



TEKFEN TOWER | CASE STUDY

Tekfen Tower: a benchmark “green” building for Turkey

Tekfen Tower is a benchmark building for Turkey, in terms of both its “green” performance and superb facilities for tenants. Commissioned in 2003, the development comprises a 26 storey tower and an adjoining low-rise construction, together providing a total indoor space area of 80.000 m².

Tekfen Tower was developed by Tekfen Holding A.S. (“Tekfen”) as the first “Class A” construction in Turkey to be built to ISO 9001/2000-OHSAS 18001 standards.

Tekfen is a Turkey-based holding company active in various sectors, such as construction, agriculture, finance and real estate. Tekfen Tower was developed by its subsidiary Tekfen Real Estate Development Group. It was constructed by another subsidiary, Tekfen Construction & Installation, and is managed by a third, Tekfen Tourism and Facility Management.

The office accommodation in Tekfen Tower is occupied by various companies including several Tekfen subsidiaries, as well as tenants such as Deutsche Bank, Citibank, McKinsey, Mitsubishi, Pepsi, and the Canadian and Japanese Consulates. The building also houses a cafeteria, conference hall, fitness centre, supermarket, promenade terrace, cocktail bar and rentable storage spaces.

BACnet brings complex systems together

It was vital to Tekfen that this benchmark “green” building included the best possible building management system (BMS) to control its first-rate HVAC plant. “We selected BTS (Bina Teknolojik Sistemleri) which has exceptional expertise in designing and installing building automation systems, and Alerton which provides excellent BMS products and technology,” explained Mehmet Erkan of Tekfen, the technical manager for the project. Tekfen appointed Ersa Engineering to design the HVAC system and for Sönmez Metal Co to construct the HVAC plant.

In addition to monitoring and controlling the automated HVAC and plumbing systems, the Alerton BMS, provided by BTS, monitors the chillers, the fire and smoke control system, the energy automation system and elevator automation system. All these communications are via BACnet standard protocols.

BTS explained that Tekfen Tower’s HVAC system was comparatively complex, to satisfy the very high environmental standards set by Tekfen. “For example, it has over 650 fan powered VAV controls, which was a ‘first’ in Turkey,” said Hakan Ozbek of BTS. “There are 870 parallel fan-powered VAV boxes, 22 AHUs, 44 fans and 82 pumps; this degree of complexity was



unusual for 2002/3, when the system was installed. Actually, it is still one of the best installations in every aspect and is recognised as an excellent reference building by most of the professionals in the Turkish construction industry."

Tekfen's high standards

The HVAC and BMS in Tekfen Tower uses high performance strategies to enhance such criteria as energy saving, water efficiency, reduced CO2 emissions, improved indoor environmental quality and stewardship of resources.

"The Alerton BMS meets very high standards," explained Mehmet Erkan of Tekfen. "These are ASHRAE 90.1, ASHRAE 62.1 and ASHRAE 55."

"ASHRAE 90.1 lays out the standards for energy efficiency. Some of its key requirements include: zoned thermostatic control, dead band control, setpoint overlap restrictions, timer control, automatic shutdown, setback control, optimum start control, zone isolation, stair and shaft vent control, gravity hood, vent and ventilation control, various damper controls, various humidification and dehumidification control, freeze protection and snow/ice melting. The standard states the BMS should also provide economizer control, simultaneous heating and cooling limitations, variable air volume (VAV) air handling unit (AHU) static pressure setpoint reset control, water temperature setpoint reset control, and fan speed control. The BTS/Alerton system provides all these and more."

"The requirements of ASHRAE 62.1 (indoor air quality) include ventilation system control, relative humidity control, ventilation dynamic reset control and outdoor airflow verification. In addition, the Alerton BMS, provided by BTS, meets ASHRAE 55 (thermal environmental conditions for human occupancy) which refers to air temperature control, humidity control and temperature drift or ramp."

Tekfen Tower benefits other projects

Mehmet Erkan of Tekfen is delighted with the performance of Tekfen Tower's HVAC system. "It was the first Class A building in Turkey. Since we were able to meet such high standards with the Alerton system, we decided to use Alerton in two later projects. The first one, the first LEED GOLD certified core & shell office building in Turkey, was commissioned last year. Our latest project, which is designed to be a LEED GOLD certified office building, will be commissioned by the end of this year."



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