

GSA FEDERAL CENTER

In order to comply with an executive order to reduce energy consumption in all government buildings, the General Services Administration's (GSA) Federal Center at 4300 Goodfellow Boulevard, St. Louis, Missouri, turned to Air Masters Corp., a St. Louis-based mechanical contracting firm, to install an Auto-Matrix *Energy Management and Control System (EMCS)*. The Auto-Matrix system accommodates more than 7,000 points of monitoring and control which regulates room temperatures; manages the operation of all heating, ventilation, and air-conditioning (HVAC) equipment; and adjusts the lighting throughout the Federal Center's tree-lined campus of twenty-five two-story buildings. The Federal Center is the second-largest facility in the General Service Administration's (GSA) Region Six and accommodates approximately 4,000 workers daily. The buildings were originally constructed as an ordnance plant in the early 1940s, then converted to office space during the late 1960s.

The *Direct Digital Control (DDC)* system, procured by the GSA in several stages over a five-year period, has given the buildings in the 1.6 million square-foot complex a state-of-the-art climate control system that minimizes energy usage while maximizing the satisfaction of tenants from a variety of federal organizations. Occupants include representatives of the US Army Aviation and Troop Command, the Veterans Administration, the US Department of Agriculture, the US Department of Defense Finance and Accounting Services, the Social Security Administration, and the GSA.

Utilizing various digital control sequences, the Auto-Matrix system starts, stops, and controls HVAC equipment according to weather conditions and tenant-specified comfort levels. Along with controls energy management functions, the EMCS provides diagnostic information based on factors relevant to energy consumption, such as outdoor air quantities. The *DDC* system uses fully-distributed intelligence for all control functions. Each of the more than 600 VAV and fan terminal boxes use an Auto-Matrix TC1 controller for zone temperature control. Each air handler has an RX1, GX1 or GC1 controller allowing it to operate independently. Unit heaters and exhaust fans are activated by unitary controllers located strategically in each building and are networked via twisted pair cable to the local SAGE panel.

More than 1,000 unitary devices have been implemented to control the HVAC equipment from the single-unit level. Global functions, such as coordination of chillers with air handler operations, takes place at the SAGE level. The SAGE panels coordinate higher-level functions and provide user-friendly, menu-driven systems for assessing the HVAC data for each building. All data is routed across the facility's Ethernet LAN for access from all operator terminals. Using the Auto-Matrix *DDC* system, the Federal Center maintenance staff and management are able to anticipate and respond quickly to any problems arising within the HVAC system. The system also records trends in the tenant after-hours usage patterns, allowing the GSA to bill tenants for extra energy consumption. Additionally, the system helps GSA control energy costs by "remembering" to turn-off lights and heating or air conditioning during the hours when spaces are unoccupied.

As the federal government reduces staff and expenses, the Auto-Matrix *EMCS* allows Air Masters Corp., the Federal Center's building maintenance and operations contractor, to monitor all buildings efficiently and ensure that precise temperatures are maintained.



