



Bell & Gossett Keeps Amazon Bank Cool

Located in the heart of the Amazon, Brazil's central bank in Brasilia decided to modernize the building's cooling system. Because the building's operations, including computers that run the country's currency exchange operations are so important, pumps and control systems from ITT Industries' Bell & Gossett unit were chosen to run the new cooling system.

Banco Central do Brasil, one of the country's tallest commercial structures, is among Brasilia's finest showcase facilities - its headquarters employs approximately 2,900 persons and manages the country's domestic and foreign financial operations. The Central Bank also houses all currency reserves. Built in 1977 and operating since 1981, the black glass and concrete structure piercing Brasilia's skyline, includes 23 floors above ground and four stories below ground.

Recently, facility management personnel at the nearly 1.2 million square foot building decided that the facility's electrical systems and HVAC mechanical equipment needed upgrading. The improvements had to ensure that reliable cooling of the bank's mainframe computer would continue. In addition, the team wanted to increase the level of comfort and security of the 2,900 employees working in the facility efficiently and economically.

The heart of the project was replacing seven vintage chillers with four, new, highly efficient chiller. Each chiller has a 625 ton capacity and operates on 63 percent of the kilowatt hours required to run the old chillers. This very efficient plant includes Bell & Gossett pumps and Triple Duty Valves.

This chilled water hydraulic system is composed of a primary and secondary loop. In the primary loop each pump is responsible for maintaining constant the water flow through its associated chiller - that is - for each chiller there is a primary pump. Four new chillers and five new Bell & Gossett VSCS pumps with 25 horsepower motors (with one being a stand-by pump) were installed.

The other loop in the system is referred to as secondary loop. In this particular case the secondary loop is composed of two circuits. Each one of these circuits supplies chilled water to a different area of the building. One circuit is for the main frame computer facilities and another circuit is for the rest of the building.

The Bell & Gossett pumps used in the secondary chilled water loop are responsible for providing chilled water to every operating air-handler. These air handlers are equipped with two-way control valves, which will modulate the amount of chilled water through the coil as a function of the

room temperature, by means of an electric actuator hooked up to a temperature sensor located in the return air or in the room.



The daily financial activity at Brazil's central bank is so critical to the country's currency exchange operations that the reliability of its systems - including the cooling system, must be guaranteed.

These two-way control valves have the characteristic to induce in the secondary loop, flow variations on the chilled water demand according to the thermal load acting on each and every coil.

Due to this characteristic, these secondary chilled water pumps are driven by a Bell & Gossett adjustable frequency drive that can modulate the rotation of the pump as a function of the total thermal load acting on the secondary circuit.

The secondary chilled water pumps in circuit 1 for the main frame facilities are two Bell & Gossett VSCS units with 25 horsepower motors. Circuit 2 is powered by three Bell & Gossett VSCS units with 100 horsepower motors.

One of the pumps in each secondary circuit is a stand-by unit. Therefore, there are two pumps which will run in parallel in Circuit 2.

Bell & Gossett also supplied the cooling tower water pumps, which operate much the same way as the primary pumps. These five Bell & Gossett VSCS pumps with 60 horsepower motors maintain a constant flow of water across the chillers' condensers to the cooling tower and back to the chiller.

According to Eduardo Gudín of HTE Equipment in Rio de Janeiro, "The fact that the new Chilled Water Plant had to be prepared without interruption of the old one imposed the need to have all new equipment installed in a very restricted area near the old plant." Gudín continued that, "The use of VSCS pumps made it possible to do just that due to its design where the equipment layout can be optimized to occupy allot less space than a conventional end-suction pumps layout would."

The new chiller plant was mounted without interruption of the old one. Once mounted, the change over from the plant to the new one was done within minutes.

In terms of energy savings, every VSCS pump selected for this job showed a 10 to 20% increase in efficiency over the competitors' pumps. Gudín noted that, "therefore, not only were the space limitations a great factor in choosing B&G, but the VSCS efficiency also contributed to the overall goal of the retrofit."

The application engineer worked together with the contractor from the very early stages of the project design in order to provide the solution that would satisfy the job's tough requirements on space and efficiency. Since no other pump manufacturer could provide what was necessary for this job, Bell & Gossett VSCS pumps were selected as the solution for this project.



Bell & Gossett equipment was chosen for the cooling system upgrade to Brazil's central bank because of energy and space efficiency.