

BATTLE McCARTHY©

Consulting Engineers & Landscape Architects



PROJECT:

Gazprom Tower, St. Petersburg, Russia

CLIENT:

Gazprom

ARCHITECTS:

RMJM

BM SERVICES:

Building Services Engineering

VALUE:

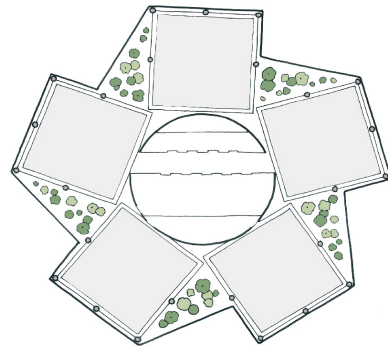
£303million

DESIGN INITIATIVES/ACTIONS UNDERTAKEN

From a building services viewpoint there are two features to the Gazprom tower development that together will not only go towards expressing Gazprom's concern for the environment, but greatly considers the company's dedication to the comfort of their employees.

The "Fur Coat"

With the harsh Russian winters, it may come as no surprise that for such a large building as this, great consideration must be made towards the reduction of heat losses but still maximising floor perimeter to allow for greater natural daylighting and external views. The solution implemented at the Gazprom Tower is a double skin concept.



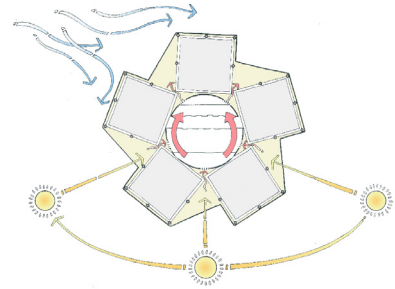
This double skin approach creates a series of "buffer zones". These buffer zones can be utilised to achieve an effective, year round, natural ventilation system as well as providing the tower with thermal insulation.

Rather than simply leaving these areas an unused space here they are converted into three/four story "sky gardens" for the benefit of the building user

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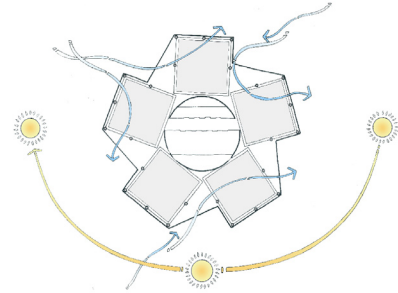
Winter Conditions

- During the harsh winters the external skin is closed, this deflects the cold winter winds away from the main body of the tower
- The buffer zone between the two skins acts as a thermal store, collecting heat from the direct solar radiation penetrating the external skin
- A simple heat exchange module located within these buffer zones is then able to transport this heat to where it is needed, the north side of the tower



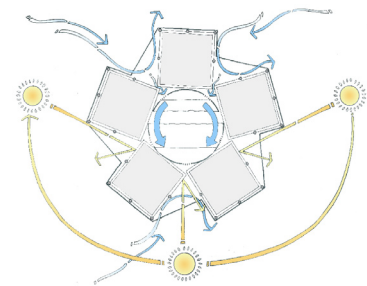
Mid-Season Conditions

- During mid-season both the external and second skins are opened to allow external air movement
- For the individual comfort of building occupants, windows are installed into second skin, opening into the buffer zone
- With both skins open, the buffer zone is kept cool by the through flow of external air
- Without the buffer zones acting as thermal insulation a greater percentage of the thermal mass of the tower is exposed to the external elements, this prevents overheating
- Daytime air conditioning loads can be further reduced by using free nighttime cooling

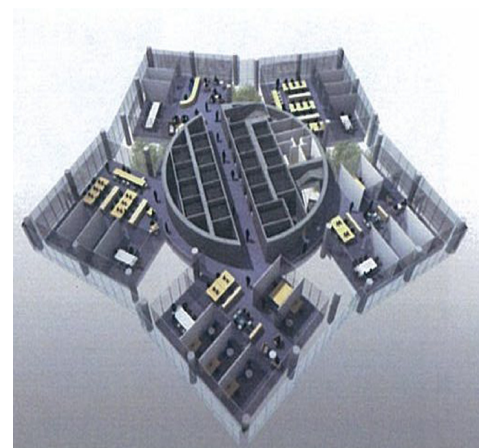


Summer Conditions

- With the inner office skin consisting of reflective glass, a vast amount of solar radiation is prevented from entering the office space, greatly reducing solar gains, instead becoming trapped in the second skin
- This trapped heat is then disposed off, being ejected to the outside environment
- Without direct sunlight the towers north side remains cool. Using the heat exchange modules this cooler air can be transported to the warmer, south side
- As with mid-season conditions nighttime cooling can be utilised to keep the building cool as well as again the large thermal mass preventing overheating



Site Masterplan



Internal Office Space Plan