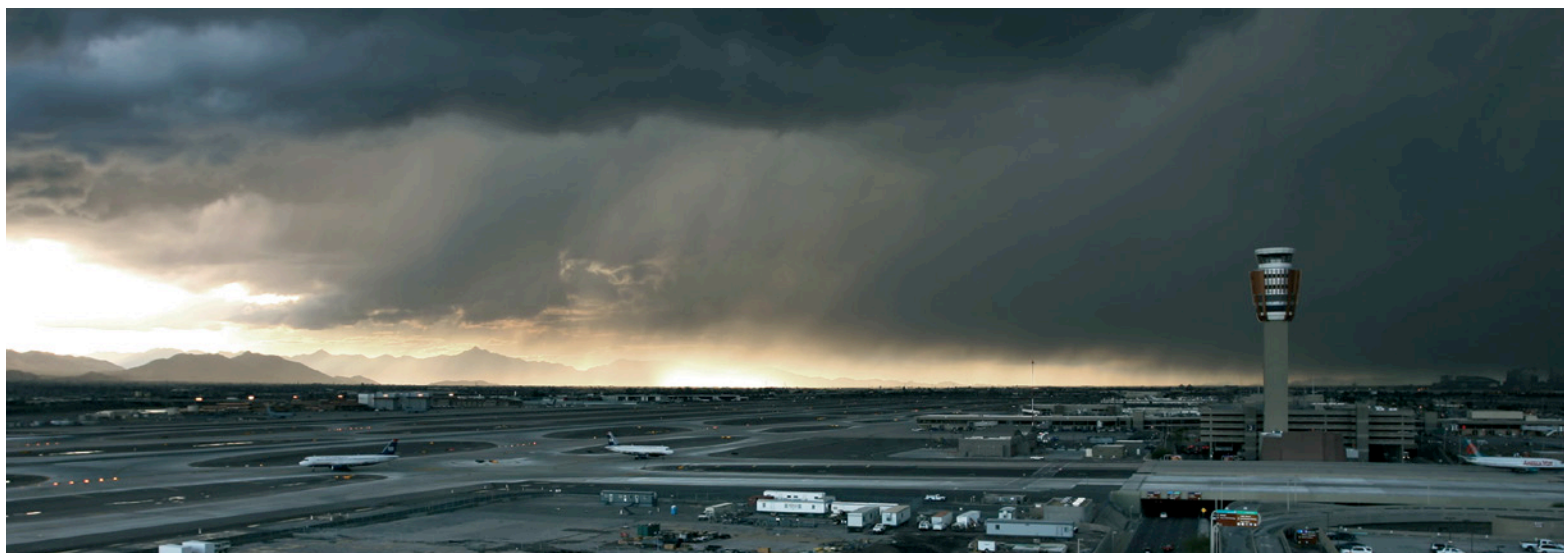


Invisible Threat – Easy Solution

/ VAISALA AVIMET® LOW LEVEL WINDSHEAR ALERT SYSTEM



VAISALA

Landing on the Right Solution Takes off the Danger



Universal Phenomenon – Unique Risk

Hundreds of airports around the world are affected by thousands of annual occurrences of low-level windshear. They impact all airport types, especially in regions prone to strong thunderstorms.

The strong, downdraft generated microbursts near airport flight corridors are dangerous especially during takeoff and landing, when airplanes are at their most vulnerable. Vaisala enables pilots and ATCs to mitigate the risks of windshear safely and intuitively through accurate, easy-to-use information.

Windshear Costs

The human and financial costs of windshear are high with over two hundred and fifty fatalities and fifteen written-off aircraft in twenty accidents, according to Aviation Safety Networks study covering the period between 1990 and 2008. Another study by the FAA estimates that the financial cost of an air-taxi accident often approaches USD ten million, with an air carrier accident cost easily rising up to over a hundred million USD.

An Efficient Solution for High-risk Situations

Windshear is a daily phenomenon threatening numerous airports of all sizes around the world. This is why Vaisala has developed a solution that

is universally deployable by both performance and cost-efficiency.

The Vaisala AviMet® LLWAS is the leading solution that, according to MIT Lincoln Lab, enables airports to improve their safety at a fraction of the life-cycle costs compared to other available systems.

Combining high efficiency, reliability and affordability, the Vaisala solution is fast becoming a de-facto standard.

Low Level Windshear from the Pilot's Point of View

A sudden lift caused by a strong headwind makes the pilot compensate by dipping the nose – only to have the headwind change into an equally strong tailwind in mere seconds. The



result is a dramatic loss of airspeed with little time for evasive action.

