Media briefing

Burj Dubai – The Sky is No Limit

Imagine a building that is twice as high as the Empire State building and you will have a measure of the Burj Dubai tower, a glass and steel skyscraper in the United Arab Emirates that will soon be the world's tallest building.

By the time Emaar Properties completes the $1-billion project in 2008, the building will rise above the Sears Tower in Chicago, Malaysia's Petronas Towers and Taipei 101 in Taiwan, setting a new world benchmark for architectural and engineering design.

Burj Dubai's power needs will be equivalent to those of a small town and ABB's job is to ensure the reliable delivery of that electricity.

The tower will have peak demand of an estimated 36 megavolt ampere (MVA), which is roughly the amount of electricity needed to power 4,000 households. At peak cooling times, the Burj Dubai will need to draw enough power to match the cooling capacity of 10,000 tonnes of ice per day.

For that, the tower is equipped with its own substations, where the voltage of electricity from the utility is lowered to a level necessary for its safe delivery to consumers. Such systems rely on switchgear, which switches and interrupts devices that can turn current on and off so that electrical equipment can be isolated for maintenance, repair or to clear electrical faults.

Compact switchgear

ABB's contribution includes 50 gas-insulated switchgear units. The robust, lightweight and compact ABB switchgear is well-suited to life in a high-rise, offering long service and taking up little space.

ABB is also supplying 72 Resibloc distribution transformers, equipment used to regulate the supply of small amounts of power directly to residences. These 72 units were designed specifically for Burj Dubai tower with a flexible enclosure, to fit into a compact space.

Resibloc transformers are made of pure epoxy resin reinforced with glass fiber rovings, or threads, an enormously strong material that can withstand extreme mechanical stress and thermal shock.

In addition, the tower uses ABB low-voltage switchgear to send power to all parts of the building, including 37 main distribution boards with electronic circuit monitors, 442 sub-main distribution boards and 1,319 final distribution boards. All equipment was designed and assembled by ABB's subsidiary in Dubai using European components.

Keeping cool

Reliable heating, ventilation and air conditioning (HVAC) is an essential function in a country where July humidity reaches 90 percent, the air temperature exceeds 49C, and weeks of blazing sun turn even the sea a soupy 38C.

Keeping life comfortable in the Burj Dubai tower are ABB's variable frequency drive panels, consisting of ABB variable-speed drives, designed to control air-handling units, exhaust fans, booster pumps, chilled-water pumps, supply and return air fans, smoke-gas fans and fresh-air fans.

The introduction of a dedicated ABB drive for heating, ventilation and air conditioning (HVAC) applications is a significant milestone in the development of alternating current (AC) drives. The innovation features a user interface as simple to operate as a mobile phone and direct, understandable instructions in clear text.

Top monitoring and control system

Watching over the smooth operation of all the electrical equipment is another ABB contribution, a state-of-the-art power monitoring and control system known as MicroSCADA that integrates unit substations at various levels of the building.

Supervisory control and data acquisition (SCADA) systems have been around since the 60s, and consist of a network of computers, software, and special hardware to gather and display information and provide operational control of plant and equipment.

ABB's MicroSCADA technology offers immediate access to real-time information as well as easy connectivity to other systems. MicroSCADA Pro based systems are designed for local and remote control applications in both electrical and non-electrical processes.