



AOS Consulting Engineers for New Orange Data Centre and Office, Botswana

Orange Botswana appointed the professional team of AOS-GBK to build a new data centre and offices on Plot 74911 at the Botswana Innovation Hub Technology Park. The data centre will be used to host existing and future telecom and IT equipment.

The request for proposal (RFP) initially required an office space for 30 employees and a 600 m² 'white space' with auxiliary service and functions. Bidders were to provide two proposals:

- single storey with provision for an additional floor in the future
- double storey.

Subsequently, the proposal transformed into a single-storey building with office space for 25 employees and a 200 m² 'white space' with auxiliary service and functions.

Initially, only 119.98 m² of the 'white space' with a Meet-Me room of 42.14 m² would be fitted out with the following:

- access flooring
- suspended ceiling
- mechanical and electrical services to ensure a functional data centre for the telecom and IT equipment.

Various passive design options were investigated and implemented to ensure that there is no abnormal heat transfer and also to provide a reduction in the heat load required for cooling the data centre space.

The HVAC system complied with the following principles:


- an ASHRAE Class A1 environment for the IT equipment and services
- energy efficiency
- lowest possible capital and operational costs
- reliable and trouble-free installation.

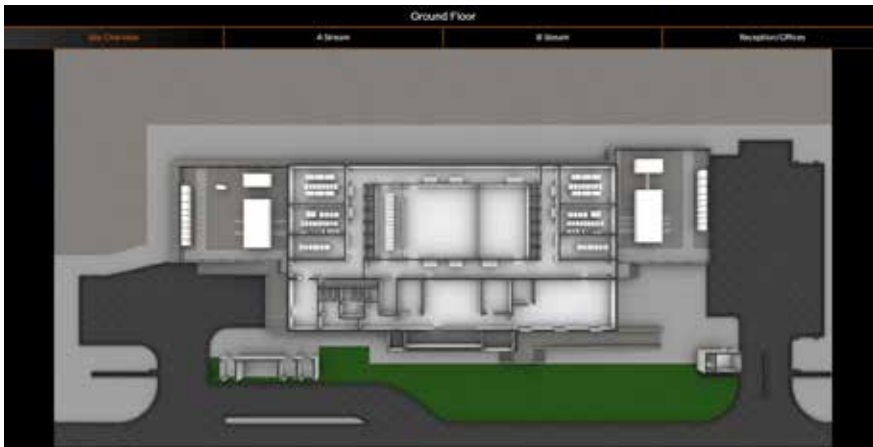
The units selected for this project are all air-cooled units and not dependent on a water supply. Additionally, the Mitsubishi PFD units employ inverter-driven compressors

and not digital scroll compressors as per the norm. Minimal (if any) humidification is required, which saves additional water.

The system uses high-efficiency inverter compressors and DC fan motors. In addition to this, the system is equipped with a heat interchange circuit, which provides additional subcooling, improving the capacity of refrigerant delivered to the expansion device.

It is notable that the outdoor unit has a guaranteed ambient operating range of between -20°C and +52°C. The system is also equipped with an electrical noise filter circuit protecting the electronic circuits of the system. This means that no additional third-party protecting devices are required. The electrical noise filter circuit protects against over- and under-voltage conditions, and is equipped with an auto phase correction facility. The system is also programmed for a quick auto power recovery.

The project achieved Tier III Certification from the Uptime Institute in March 2020. 



PROJECT TEAM
 Client: Orange Botswana
 Lead consultant: AOS-GBK
 Mechanical and fire: AOS Engineers
 Architect: GBK Architects
 Electrical engineer: Onezero Consulting
 Contractor: Concor