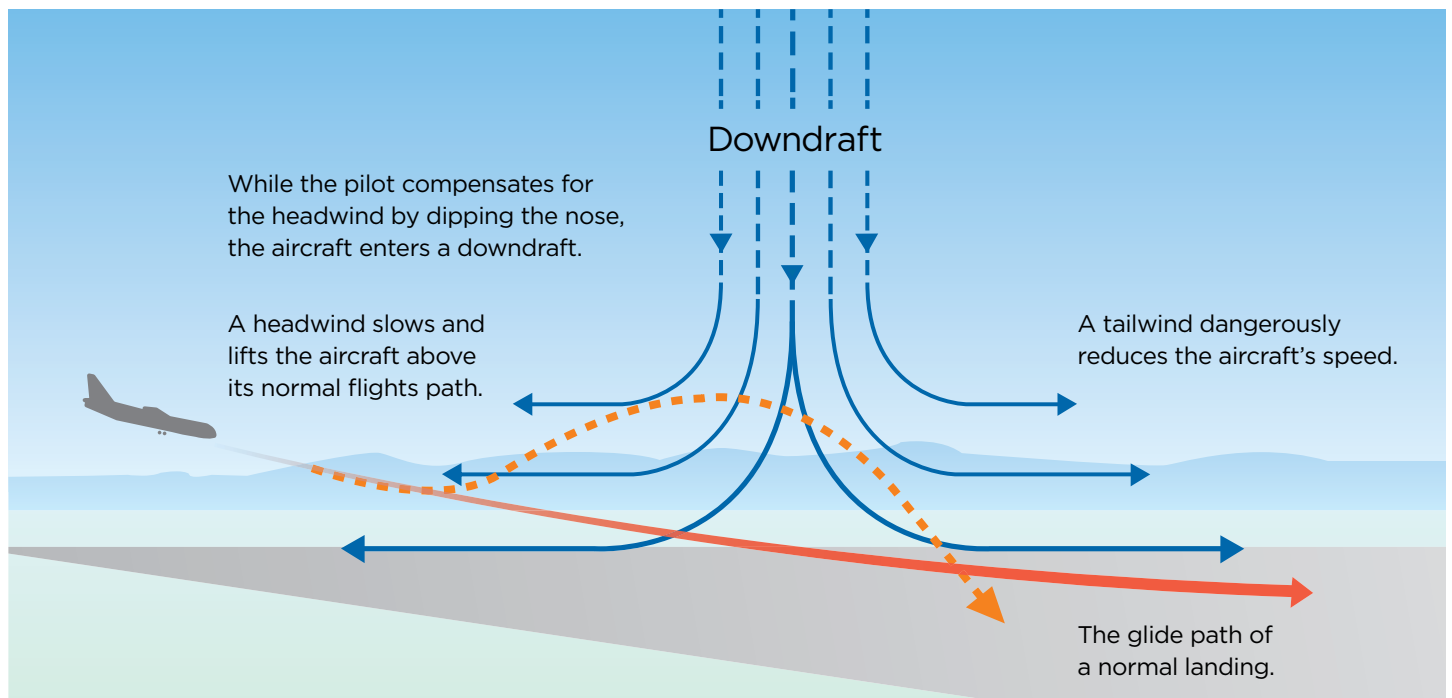
The effects induce "wrong 'right' logic" where the pilot thinks he is acting correctly, until it is too late as the power of windshear can surpass the performance of a modern aircraft.

The Vaisala AviMet® LLWAS informs

- when there is no windshear
- when windshear starts
- when windshear ends

The solution provides the pilots and the ATC with full situational awareness, resulting in better safety, high decision-making confidence and increased efficiency. "Oceanic Airline, windshear alert, expect a forty-five knot loss at one mile final" – life-saving information can be short and simple.

Downburst



Prepare for the Unpredictable

Low-level windshear varies and is hard to detect both by the ATC and the pilots. The sudden changes in wind speed and direction are challenging as the quick succession of headwinds and tailwinds can cause a sudden and dramatic loss of altitude resulting in a serious accident.

To improve windshear situational awareness outside of the immediate airport area, Vaisala's LLWAS is now enhanced with a web-based, real-time display of Global Lightning Dataset GLD360 data in a large region surrounding the airport. Windshear watches are issued when lightning indicates that thunderstorms are close enough to the airport to potentially produce a low level windshear event. This data can be used by Air Traffic Controllers to anticipate potential thunderstorm-induced, windshear events at the airport and alert aircraft

about to fly directly through dangerous thunderstorms producing turbulence, windshear, and hail.

