Case Study:

MTECH Systems

Paro, Bhutan

AWOS Project 1997, Upgraded 2004

MITAS

Automatic Weather Observation System

The main runway at Paro International Airport, Bhutan

The mountainous country of Bhutan is dependent on a single airport situated at Paro. Since the start of air transport services in this country in March 1983, Paro airport has been restricted to handling international flights operated by the national airline Druk Air. At present, Druk Air operates services to and from Delhi, Calcutta, Kathmandu, Bangkok and Dhakha, with two Airbus A-319 aircraft. Druk Air's operations are governed and regulated by the Civil Aviation Division, which was established in January 1986.

For several months of the year, dense and often unpredictable cloud cover reduce visibility over Paro to the point where it is necessary for Druk Air to postpone flights or, in the absence of an alternative airport in Bhutan, to abort landing at Paro and land overnight instead at Calcutta. The international airport at Paro, Bhutan is located at an altitude of 2,200 Meters (7,500 Feet). This makes it one of the highest international airports in the world. This aspect to the airport brings its own special set of requirements.

The approach to Paro airport is difficult from both directions. The airport is situated in a steep valley running between two mountain ridges. At one end of the runway two valleys merge creating an area sometimes effected by strong and unpredictable winds. The approach from the alternate end of the main runway has a sharp dogleg in the valley just before the end of the runway.

The local conditions necessitated an aviation weather monitoring system to provide detailed information on the current weather conditions at key locations on the airport. MTECH Systems was chosen to provide such a system in 1997. The project to install the MTECH systems MITAS AWOS was to be funded by the ICAO Technical Assistance Bureau.

The supplied system included a AWOS server, observer workstation and two wind sites employing 10M guyed masts and 911-A & B wind speed and direction sensors.

The wind sites were located at the threshold point at either end of the runway. Connection to power and communications links were housed in highly durable stainless steel equipment enclosures alongside the masts. The masts specified are lightweight and frangible in design and are easy to install and maintain. The masts meet all ICAO and WMO guidelines. One of the AWS locations can be seen at right.

The central server collects and communicates the weather information to all connected displays and workstations. The central server allows for a great deal of expansion and up to 32 sensor sites can be added to the system. The system can communicate via satellite, serial, xDSL, parallel , microwave and radio data link with any of the sensor sites. To communicate between the two AWS sites and the control tower at Paro International V.22 protocol connections over copper pair wire was utilized. See Paro server rack at bottom left of page.

Several subsequent visits have been made to Paro by MTECH engineers. These visits have included the update of the server software in 2000 and the expansion of the system with touchscreen displays for the visual control room in 2004.

The touchscreen displays and observer workstations allow for weather data from both wind sites to be simultaneously displayed on the one screen. Icon representations of the wind sites can be “zoomed” to display a full compass rose view with instant, 2 minute and ten minute averages for cross wind, trackwind, rainfall, wind speed, wind direction, visibility, RVR, cloud height and many more.

The management team at Paro plans to take advantage of the MITAS systems’ flexibility and expandability. This is set to happen in late 2005 with the addition of an MTECH 8000-CHS ceilometer and several new workstations and displays.

For further information please contact:

MTECH Systems Pty Ltd
2 Garden Boulevard, Dingley, Australia, 3172
Ph: +61 395 518 333 Fax: +61 395 518 444
sales@mtechsystems.com
http://www.mtechsystems.com