CASE STUDY

OKO TOWER

MOSCOW, RUSSIA

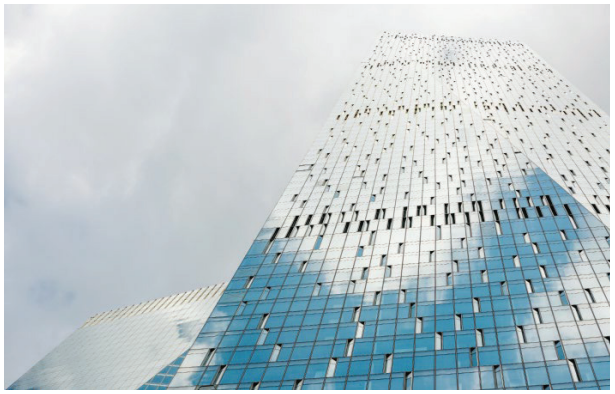
ASHRAE ILLINOIS CHAPTER
EXCELLENCE IN ENGINEERING AWARD 2016

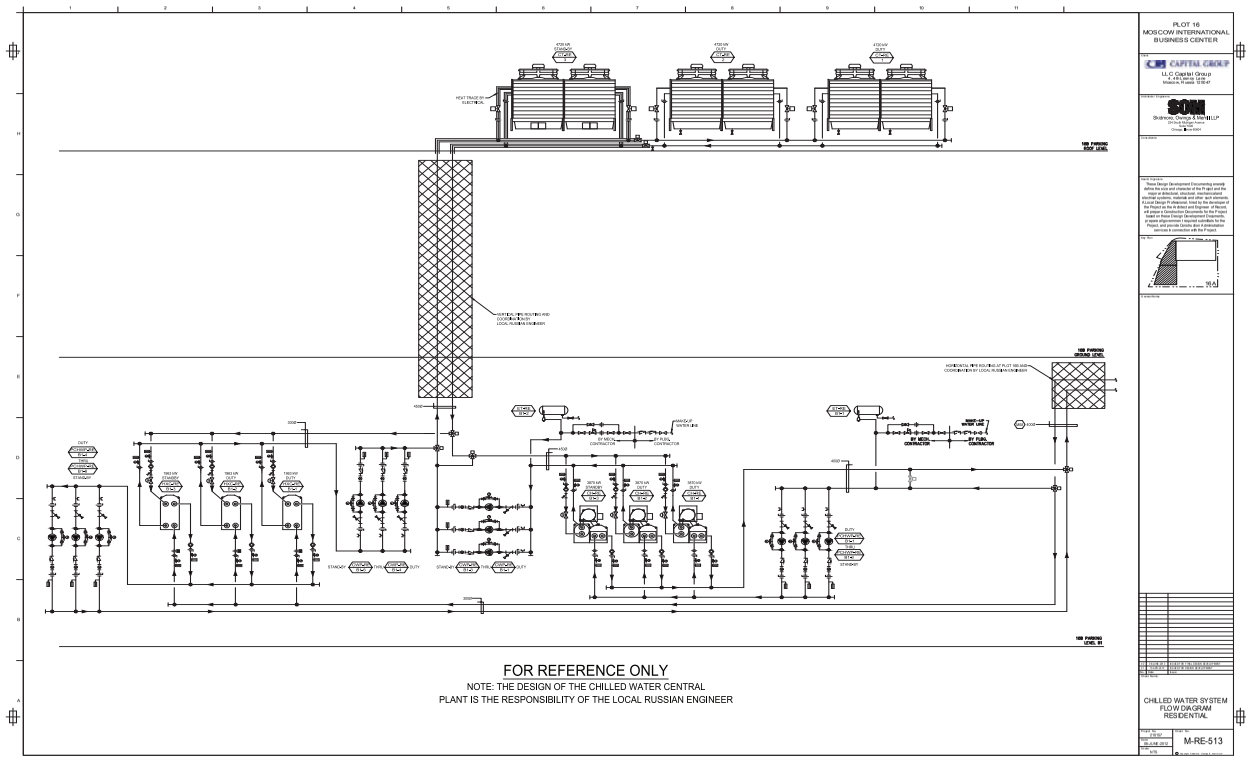
The 1.5 hectare OKO Tower is located in the new Moscow City development, and provides nearly half a million square meters of new development including exclusive residences, premium Class A office space, and parking.

The residential and office program are separated into two distinct towers, each expressing its specific function. The two towers are inspired by their relationship to the site, skyline, and climate of Moscow. Both towers are defined by their large faceted facades that gently taper away from each other as they rise. Referencing the icy landscape. the glass facades offer varying degrees of translucency and reflection of the Moscow sky. The slender 353-meter residential tower, the tallest residential building in Europe, is located on the southwest corner of the site. The façade of the residential tower is randomly faceted with angled strips of glazing, directing light further into the unit and providing an opportunity for natural ventilation on the elevation.

The building's lighting design employs high-efficiency fixtures with daylight sensors and dimming controls in the perimeter public zones. Occupancy sensors are also utilized to automatically shut-off lights during periods of non-use. Even though the new building appears nearly transparent, it achieves a wall-to-window ratio of less than 75% with an improvement over the maximum ASHRAE 90.1-2007 allowable U-Value of more than 65% reduction. A study was performed to understand the impact of PM 2.5 on the ability to open windows for natural ventilation; the angled panels every three façade modules provided an opportunity to introduce natural ventilation, incorporating ventilated mullions.

The air-side systems for the hotel amenity and residential units will include dedicated outside air units with an integral energy recovery wheel for heat recovery from the toilet exhaust system with a minimum effectiveness of 75%. Supply and return air systems employ variable speed controls, modulating fan speeds in response to changes in cooling and heating requirements, limiting wear and tear on HVAC equipment and providing energy savings.





COMPLETED 2015
SKIDMORE, OWINGS & MERRILL LLP