From Site Assessment to Full Delivery

The low-level windshear and microburst conditions are assessed by processing wind data collected from a network of wind sensors around the airport.

Over 1500 ICAO and FAA compliant airport weather solutions in over 90 countries, we have the technology, experience and contacts to provide solutions for all kinds of airports, anywhere.

Location, Location, Location

High quality anemometer sites are crucial for LLWAS solution performance. A site survey is required to ensure proper siting and right anemometer height, covering the distance from runway, obstructions and electrical

interference as well as site access and property ownership.

Anemometer Unit

The number of wind sites per airport is evaluated on a case by case basis and is typically between eight to twelve. They cover a geographically large area and normally include:

- Vaisala ultrasonic wind sensor (Used in the FAA LLWAS system)
- Radio modem
- Solar panel with battery
- 15-30 meter high masts

The mast height is determined by the site survey results and is usually between fifteen and thirty meters.

The Vaisala LLWAS install base is growing with around twenty solutions installed by the end of 2012 and numerous on-going projects around the world. This makes Vaisala the most experienced vendor in the world with the fastest growing windshear solution.



Project flow

Vaisala AviMet®

Vaisala AviMet® is the leading global airport weather safety and efficiency platform with the largest user base. We enable over 80 000 flights and 4 500 000 passengers to take off and land safely – globally, every day.

The AviMet® platform covers ICAO CAT 1 to CAT 3 airports, including the largest international hubs. The Vaisala Avimet® LLWAS is a part of the largest airport weather solutions portfolio that also includes:

- Automated Weather Observing System
- Runway Visual Range
- Small Airport System
- Present Weather Reporting
- Airport Lightning Information System
- Runway Weather Information System
- Full selection of airport weather products and components

Our complete LLWAS solution also incorporates advanced radar and lightning information, based on Vaisala's unique technologies.

