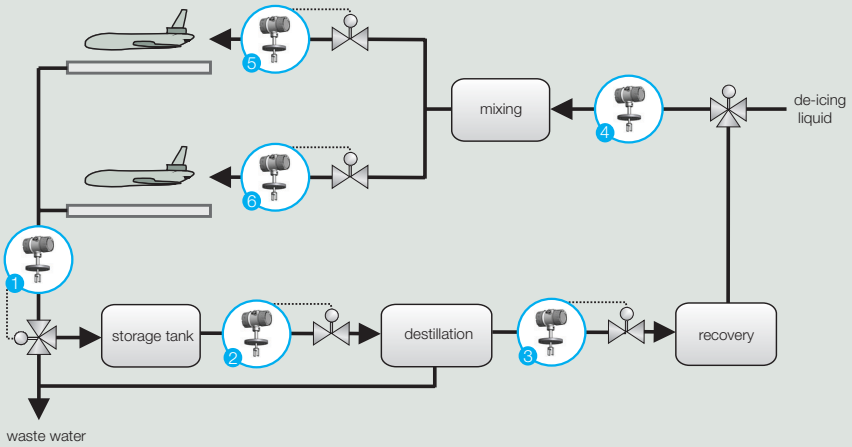
SensoTech
In liquids, we set the measure.



Measuring point	Installation	Measuring task
1	pipeline	monitoring of used aircraft deicing liquid
2	pipeline	concentration monitoring of collected deicing liquid
3	pipeline	quality control of distillation process (recycling)
4	pipeline	incoming goods control for the delivered deicing liquid
5,6	pipeline	control of the required deicing liquid concentration

Aircraft Deicing

Introduction

In frost, the aircraft, runway and pavement must be kept free of snow and ice before the start. Aircraft deicing reduces the aircraft weight and prevent unfavorable aerodynamics, which is reflected in a price reduction and ensures high standards of quality and safety. At special deicing areas of the airfield, the ADL (aircraft deicing liquid) is sprayed on the aircraft. ADL is a mixture of propylene glycol or ethylene glycol with water and is used at temperatures up to below -25°C.

For a better surface adhesion on the aircraft, the deicing liquid is additionally mixed with thickeners. Thereby, the deicing liquid works as a protection against refreezing. Depending on the type of aircraft and the weather conditions, different types and concentrations of ADL are used.

Application

The deicing liquid is made from a mixture of water and ethylene glycol or propylene glycol in a ratio of 50 - 80 wt% glycol. The desired concentration of the mixture is controlled on site. The measuring system LiquiSonic® provides a precise inline concentration measurement of the deicing liquid, whereby the target concentration can be exactly adjusted.

During the deicing process, the deicing liquid is mixed with surface water and snow. The diluted ADL is directed in underground channels and stored in collection tanks. The concentration of the collection tank is inline monitored. Depending on the residual concentration, a deicing liquid recycling (>1%) or discharge into the waste water system is initiated.

By use of LiquiSonic® inline concentration analyzers, the residual concentration of the deicing liquid is determined and further processing steps (distillation or waste water treatment) can be controlled.

Customer value

LiquiSonic® analyzer provide precise inline ADL concentration control with real-time monitoring.

LiquiSonic® reduce expensive total organic carbon (TOC) lab measurements:

- time saving: 1 h per day
- cost per hour: 50 € (60 $)
- total cost savings: 10.000 € (12,000 $) per year

The continuous monitoring of the deicing liquid in the waste water ensures compliance with environmental regulations. Costs are reduced as a consequence of the targeted discharge of ADL waste water into the recycling plant of the airport.

Saving potential for Ø 4500 aircrafts with 400 l ADL:

- increase of the reprocessed deicing fluid of 1 % by exact concentration analyze in the wastewater
- cost savings: 18.000 € (24,000 $) per year

Investment: approx. 15.000 € (20,000 $)
Amortization: < 1 year

Installation

The LiquiSonic® sensor is installed in the transport piplines (e.g. DN 50), collecting lines or reservoirs. Particularly in the reservoirs, sensors with a length up to 4 m can be installed.

