

Control and Monitoring System (CMS) Case Study



Introduction

Macau International Airport commenced operation in November 1995. Since then, it has rapidly established itself as a vital link between the Pearl River Delta and the rest of the world. With efficient land and sea links to neighbouring regions, Macau International Airport is ideally positioned as a hub for the Asia-Pacific.

Macau International Airport is a fully function 24-hour airport with an 11,000 foot runway that is capable of handling long haul flights.



Macau International Airport



Macau International Airport - Tower and Taxiway

Problem

The airport is equipped with new radar and aircraft navigational aid equipment. The radar equipment consists of Primary and Secondary Radar systems. The navigational aid equipment consists of a Doppler VHF Omni-Range (DVOR), Distance Measuring Equipment (DME) and Instrument Landing System (ILS). A Control and Monitoring System (CMS) is required so that both air traffic controllers and engineers can constantly monitor the health of the systems. The ability to control the system is also required. The CMS is required not only to use standard I/O interfaces, but it must also get its information from a number of devices using proprietary serial communication protocols.

Solution

Willowglen Systems Inc. was selected by Lee-Dickens Ltd. to supply the main Supervisory Control and Data Acquisition (SCADA) components. For engineering purposes, a fault tolerant Willowglen SCADACOM® Master Station resides in the Engineering and Logistics room of the Air Traffic Control Centre (ATCC). To provide status information to the controllers, it is connected using Ethernet to the workstations located in the control tower. Willowglen Model 8016 Remote Terminal Units (RTU) are located at various sites at the airport and nearby islands. They handle the I/O tasks and communications with the radar and navigational equipment. Communication between the Master Station and the RTUs is done using redundant modems and microwave channels.

SCADACOM® was selected because of its proven fault tolerant capabilities, its ease of use, and its

distributed computing architecture. Its advanced Man Machine Interface (MMI) made it appropriate for operations in the control tower and its open systems design guarantees continued flexibility and growth in the future.

The Model 8016 RTUs were selected because of their ability to simultaneously monitor racks of I/O points, communicate to a large number of devices using a diverse set of proprietary communication protocols, handle a variety of communication topologies and integrate the information for use at the Master Stations.