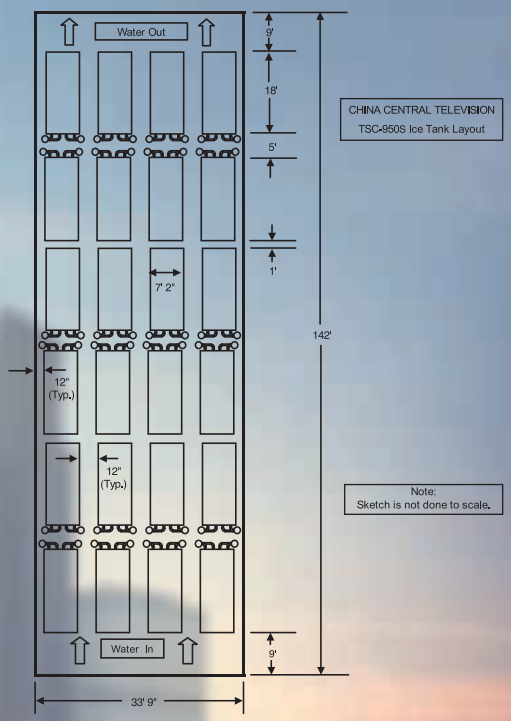
PROJECT REPORT:
CCTV New Building

One of a Kind

As one of the most important supporting facilities of 2008 Beijing Olympic Games, the CCTV headquarters is the largest cultural facility and construction project ever approved by the Chinese State Development and Planning Commission. Construction on CCTV was started in October of 2004 and finished in January of 2008. As part of a media park that serves as an extension of the central axis of Beijing's Central Business District, it was, and continues to be, used for public entertainment, outdoor filming, and its production studios.

CCTV consists of four structures: the CCTV Main Building (CCTV), the TV Cultural Center (TVCC), the circular Service Building, and the Media Park. The CCTV Main Building is the tallest tower at 234m, while the TVCC is slightly smaller at 194m. The total floor area is 550,000m^2 , and it sits on a land area of 187,000m^2 . The two main buildings are a series of horizontal and vertical sections, establishing it as an architecturally one of a kind 'earthbound' structure rather than a traditional skyscraper. The CCTV tower allows China State Television to broadcast 200 channels, while previously they were limited to 16 channels in their old facility.



CCTV Tank-Coil Layout Detail

Architect:
The Office for Metropolitan Architecture (OMA) and ECADI

Civil Engineering Contractors:
Arup (East Asia and European divisions)

TES Engineering Contractors:
Tsinghua Tong Fang Artificial Environment Engineering Company

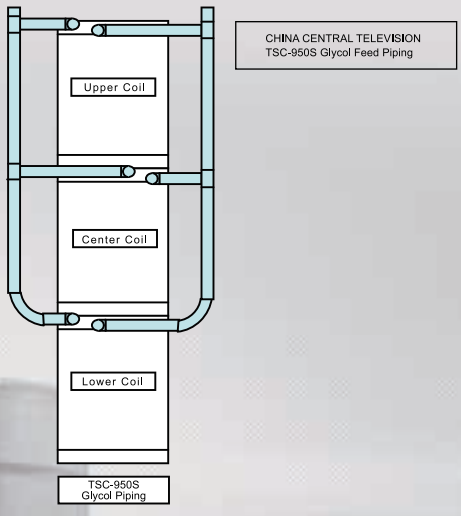
CONTINUED

PROJECT REPORT:
CCTV New Building

CCTV and BAC Thermal Storage Equipment

As a significant national project, it was essential that CCTV utilize an advanced and reliable air conditioning system. Television stations usually produce a lot of heat from large light loads in studios and from electronics and computer equipment in technical rooms, which all also require lower than normal operating temperatures. Furthermore, a reliable emergency cooling system is integral should there be a power failure. BAC's Thermal storage was the best solution, utilizing 24 sets of external-melt coils (TSC-950S) which provide 22800RTH of ice storage capacity. The coils are installed in three stacks inside of an underground concrete tank at the Service Building.

Using an external melt ice thermal storage system, BAC thermal storage equipment can supply constant cold water at 1.1°C. A system like this accomplishes the two important challenges that CCTV was faced with: it reduces operation costs by supplying a constant source of cold water while also providing emergency cooling if needed. BAC ice controls were used to take advantage of the ice thermal storage during "on-peak" periods, working in conjunction with the rest of the system to reduce the electric demand and simultaneously achieving the lowest operation cost. Additionally, during mild weather, the ice thermal storage system can meet all of the peak hour cooling requirements, eliminating the need to run the chillers during peak demand periods.



CCTV Glycol Feed Piping

Compared with internal melt ice thermal storage systems, external melt systems have the following advantages:

- ✓ Colder supplying water temperature
- ✓ Quickest discharge period
- ✓ Smaller size of pipe system
- ✓ Smaller size of pump system
- ✓ Reduced energy consumption of pump
- ✓ Smaller heat exchanger and reduce insulation cost of construction
- ✓ Makes cold air distribution more effective

Other Equipments

2 sets of centrifugal glycol chillers with 6.7MW capacity in cooling mode and 5MW in ice building mode.

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