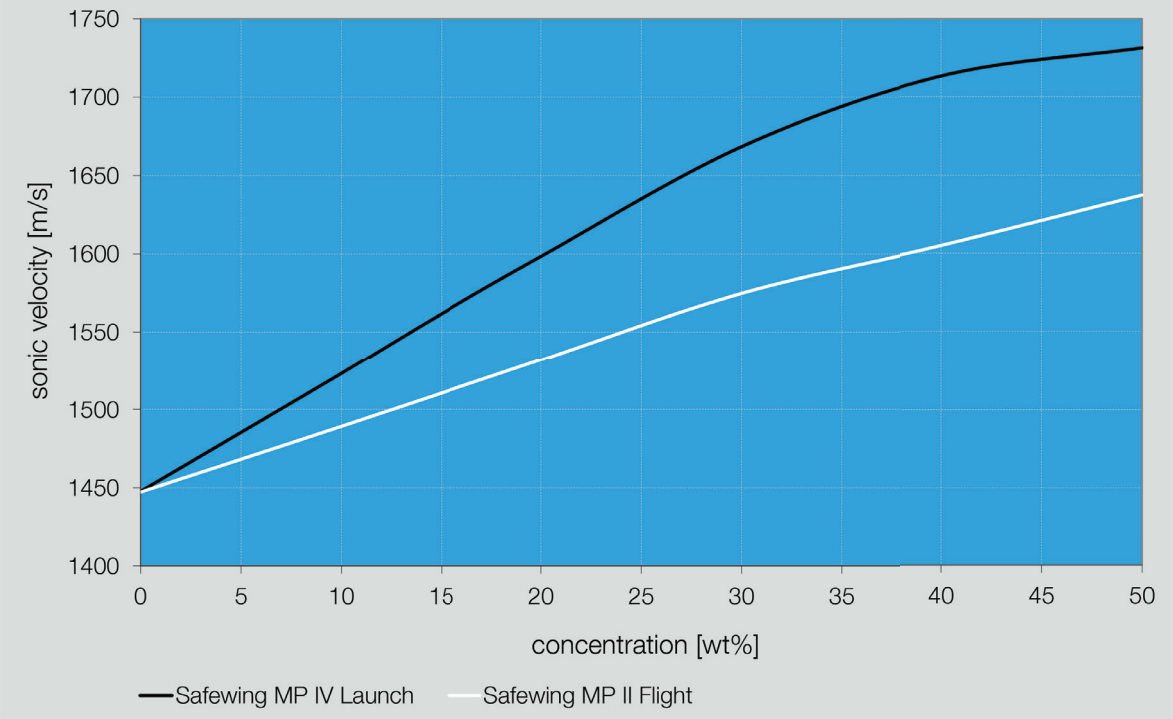
By using the LiquiSonic® controller 30, up to four sensors can be connected, allowing the simultaneous monitoring of several deicing zones. The maximum distance between controller and sensors of 1000 m can be extended, if necessary.

Typical measuring range:
concentration range: 0 to 50 wt%
temperature range: -15 to 30 °C

Typical de-icing liquids are:

- propylene glycol
- safewing MP I Eco, MP II Flight, MP III Eco and MP IV launch
- Kilfrost Typ I, II and IV
- Safeway and runway

LiquiSonic® sonic velocity measurement in aircraft deicing liquid



LiquiSonic® 30

	21001311 LiquiSonic® Controller 30 V10
	21010112 Immersion sensor V10 40-14, DIN DN50, L092
	21004350 T-adapter for immersion sensor DN50-50-50 PN16
BUS	21004435 BUS connection: Profibus DP
	21004449 Network integration
	21004110 High power sensor electronic
	21004202 Bus cable indoor (100m)
	21007846 Factory acceptance test (FAT) certificate

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