Gardermoen, one of the world’s most modern airports, was opened to the public on 8 October 1998. The new airport was designed to handle 17 million passengers a year, and its air traffic control tower can manage 80 air transport movements an hour. The airport has chosen Vaisala’s Meteorological Observation and Information System.

Vaisala signed a contract with Oslo Lufthavn AS (OSL) in October 1996 to deliver a complete AWOS system (Automated Weather Observing System) for Oslo’s new Gardermoen airport, located 50 kilometers north of Oslo in Norway. Vaisala tested and delivered the entire AWOS system, which went into official operation after the airport’s opening. As one of the world’s most modern airports, Gardermoen will serve domestic and international air traffic needs well into the next century.

Advanced meteorological observation system

The Windows NT®-based Meteorological Observation and Information System collects,
The Vaisala equipment at the Gardermoen Airport includes six MILOS 500 weather stations, six double baseline MTRAS transmissometers, four CT25K laser ceilometers, four wind measuring systems, two air temperature and relative humidity meters, two digital barometers, a precipitation system, and six DRS50 runway sensors.

The design philosophy, calculated routines and practices implemented at the airport closely follow the recommendations issued by the International Civil Aviation Organization (ICAO) and World Meteorological Organization (WMO).

Flexible sensor technology

The Vaisala equipment at the Gardermoen Airport includes six MILOS 500 weather stations, six double baseline MTRAS transmissometers, four CT25K laser ceilometers, four wind measuring systems, two air temperature and relative humidity meters, two digital barometers, a precipitation system, and six DRS50 runway sensors.

The following basic meteorological observations can be performed automatically: wind speed and direction, pressure (QFE, QNH), temperature, humidity, dew point temperature, meteorological visibility, Runway Visual Range (RVR) assessment, cloud height and precipitation.

In addition to the basic weather parameters, the system is capable of collecting data from various types of additional weather sensors such as present weather sensors and runwaysurface sensors. Vaisala’s ice warning and prediction system is an integrated part of the Gardermoen system. Furthermore, both measured and derived weather information can be displayed in different kinds of formats and by various means at relevant locations around the airport.

All the observation data is displayed either on digital displays, or on VDUs and/or graphics displays. The reporting interval of the weather parameters is prioritized. Winds and other weather parameters prone to sudden changes require a more frequent reporting interval.

Careful compliance with ICAO recommendations

Based on the automated weather observations, routine weather messages (like a METAR and a SYNOP) are generated and distributed at fixed intervals. Reports of significant weather changes, including SPECI reports, are issued according to the relevant criteria recommended by ‘ICAO in Annex 3’ at the time of occurrence.

The design philosophy, calculation routines and practices implemented at the airport closely follow the recommendations issued by the International Civil Aviation Organization (ICAO) and World

Equipment preview for Vaisala’s key customers

Before the official opening, Vaisala introduced the Gardermoen M et eorological Observation and Information System to more than 40 key customers from Scandinavia, southern Europe, the USA and South America.

Held on 21 September 1998, the presentation gave Vaisala customers a comprehensive view of the Gardermoen meteorological system. The day began with a visit to the ATC tower and the briefing room. The AWOS system, already in operation, was presented at the site, with a special focus on the MTRAS RVR and ice prediction system.

The customers were also given a brief introduction to a Forecaster Workstation. The presentations were followed by an overview of Vaisala’s future development and products in the airport segment.

The day after the Vaisala presentation, the weather was very foggy in Oslo, and airplanes could not land at the old Fornebu airport. Although the Gardermoen airport was not officially open, the systems were in operation just in case. All landing traffic was therefore diverted to Gardermoen, and everything worked as planned. As this experience clearly shows, the Gardermoen airport is well equipped to provide travelers with safe flights and good service.

One of the most modern airports in the world

Oslo Lufthavn AS, a wholly owned subsidiary of the Norwegian Civil Aviation Administration (CAA), has been responsible for the development and operation of the new airport.

Gardermoen’s two CAT III parallel runways are 2 km apart, with the operational buildings in between. The western 3,600-meter runway is used primarily for departures, and the eastern 2,950-meter runway, for landings. These two parallel runways can be operated independently of each other, unlike the crossing runways. Based on an H-shaped design, the main runways allow simultaneous segregated operations, handling a total of 80 air transport movements an hour.

Considerable attention has been focused on the air traffic control tower. With the most modern IT system in the world, the 90-meter tower is the airport’s nerve center and the work site for air traffic controllers. It is designed not only to allow controllers to see ramp operations over the roof of the terminal, but also to minimize visibility problems in low cloud.