

Setup of the Icing Test Station at the Guetsch

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The Swiss Federal Office of Meteorology and Climatology – MeteoSwiss – is currently renewing and extending its ground based measurement network, under the name SwissMetNet. In this frame, a test site in alpine environment has been built at the Gütsch, located in the Swiss Alps, in the Gotthard region above the village of Andermatt.

This test site offers the possibility to conduct inter-comparison measurement campaigns, or to test and evaluate new sensors under harsh alpine environment.

It has been selected for the Swiss project "Alpine Test Site Gütsch: meteorological measurements and wind turbine performance analysis", which is embedded in the European "COST Action 727".

The meteorological station is equipped with two measurement bridges at 2 m a.g.l., one supporting the standard meteorological instruments (delivering temperature and humidity, solar radiation, sun duration, ...) and the other one equipped with the icing detectors to be tested within the COST 727 project.

A rugged camera system is installed on one of the wind masts nearby and allows for panorama views of the surrounding as well as zoomed pictures of the instruments, providing valuable information on the icing rates.

Data from the camera as well as from the meteorological and icing sensors is transmitted every 10 minutes through a dedicated fiber optic line to a router from where it is sent to the test server of the SwissMetNet network, and thus made available in real time for customers.

An Enercon E-40 600kW wind turbine with a hub height of 50 m and an integrated blade heating system is installed approximately 200 m north-west of the meteorological station. It is monitored for its performance under icing conditions (produced power, wind speed at hub height, position of nacelle, ambient temperature at hub height, air temperature inside the blades, ...). The ultrasonic anemometer and the rotor blades are constantly monitored by web-cam.