IDS-20

Icing measurement system for airports

Environmental monitoring equipment by Sommer Messtechnik



Despite a globally warming climate, airport operation and aviation safety are still affected by harsh winter conditions. In many areas of higher latitudes and altitudes wintery conditions with ice and snow can evolve unexpectedly fast and hit important infrastructure heavily. In such situations, real-time monitoring of icing is vital to manage the operation of airport facilities, avoid disrutions of the flight schedule and minimize the risk of injury and damage.

Sommer Messtechnik offers with the IDS-20 ice detection System a reliable, highly accurate monitoring solution for ice-related concerns on and around airports.



Dangers of ice

Traffic around the airport

Icy roads and walkways can cause traffic accidents and delays of passengars and goods.

The IDS-20s with a Cube-5 sensor triggers a warning as soon as ice starts to accrete by frost or freezing rain.



Heavy ice loads on structures

Falling ice from terminal buildings, the tower and hangars can damage equipment and risk human life.

With the IDS-20d equipped with a Rod-80 sensor heavy ice loads with a thickness up to 80 mm can be measured, providing information for timely action.



Deicing of airplanes

Deicing of airplanes is based on the expert knowledge of a specialist who takes meteorological air and ground measurements, visual observations and experience into consideration.

The IDS-20d with two alternately operating Cube-1 sensors supports the airport weather expert with reliable real time ice data for his decision process. The IDS-20d can detect ice layers as thin as 0.01mm, and thus reports ice formation at the earliest possible stage.

Runway and ground logistics

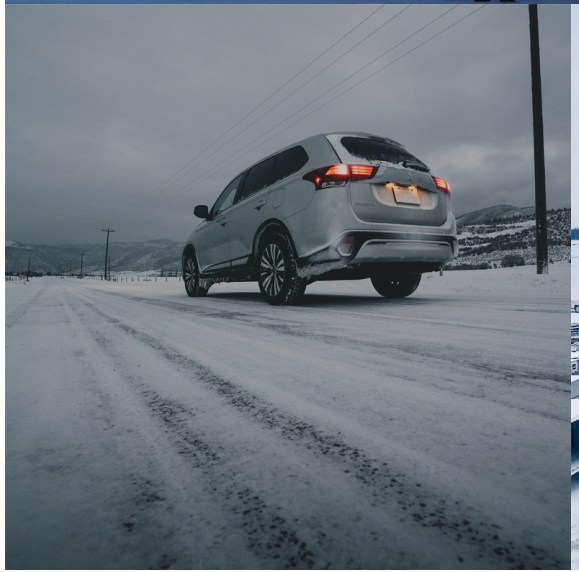
An ice-free runway is of prime importance for the smooth and safe operation of an airport. Therefore, deicing measures must be applied before icing occurs.

The Cube-1 sensor of the IDS-20 provides the sensitivity to detect the thinnest ice layer, supporting the management of deicing operations.

Icing models

The numerous, continuous data supplied by the IDS-20 can be added to an automatic weather information system and be used as input to forecast models.









Sensor technology

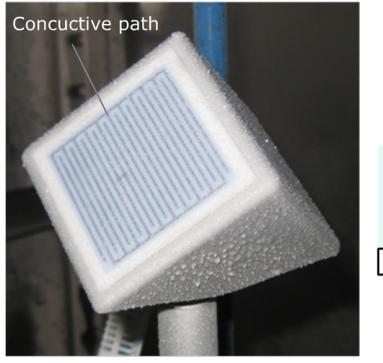
The innovative IDS-20 ice sensor makes use of the different physical characteristics of air, water and ice atvarying frequencies of an applied voltage. By measuring the complex impedance around the sensor the IDS-20 is able to distinguish between water and ice and to detect the accretion of an ice layer.

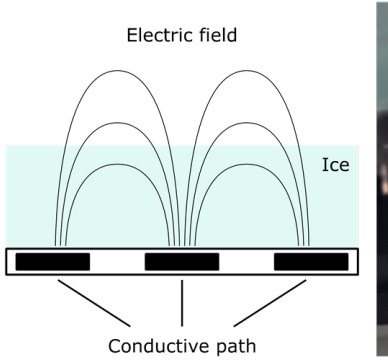
Measurement principle

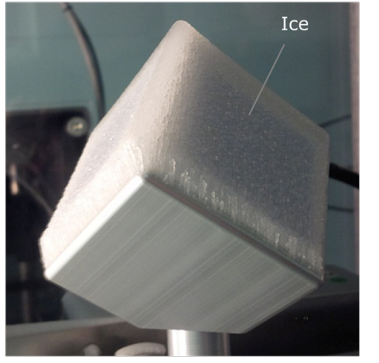
By measuring the complex impedance at different frequencies of an applied current the volumetric content of ice, water and air is determined.

Returned variables

- Ice (as thickness of an ice layer)
- Water (as thickness of a water layer)
- Air temperature
- Relative humidity
- Dew point temperature
- Estimated icing direction







Relay outputs

Two relay outputs can be triggered by pre-defined limits of ice thickness and icing-rate.

