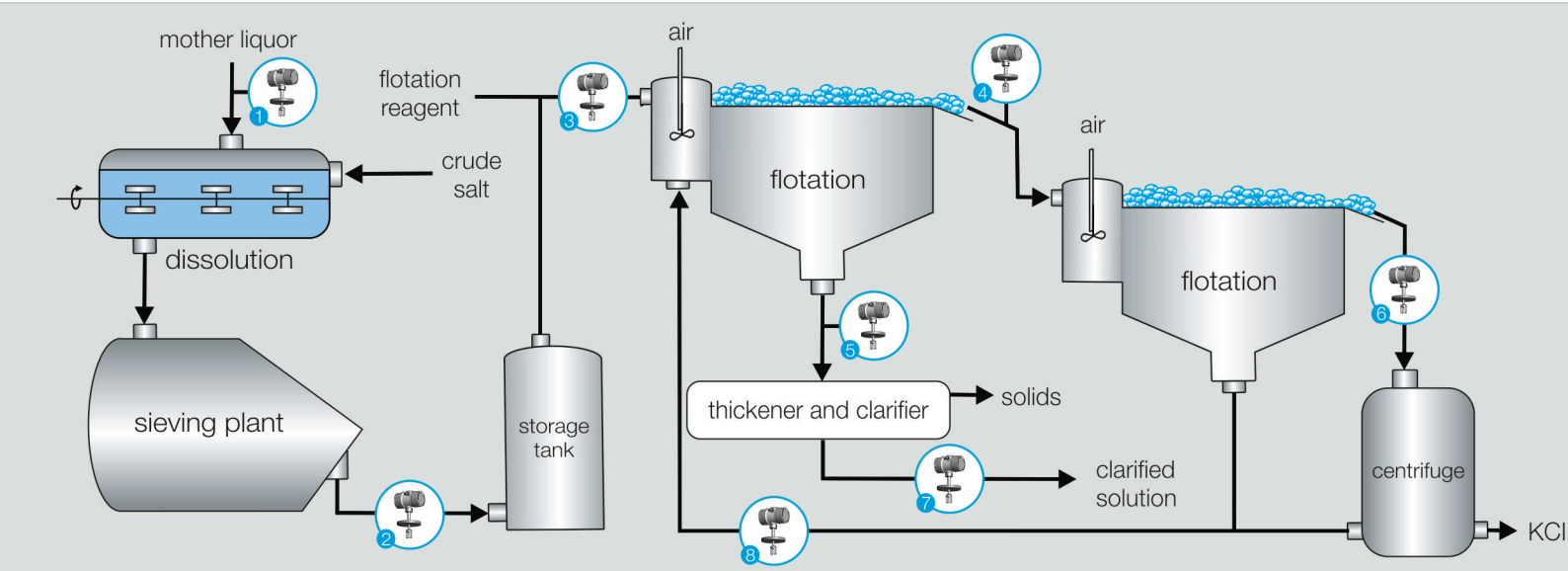
SensoTech
In liquids, we set the measure.



Measuring point	Installation	Measuring task
1, 8	pipeline	concentration monitoring of mother liquor
2, 3, 4, 6	KCl-stream	process monitoring of KCl concentration and saturation
5, 7	posttreatment	NaCl concentration measurement

KCl Flotation

Introduction

The mixture of potassium chloride (KCl) and sodium chloride (NaCl) is the base material for many mineral fertilizers and high purity salts, often used in chemcical and pharmaceutical industries.

Typical separation processes for NaCl and KCl are:

- flotation
- electrostatic separation
- hot dissolution process

During the flotation process, KCl crystals are covered by surface active substances. This allows gas bubbles to bind to the KCl. Thus, KCl is seperated by flotation, while the NaCl sedimentates.

The robust LiquiSonic® measuring technology provides an optimized quality control and productivity increase, especially trough fast process monitoring while flotation process.

Application

Crude salt (KCl and NaCl) is mixed with saturated solution (mother liquor) and is ground finely (crystal size ~ 1mm). During the optional purification stage impurities are separated and the pre-purified solution is stored temporarily.
In the flotation cell the KCl crystalls are covered by surface-active substances. Air bubbles are injected into the flotation cell which adhere to the KCl crystals. This generates a KCl foam, which is mechanically seperated. Meanwhile, the non-binding NaCl crystalls sedimentate and are posttreated in thickener and clarifier.
Frequently, more than one flotation step is needed. The purified KCl-suspension is drained by drying or centrifugation, whereby solid KCl and re-useable process water are produced.

