Indira Gandhi International Airport (IGIA) is currently investing in a 20+ year masterplan development, to service the ever increasing travelling needs of the residents and visitors of New Delhi. As a key component of the expanding development, a new air traffic control tower (ATCT) is to be built at the airport, in order to meet these challenges.

IGIA’s goal is for an ATCT that is internationally recognised, contemporary and provides an architectural landmark to the airport. In order to maintain visual connection to the ground traffic and to meet such aspirations, the proposed 105m tall tower is one of the tallest in the world. Given its height, the required 24 hour operations and the architectural aspirations of a slender aesthetically pleasing form, it required the design team to come up with many innovative engineering solutions, and to constantly challenge the design in order to further refine the scheme.

The structural design of the IGIA tower was developed to complement the architectural form of the tower stalk, making use of core walls wherever possible. However, due to the slender form, height and small tower footprint, the design employed tuned mass dampers (TMD) positioned near the top of the tower, to reduce the acceleration of movement under wind loads. This is an ever increasing trend in ATCT design. The structural design also had to incorporate the requirements of seismic movement due to the geographic zone, as well as allowing for a complex sequence of construction in a region where perhaps the latest construction techniques are not financially viable.

The design of the cab at the top of the tower posed some difficult challenges for the environmental design. Delhi is located in an area that experiences high temperatures, high humidity and monsoon rains, as well as wide variations in conditions from summer to winter.
Conditioning the 5m high, near fully-glazed visual control room to very stringent internal conditions without detriment to the thermal comfort, room acoustics or limited maintenance requirements presented a real challenge. This was met through the incorporation of dedicated plant spaces on the lower floors of the cab, where all plant was provided with duplicated elements to reduce downtime for maintenance or failure.

By applying their extensive knowledge of designing complex structures in a variety of locations, BuroHappold Engineering was able to assist the architectural team in delivering a cutting-edge facility worthy of the client’s highly challenging aspirations. Our specialist team took this project to Tender information then handed the design over to local consultants to complete production design during April 2011.

CLIENT
Delhi International Airport Limited (DIAL)

ARCHITECT
HOK International

PROJECT VALUE
Circa £35 million

DURATION
2010 - 2011

SERVICES PROVIDED BY BuroHappold
Structural, building services, facade, civil, ground, and fire engineering and design risk assessment, security strategy, specialist lighting advice, acoustic engineering