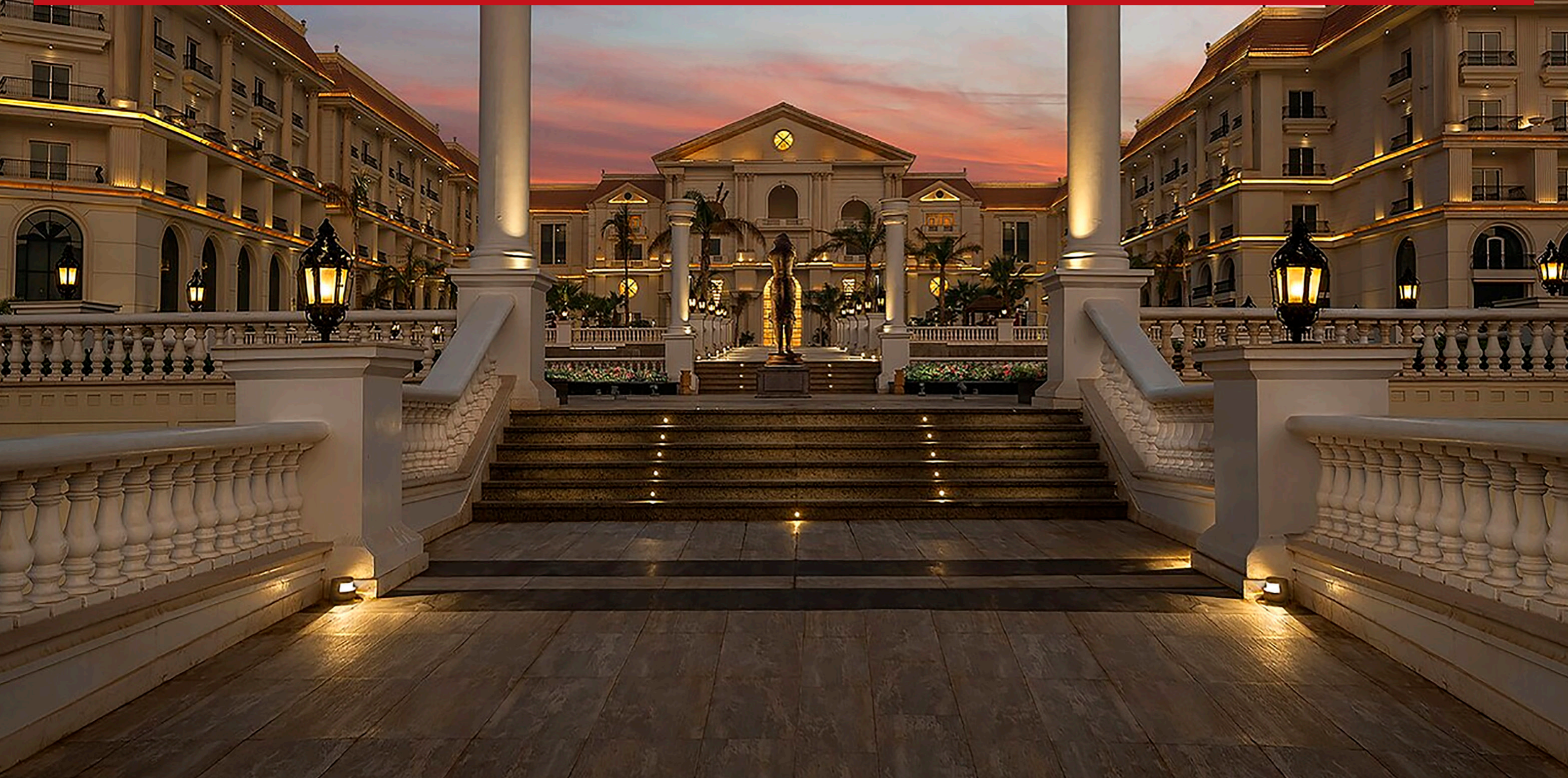


Almasa Hotel enhances HVAC energy efficiency with Danfoss valves





Located around 45 kilometres east of Cairo in the New Administrative Capital of Egypt, the 5-star Almasa Hotel has joined forces with Danfoss to improve the energy efficiency of its heating, ventilation and air conditioning (HVAC) system.

Developed by the Administrative Capital for Urban Development (ACUD), which is owned by the Egyptian military and the Ministry of Housing, the new smart city forms part of a larger initiative called Egypt Vision 2030. One of the major reasons for the undertaking of this mega-project is to relieve capacity and congestion in Cairo, with a view to delivering efficient public services, ecosystem services and personal development opportunities to all its residents. The property offers a range of amenities, including one of the largest convention centres in the Middle East and Africa, an artificial beach area, and more.