Each process step ,e.g. the crude salt dissolution, can be real-time monitored, regulated and optimized. LiquiSonic® benefits customers by its robustness, with quality improvement and economic advantages.

Customer value

The LiquiSonic® analyzer provides a precise inline concentration measurement with real-time monitoring.

The robust sensor construction and the optional special materials, like titanium, promote long process life.

Additional advantages are:

- optimum line control and reliable process data
- increasing the efficiency of flotation
- drift free measurements over years
- early recognition of malfunctions in a matter of seconds
- reduced maintenance, materials and energy

Investment: approx. 17.000 € (19.000 $)
Amortization: approx. 1 year

Installation

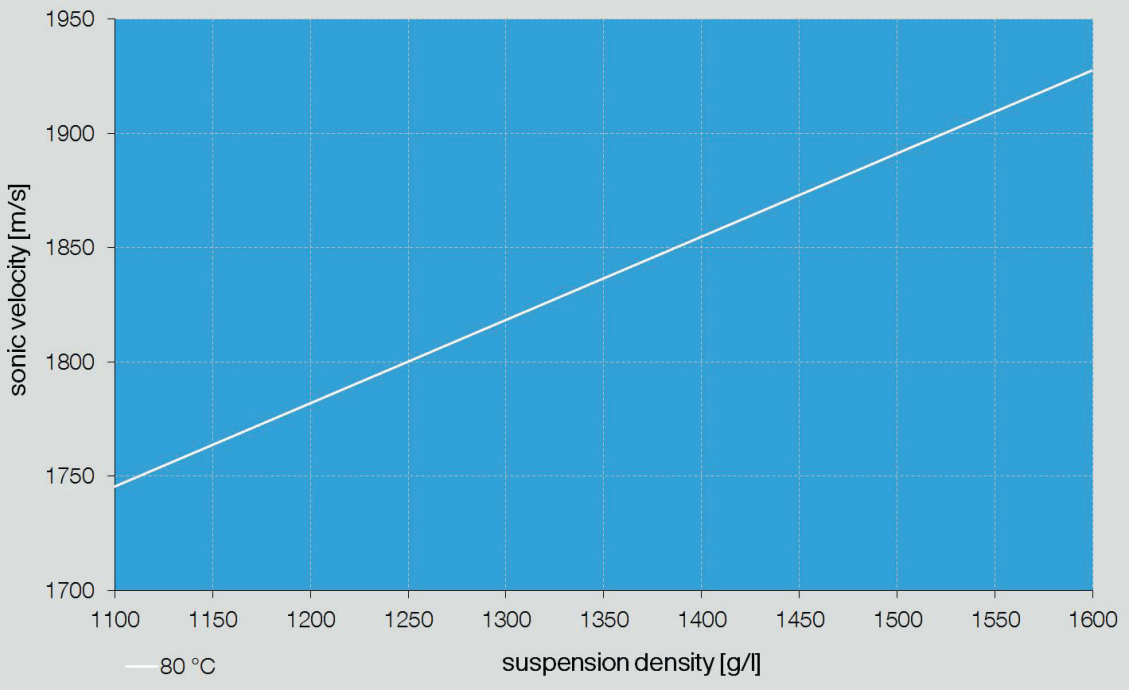
The LiquiSonic® immersion sensor can easily be installed directly into tanks or pipelines, and is well-equipped for measurements in solutions and suspensions. In partially filled pipes, installation from below is recommended.

By using the LiquiSonic® controller 30, up to four sensors can be connected, allowing the whole flotation process to be monitored at different measuring points including:

- mother liquor input
- crude salt dissolution
- clarification
- flotation unit
- KCl drainage

Typical measuring range:
concentration range: 1100 to 1600 g/l
temperature range: 10 to 40 °C (50°F to 100°F)

Sonic velocity measurement in KCl-suspension



LiquiSonic® 30

	21001311 LiquiSonic® Controller 30 V10
	21010105 immersion sensor V10 40-40 Ex ATEX/IECEx, DIN DN50, L092, titanium
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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AP174_01_01 08/2016