Traditionally, transmissometers have been the established type of visibility sensor for runway visual range (RVR) measurement, a key safety parameter in commercial aviation. In recent years, another type, the forward scatter sensor, has begun to gain acceptance around the world for this demanding application. The new Vaisala FS11 Visibility Sensor offers a number of new features that ensure reliable visibility measurement in any weather.

New technology for runway visual range application

FS11 Visibility Sensor Launched

The Vaisala FS11 Forward Scatter incorporates a new technique that measures and compensates for the attenuation effect of window contamination.

Automatically compensates for window contamination

Unlike most forward scatter sensors, the FS11 incorporates a new technique that measures and compensates for the attenuation effect of window contamination. It ensures that measurement accuracy is maintained throughout the recommended interval between window cleanings – and it lengthens this interval. The system works by monitoring the total reflectance of the window surface. It automatically compensates for visibility measurement errors caused by window contamination.

A scientifically valid chain of calibration

When evaluating forward scatter sensors, special attention must be paid to calibration. Every Vaisala FS11 is calibrated through a scientifically valid chain of reference. The scattering response of the calibration device can be clearly traced to a reference FS11 Visibility Sensor, which is in continuous operation at Vaisala's outdoor test field, along with reference transmissometers and other instrumentation. The FS11 offers a measurement range of up to 75 km and meets WMO, ICAO and FAA specifications for visibility measurement in civil aviation.

Operates reliably in the worst weather

Four main design features are combined in the FS11 to ensure that it operates reliably in the harshest weather. The first is the window contamination compensation technique. The second is the "head-down" design of the optical heads, which protects them against virtually all wind-blown particles (even those flying horizontally). High-power heaters are the third feature, each with its own temperature monitoring and control mechanism to prevent snow accumulation during the heaviest snowstorm. As a final measure, there is optical path clearance monitoring circuitry to verify that measurement is not affected by obstructions.

A snap to service

The FS11's sophisticated self-diagnostics and modular design allow for very short service times. The measurement fork and optional background luminance meter (LM21) are independent instruments that can be replaced quickly as pre-calibrated spare parts.

New level of reliability in background luminance measurement

A new LM21 Background Luminance Sensor has been launched along with the FS11. The LM21 provides similar monitoring and contamination compensation features as the FS11, and raises background luminance measurement to a new level of reliability. Traditionally, background luminance sensors have either incorporated rudimentary self-monitoring features or had none at all. ●