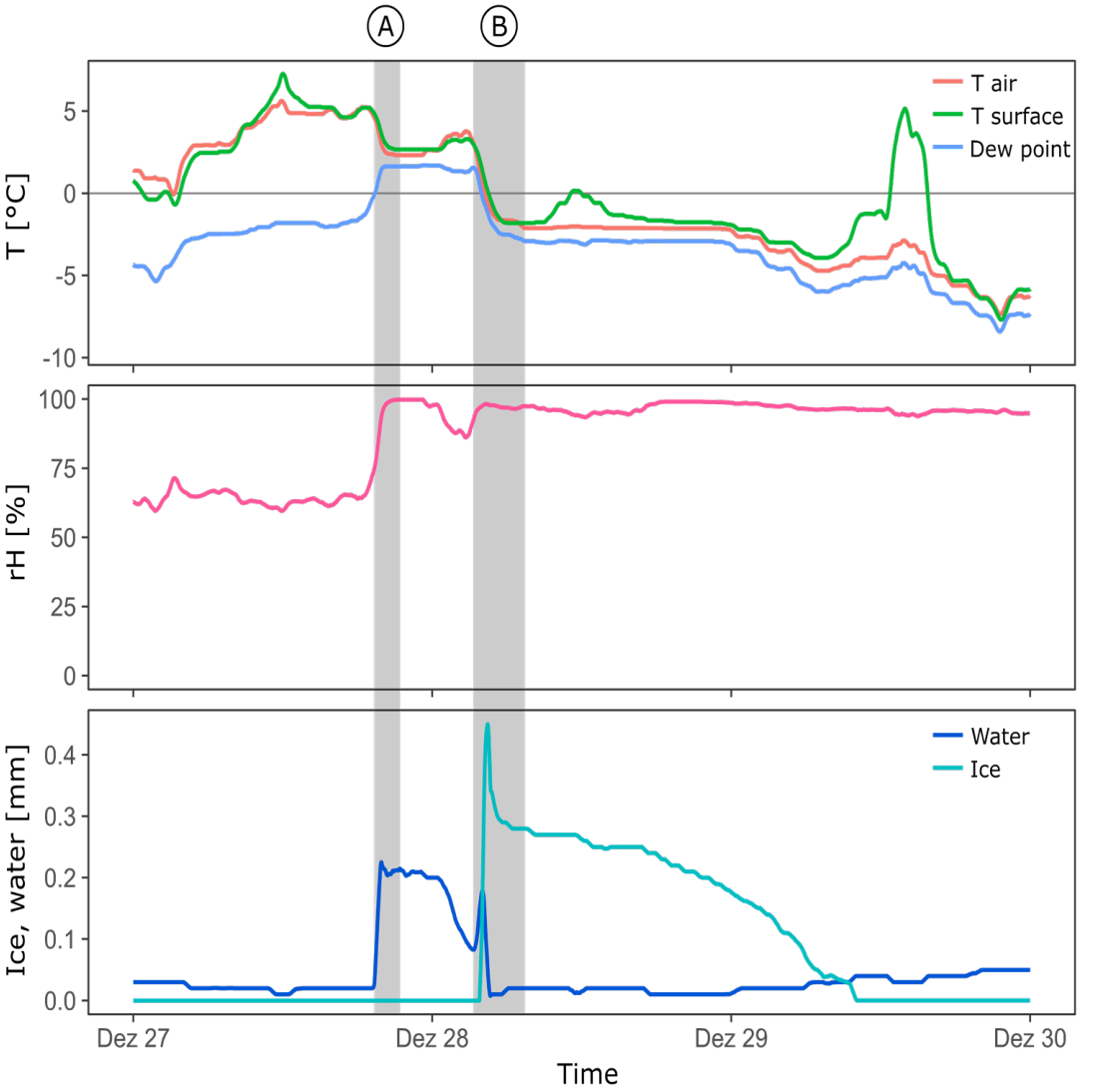
High data quality with plausibility check

Formation and accretion of ice on a surface depends on specific environmental conditions determined by air temperature, humidity and surface temperature.

Now, a unique and valueable feature of the IDS-20 is that it additionally considers meteorological data for the purpose of a plausibility check: Parallel to the ice sensor the IDS-20 measures the air temperature and humidity and calculates the frost point. The instrument then uses these data for a plausibility check of the measured ice values. Therefore, the IDS-20increases the quality and reliabilty of ice detection.

(A) Air temperature drops, relative humidity reaches saturation and a water layer builds up.

(B) Air temperature falls below zero °C and the water freezes to an ice layer.



Sensor of choice

The different versions of the IDS-20 provide appropriate solutions for various icing problems which may cause disruption, risk to human life and commercial loss. With reliable real time ice detection, management of facilities and procedures is much easier, safety measures can be invoked early, and money can be saved.



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