
Mechanical Technical Report 2
Building and Plant Energy Analysis Report
October 27, 2006

Executive Summary

This report analyzes the Straumann USA facility to determine the number of expected LEED points generated and compliance with ASHRAE Standard 90.1-2004. A load and energy analysis is also performed, and compared with the design loads, and yearly energy data.

Straumann USA was not designed to be a LEED certified building but it did meet the requirements of 4 LEED points. However, the facility only met 3 of the 7 prerequisites. Several categories such as Sustainable Sites, Materials & Resources, and Water Efficiencies might have been able to produce points, but since LEED certification was not a goal of the project, such requirements were not pursued.

Overall, Straumann USA does not comply with the requirement of ASHRAE Standard 90.1-2004. However, there were several sections where the building did fully comply including the service water heating, power, and lighting sections of ASHRAE Standard 90.1. The building envelope section did not comply based on the vertical fenestration U, and SHGC values. Fan power limitations, and insulation thicknesses prevented section 6, HVAC systems, from complying.

The load estimate and energy cost summaries are summarized in Table 1.1. The cooling load and ventilation rates are reasonably comparable to the design values. However, the estimated heating load is significantly different, and could be attributed to the estimated distribution of lighting loads to the space and plenum. Since the heating loads are quite different, this also results in a large difference in fuel costs which serves only heating loads. The electricity costs estimated are actually close to those actually seen by Straumann USA. The slight variation could be a result of higher lighting and power requirements per square foot, or the application of the utility rates to the estimated load.

Annual Comparisons		
	Estimated	Design
Supply Air (CFM)	260992	282183
Cooling Load (MBH)	9388	8088
Heating Load (MBH)	1076	2786
	Estimated	Actual
Fuel Costs	\$19,277	\$75,000
Electric Costs	\$673,710	\$622,650

Table 1.1 Annual Load, Ventilation, and Cost Comparisons