

Praava Health's PCR Clean Room

Location: Bangladesh

Year: 2020

Engineer: Clare Luo

Airwoods Representative: Jonny Shi

Project Overview: PCRLab HVAC System Design & Supply

To face the challenge of rapidly growing Covid-19 confirmed cases in Dhaka, Praava health commissioned a PCR lab expansion of its Banani Medical Center to create a better testing and diagnostic environment in 2020.

The PCR lab contains four rooms. PCR clean room, master mix room, extraction room and sample collection zone. Based on the testing process and cleanliness class, the design requirement for room pressures are following, PCR clean room and master mix room are positive pressure (+5 to +10 pa). The extraction room and sample collection zone are negative pressure (-5 to -10 pa). The requirements for room temperature and humidity are 22~26 Celsius and 30%~60%.

HVAC is the solution to control indoor air pressure, air cleanliness, temperature, humidity and more, or we call it building air quality control. In this project, we choose FAHU and Exhaust Cabinet fan to archive 100% fresh air and 100% exhaust air. The separate ventilation ducting may require based on Biosafety cabinet and room pressure requirement. B2 Grade Biosafety cabinet has built-in full exhaust system. But require separate ventilation ducting to archive room's negative pressure control. The A2 Grade Biosafety cabinet can design as return air and not require 100% exhaust air.

The PCR lab classified ISO 7 standard, FED STD 209 E equivalent of class 10,000. Particles smaller than 0.5 microns are not taken into consideration. The concentration of particles of $\geq 0.5 \mu\text{m}$ and above should be below 352,000, for particles of 1 micron and above 83,200 or lower and for particles of 5 microns and above 2,930 or lower. The estimate cost of the project is 35,000 USD.

