



Rebecca S. Allen
Mechanical Option

The Palestra Building
London, England



Mechanical Systems Existing Conditions Report

I. Executive Summary

The purpose of this report is to examine and summarize the existing mechanical systems designed for the Palestra Building in London, England. The design team's main objectives were to create an iconic office building in the south of London that was BREEAM Certifiable (The Building Research Environmental Assessment Method – the UK's equivalent to the LEED program) yet flexible enough in its design to accommodate its tenants both currently and in the future. The ability to maintain the desirability of the rentable office space is critical to the project's financial return to its investors and owners.

This report will elaborate on the design conditions (indoor and outdoor), the heating and cooling loads the systems were designed to meet, as well as the schedules and schematics of the main mechanical equipment.

The estimated heating demand of the building, including preheat and spare capacity, is 1796kW. The cooling load was calculated to be approximately 3871kW, including almost 20% spare capacity. Based on these calculations and the design criteria set by the project developer centralized chiller and boiler plants were installed in coordination with a 4 pipe fan coil system. The chiller plant consists of seven chiller units of equal size with the seventh serving as a reserve. The boiler plant consists of four gas-fired boilers of equal size with the fourth unit also serving as spare capacity.

In addition seven air handling units will be installed throughout the building servicing the office spaces, corridors, water closets, reception area, and plant rooms. This system has allowed for a significant percentage of growth to account for all equipment brought in by the tenant and the possibility of additional fan coil units being added.

Overall the mechanical systems are very well designed and have achieved a high level of flexibility, desirability, and redundancy. The choice to use gas heating versus electric also gained several additional 'Green' credits, allowing the project to go on to achieve a 'Very Good'



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BREEAM rating. The largest critique of the system would be the lack of humidity control. Due to the moderate climate found in London, humidity levels are rarely a problem for three-fourths of the year. However, those levels can occasionally drop below 35% during the winter months. While there are accommodations to allow for the installation of humidifiers in the air handling system, there will be no direct control of these levels as currently designed. This could be an excellent opportunity to look into the feasibility of a Dedicated Outdoor Air System for the Palestra Building.

It is also important to note that the Palestra Building is still under construction, so all load calculations and energy rates are based on ‘Good Practice.’