

Energy profile

1125 Howe Street



1125 Howe Street is in the heart of downtown Vancouver. Built in 1985, this 13 storey office tower uses a central, gas-fired boiler plant to heat hot water duct coils that supply heated, distributed air throughout the building. Early in 2001, Don Topping, Building Superintendent, and Alan Cumberlidge, Maintenance Supervisor, became quite concerned with the longevity of the boiler plant. There were signs of failure due to corrosion and excess carbon build-up due to inefficient operation, and it seemed that the operating and fuel costs were climbing even higher. Don and Alan brought their concerns to the property manager, Karen Clarke of Boulton Realty Ltd., who informed the building owners of the potential problems lurking in the penthouse mechanical room. From an operating perspective, the owners knew that they must be proactive in pushing forward with a replacement strategy before the maintenance and fuel costs became prohibitive or the equipment failed altogether. Karen was instructed to research options and report back; this she did and the owners responded by taking action!

Actions

Of the quotations that were received for this project, most of them suggested similar equipment to what was already there. The existing boiler was a 3,200,000 Btu/h heater of copper tube design which typically supplied water at a temperature of 180°F to 200°F. This system included a three-way mixing valve that was used to modulate the water temperature to the fan coil, depending on load requirements. Two large circulators were piped in parallel to ensure enough water flowed through the coils to maintain the supply duct temperature. All of these components were controlled using a 1985 vintage, electronic “DDC” (Direct Digital Control) system operated via a central computer.

Only one quotation came back with a totally different perspective. Chapman Burner and Heating Service Ltd. suggested installing a 1,800,000 Btu/h, high efficiency, all stainless steel, condensing boiler plant which would utilize cooler supply and return water temperatures

to the existing duct coils, removing the mixing valve and reducing the number of circulators to just one. Additionally, the existing “DDC” controller would need re-programming to different operating parameters. The new hot water supply and return temperatures would be reduced to 104°F and 82°F respectively. At first, Karen and the owners were skeptical of Chapman’s proposal. They wondered if the new temperatures would satisfy the heating needs of their tenants, whether the new boiler would last and how much energy they could save with this concept. Chapman provided the technical back-up and assurances to support his theories and assured the owners of this concept’s validity. The owners accepted the proposal and installed Chapman’s system in the fall of 2001.

Results

After two years of operation, the new boiler plant is still in top notch form and has no difficulty providing heat to the tenanted space at 1125 Howe Street. Don Topping and Alan Cumberlidge agree that operating the new plant is easy and that they have better control in maintaining operational parameters without the risk of plant failure. So, what of energy savings? Karen Clarke and the owners of this property are very pleased with those results — and report a two year average of 38%!

Conclusion

Energy savings in commercial high rise buildings can be achieved by approaching the task from “outside the box”. At 1125 Howe Street, the owners and managers did just that and reaped the rewards. Their success could work for you too.

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