

References

Project: **New Indian Research Base at Larsemann Hills (Antarctica)**
 – **General Planner, Construction Supervision**

Period: November 2008 - March 2012

Client: National Centre for Antarctic and Ocean Research (NCAOR), India

Short Description: The Indian National Centre for Antarctic and Ocean Research (NCAOR) was designated to realize a New Indian Research Base at Larsemann Hill, Antarctica. NCAOR organized an international competition in 2006; IMS won this competition and received the contract in November 2008. To execute the project IMS is leading a consortium of following firms.



- IMS Ingenieurgesellschaft mbH; Hamburg (main consultant, coordinator and structural designer)
- m+p Consulting, Braunschweig (technical services)
- bof architekten, Hamburg (architectural rendering and interiors)

Along with conceptual and general planning (Draft design, preparation of tender documents and participation in award of contract), design services IMS is responsible for, according to NCAOR includes-



- Data collection and design conceptualisation of the project.
- Design and planning of the site, construction stages, construction time and the facilitation of the site:
- Preparation of the building layout, including functional layout of working and living quarters, structural system and outer façade system (cladding) keeping in mind the extreme environmental conditions and energy conservation.
- Site exploration, logistical verification and preparation of the survey document to plan the construction in an effective, economical and ecological way for the environmental compatibility.
- Analysis and prediction of wind pressures and snow drift via Computational Fluid Dynamics (CFD) simulations to understand and identify the wind pressure, flow and potential areas of snow accumulation around the station.
- Conceptualisation and preparation of report on fire protection measures.
- Proposal for waste management (solid and liquid) keeping in mind the environmental protocol of Antarctic treaty and CEP provisions contained there in.
- Development of the concept on power generation, current supply and heating and ventilation techniques.
- Defined the estimated, investment and operational costs of the project

Characteristics of the station

- Pile foundation and steel structure protected against corrosion by robust galvanization. Rooms are modular in construction and composed of shipping containers that constitute the primary structural and brac-

ing system. Standard containers (20' long, 8' wide and 9, 5' high) would be prefabricated in homeland (India) and assembled on site.

- External façade protects the internal space from wind, precipitation and irradiation made out of compressed PUR core sandwiched between steel sheet covers.
- Trapezoidal shape of the station contour features the technological and aerodynamic stability of the building.
- Supply of power and heat by CHP (combined heat and power) to perform for the complete range from minimum to maximum energy demand.
- Due to the prefabricated and modular structure the construction on the site is fast and so will be the decommissioning when required.