As with any hotel, air conditioning is extremely important to the property in Almasa, all year around, to allow its guests to enjoy their stay in optimum comfort, both in their private rooms as well as all the main communal facilities.



The challenge: providing guests with improved room comfort

The purpose of an HVAC system is to maintain the comfort and safety of building occupants, whether this be within a residential or commercial building. Heating and air conditioning components help to control the indoor climate and allow for proper airflow.

“HVAC systems can contribute an average of 50 percent to energy costs and thus provide an excellent opportunity for optimisation,” explains Emad Anwar, Country Sales Manager of Danfoss Climate Solutions (DCS). “The resultant reduction in energy consumption and energy efficiency gains present ‘low-hanging fruit’ for organisations to increase productivity, decrease running costs, and thus improve the bottom line, while also helping to combat climate change.”

When it comes to the hospitality sector, the optimisation of HVAC solutions can provide a competitive advantage towards reduced expenses and improved guest experience quality, allowing for a safe, comfortable and healthy stay. In line with these potential benefits, the Hotel wanted to be able to provide its guests with improved room comfort by delivering desired flow in all conditions. Aside from improving the hotel’s HVAC system’s process, the client was also looking to enhance energy efficiencies as well as sustainability, and improve Return on Investment (ROI).



Solution:

Danfoss successfully beat out several competitors in order to install around 650 Pressure Independent balancing and Control Valves (PICVs), which are specifically used for HVAC heating and cooling applications.

The engineering firm introduced its 'Green Restart' initiative in early 2021, with a view to restarting global economies that have been negatively affected in the wake of the COVID-19 pandemic, fuelling growth while also heralding climate action by investing in a low-carbon world.

"Buildings are responsible for 40 percent of global energy use, making them a crucial starting point for the Green Restart," says Anwar, "and one of the benefits of going green is a potential 30 percent reduction in energy use through modern HVAC systems.

"For the Hotel located in Almasa, the starting point was identifying that the opening and closing of valves, depending on the need for heating or cooling, cause continual flow and differential pressure changes. Without proper measurements, these systems can suffer from uneven heat distribution and poor energy inefficiency, and they are also difficult to commission."



According to Anwar, Danfoss' Pressure Independent balancing and Control Valves (PICVs) provide the best and simplest solution to solve these challenges.

"Danfoss is the market leader in pressure independent control technology, with vast experience producing reliable and precise automatic control solutions. Independent research institutes determined that the Danfoss AB-QM provides the best control performance compared to other pressure independent control valves on the market.

"The Danfoss AB-QM PICV helps save time during implementation, decrease maintenance and save energy both during renovation or designing for a new building. The AB-QM valve is able to cut energy consumption from HVAC by between 20 and 50 percent.

"Danfoss' technical prowess and expertise within the valve area were two key factors in the company's successful contract win," he explains. "Our KV value for all valve settings, which expresses the amount of flow in a regulating valve at a given valve position with a pressure loss of one bar, was also important in our client's decision-making process, as was our excellent reference list, and our strong partner, PETROKIMA."

"The Hotel was looking for a sustainable system that could provide the desired flow in all conditions at all loads, while delivering energy savings. And it is here that we believed Danfoss, a long-term partner of PETROKIMA, would be able to help make a real difference," stated Ahmed Aman, Board Member, PETROKIMA, an Egyptian Danfoss partner. "Combining high accuracy, durability and user-friendliness with ease of implementation, Danfoss' PICVs provides perfect balance, and compact design for HVAC control!"



Results

Following intensive discussions, technical seminars and the provision of the pressure drop graphs at different valve opening percentages for all sizes, Danfoss has supplied and installed the reliable, robust PICV solution at the property.

“Benefits of the project included a shorter commissioning time,” states Anwar. “This shorter handover phase, lower installation costs and improved running costs all contribute to a faster ROI time frame, which will be less than three years.”

“Aside from this, hotel guests are experiencing improved indoor comfort thanks to stable room temperatures, which was one of the two stated objectives. The hotel itself is experiencing energy savings through enhanced energy efficiency and achieving the required Delta T, which represents the difference between return air temperature and supply air temperature. These energy savings will allow for an increased ROI, thereby achieving the desired result on the second challenge.

“Energy efficiency is a critical part of achieving carbon neutrality and by embracing more efficient solutions, as the Hotel has done, the overall requirement for energy is reduced. This then decreases the need for additional capacity and greater investment in renewables, paving the way for the most cost-effective, efficient way towards a low-carbon world,” he concludes.

About PETROKIMA

Building technologies expert, PETROKIMA was founded in 1977 by Eng. Sami S Aman. With a strong focus on the implementation of integrated building management systems, including control system solutions, fire safety and security solutions, PETROKIMA has an excellent reputation in third-party integration. The company has enjoyed a lengthy partnership with Danfoss of more than 12 years.