Verifying the windshear hazard at the airport



Designing alert system and life-cycle support



Managing system assembly and delivery

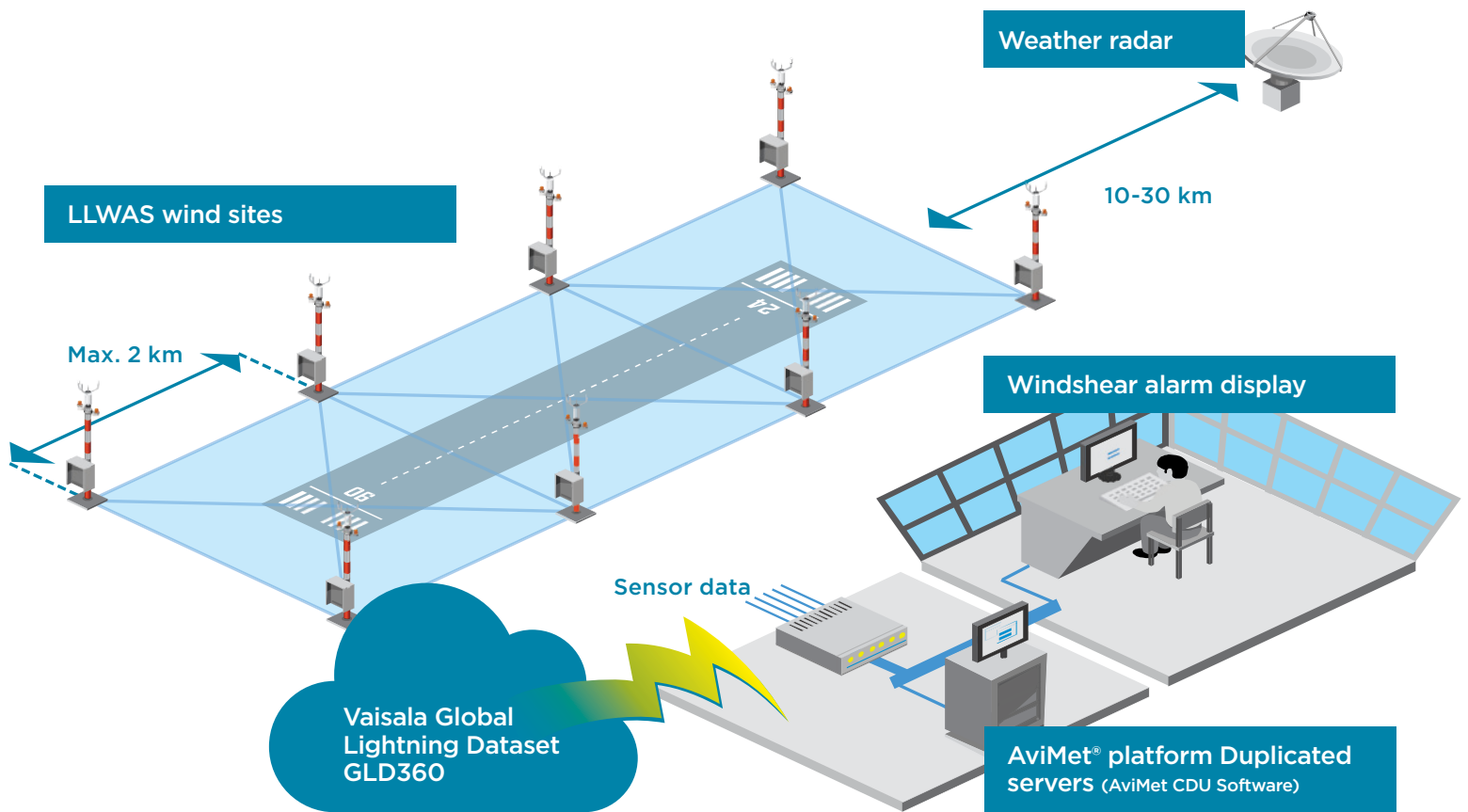


Installing and commissioning the system



Maintaining and verifying solution performance

Global Managing Experience



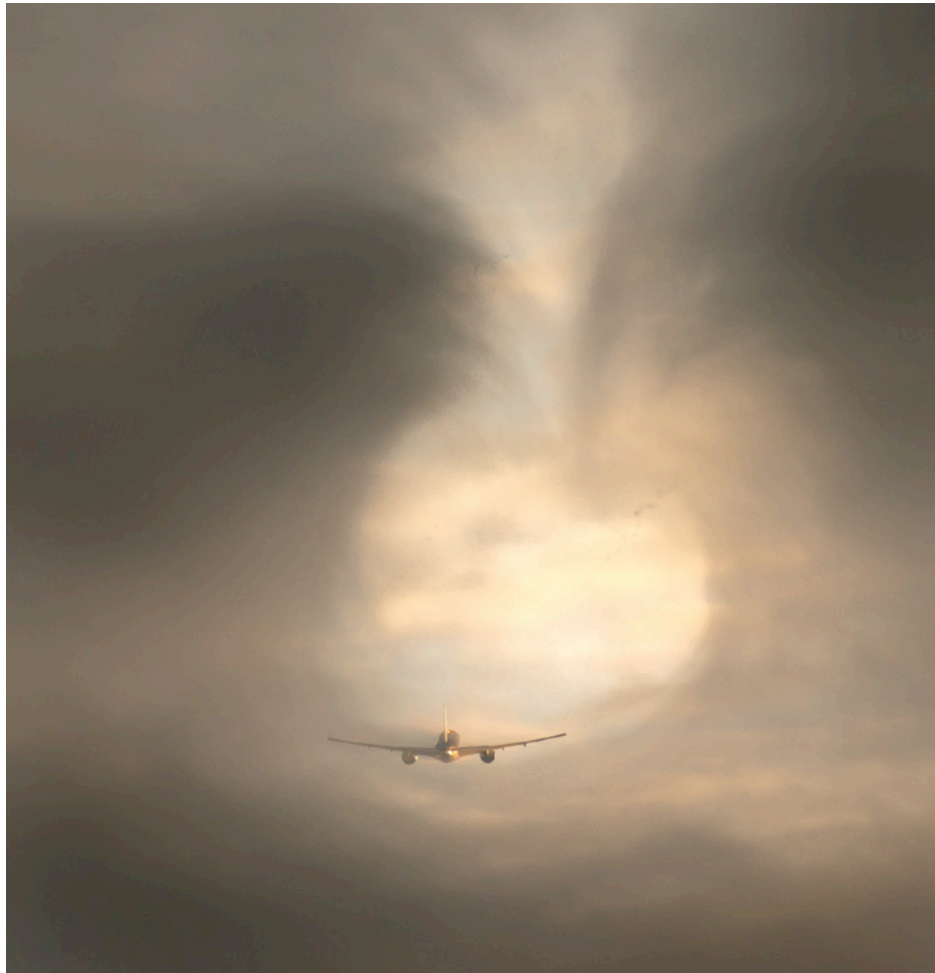
Safety with Sound Economics

Windshear information is vital for flight safety during the most critical flight phases. A growing number of airports are in the process of planning and installing our system to provide upgraded safety and service to their customers. As the Vaisala AviMet® LLWAS is the most cost efficient option on the market, there is no financial excuse for any airport to have a windshear risk.

