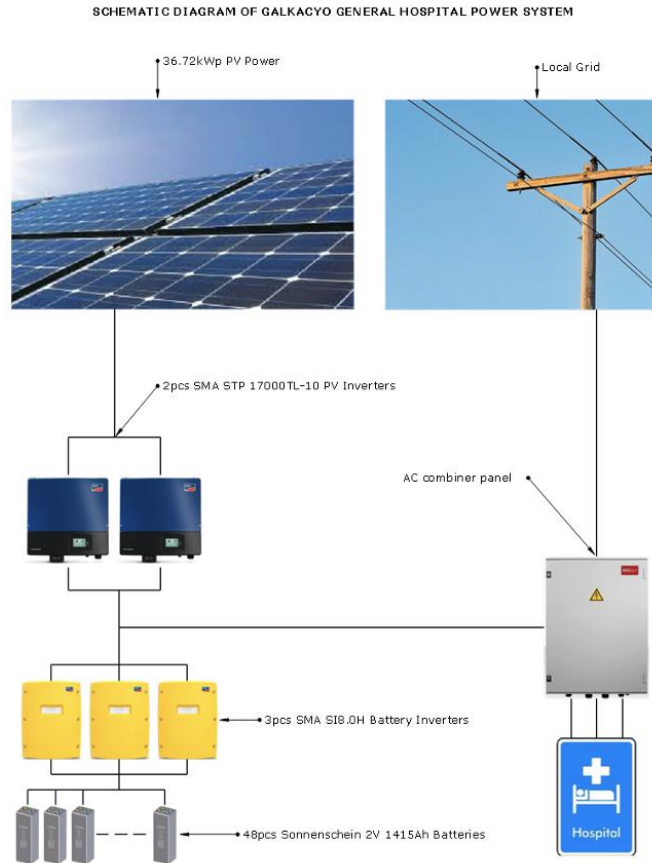


Figure 2: Schematic Diagram Existing Electrical system

3. Proposed PV Installation Area

The hospital does not have much space on the ground and the management suggested that the PV panels to be mounted on the roof of the 5 building blocks for the covid-19 Centre. Each block measures 18m by 10m. The distance from the proposed PV mounting area to the location of the current inverters is around 80m.



Figure 3: Proposed roof

Required PV System Solution

1. The required system is a grid connected PV system of 75 kWp with 85 kWh lithium-based energy storage that to be coupled with the existing 36.72kWp PV system.
2. Rewiring DC cabling of the existing installed PV modules of 47 36.72kWp and connect this together with the new system.
3. Replacement of inverters by new correctly sized and state of art technology. This is to avoid future issues on either communication or performance of the system
4. Solar modules will be roof mount type and fixed by an aluminum structure fixed to concrete floor. The proposed area of each roof is measures 18x10 meters respectively – refer figure 3 in the above.

1. Photos of existing hybrid solar PV System - Galkayo Regional Hospital

