

Case Study:



Langkawi, Malaysia

RVR System Project

**5000-200 Transmissometer
Runway Visual Range System**





Airport in Paradise

Langkawi is one of the world's most desirable resort locations. The largest of almost 100 islands, located off Peninsular Malaysia's far north coast, Langkawi, not only boasts stunning beaches, rainforest mountains, and a slew of luxury resorts, it is the venue for the LIMA Aerospace exhibition, which is held at the Mahsuri International Exhibition Centre adjacent to the new international airport.

After Langkawi emerged from years of Mahsuri's curse, a local legend regarding the island being cursed, and its proclamation as a duty free paradise island, the old Langkawi airport required an upgrade to handle the expected increase in traffic volume and size.

For this increased activity the runway required lengthening to 1310 metres, relocation of the ILS glide path and the RVR system upgraded to CAT2 capability. The runway now handles 747 and Malaysian Airforce C130 aircraft movements as well as the more regular Malaysian Airlines and Silk Air aircraft. Fighter aircraft demonstrate the awesome capabilities pushing the flight performance envelope during LIMA.

The Approach

The main approach to Langkawi airport is from the sea. An approach over land is hazardous, due to the mountainous region on the inland side of the airport and is rarely used. Langkawi is badly effected at times by smoke and haze present at many tropical Asian airports, but also the extremely bad smoke caused by forest fires in Sumatra. Other frequent weather conditions include tropical storms and hurricanes.

Project Plan

In 2001 MTECH Systems was contracted to supply and install its 5000 series RVR Transmissometer based system at Langkawi Airport. The project required provision of transmissometers at the threshold and mid points of the runway, together with RVR server system and displays at the control tower complex, with a remote display at the Meteorological Offices near the Lima Exhibition Centre.



High Specification Equipment

The research and development team behind the MTECH 5000 series transmissometer was headed up by highly regarded rocket scientist Dr. Werner Fabian. The RVR system includes advanced optics and electro-optical signal processing techniques that were developed under his technical leadership.

The 5000-200 transmissometers utilise very high intensity xenon flash technology, to maximise signal to noise ratio and increase the measurement accuracy. The atmospheric visibility and thus RVR is measured by computing the ratio of signals between a reference sensor and a sensor located at the end of a 50 metre path between the transmitter head and the receiver. The light source used has a life in excess of 10 years under normal conditions. The high quality of construction of the sensor pole and housings ensure that the device will operate satisfactorily in even the harshest humid, marine and industrial environments. The system adapts to the current visibility conditions through inbuilt algorithms to give the most accurate reading possible. The system was interfaced with the airports airfield lighting system to enable the inclusion of airport lighting intensity into the RVR calculations.

Compliance of the new system to the relevant ICAO and WMO guidelines was of high importance to DCA staff. The delivered MTECH transmissometer system was fully compliant with ICAO AN-908 2000 and Annex 3. The RVR processing system utilised the latest computer operating systems, giving a very convenient graphical user interface and enabled the logging of all vital parameters of operation of the transmissometers and associated sensors.

A periodic inspection after several years of operation showed little or no corrosion even in the harsh and humid marine environment.

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