A New Wind is Blowing

It's time to remove a major aviation hazard from your airport as pilots and airlines are increasingly demanding a solution. Vaisala AviMet® LLWAS combines leading technology, sensible economics and easy implementation through understanding and global experience. You only need to land on the right solution.

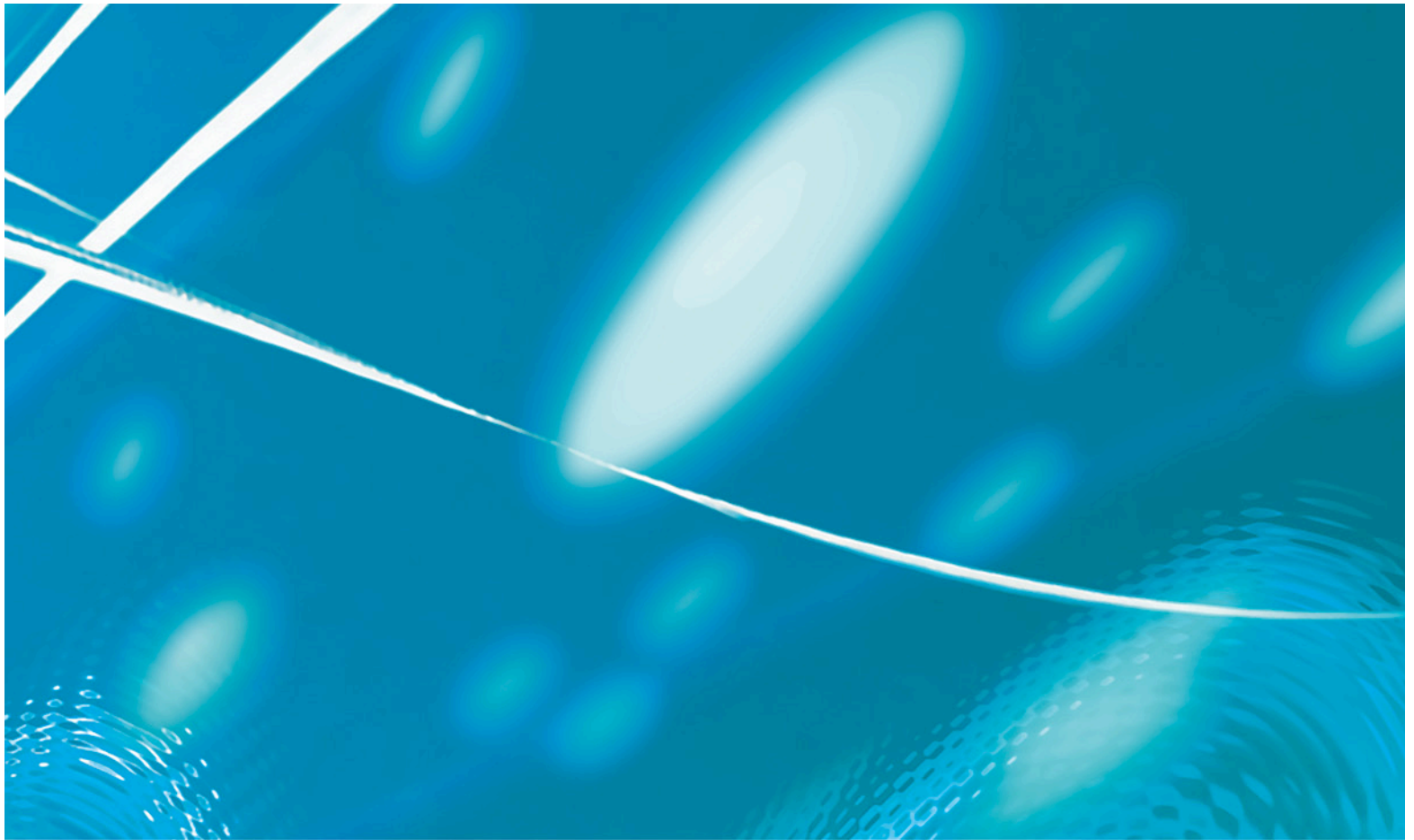
Vaisala - The Knowledge Company



Vaisala is a global leader in environmental and industrial measurement.

Curiosity, the desire to meet challenges and an extraordinary ability for innovation are at the heart of the company – both past and present.

Curious? Learn more about Vaisala at vaisala.com



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