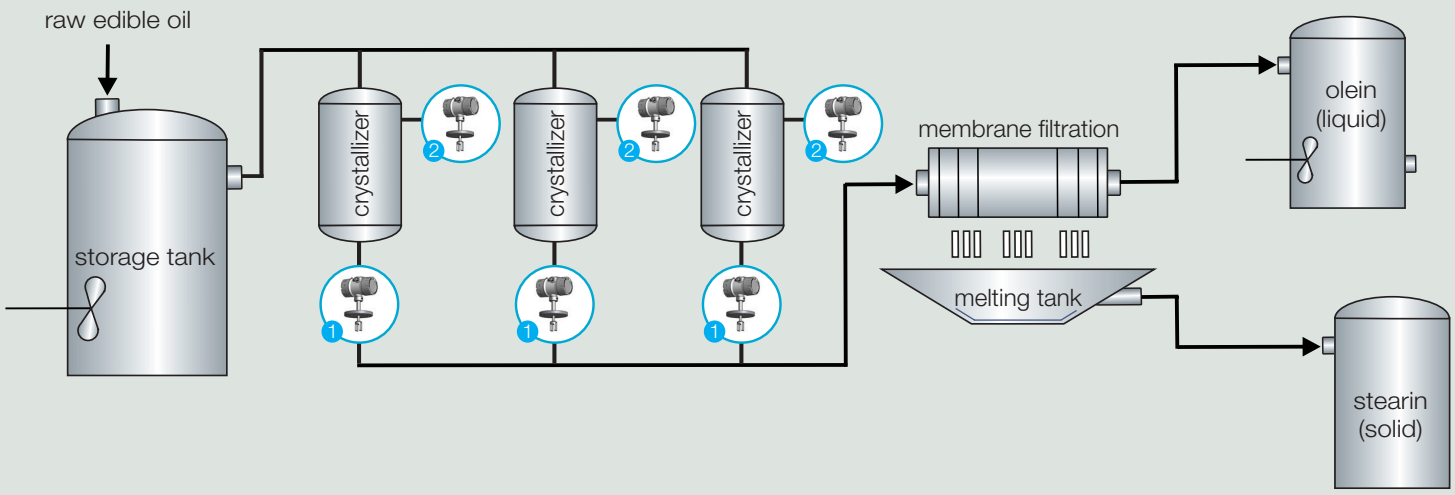
SensoTech
In liquids, we set the measure.



Measuring point	Installation	Measuring task
1	Outlet crystallizer	Determination of solid fat content (SFC)
2	Crystallizer vessel	Inline process monitoring of dry fractionation and crystallization

Oil dry fractionation

Introduction

In their native type, numerous edible oils are not usable for food purposes. To optimize their texture and structural properties, the food industry uses various chemical and physical modifications. Edible oils with a modified texture are most suitable for a consistent final product quality and a stable processing chain.

Dry fractionation is one of the first and most prominent texture-improving processes. It is mostly used for edible oils with high solid fat content (SFC), e.g.:

- palm oil or palm kernel oil
- coconut oil
- soybean oil

The inline LiquiSonic® system provides an optimized dry fractionation process control and precise solid fat content determination.

Application

Dry fractionation is based upon the principle of separation according to the varying melting points for the fat fractions within the edible oil. The method works without solvents. Caused by temperature changes, valuable fatty acids with a higher melting point are separated from the low melting liquid fat fraction. In case of palm kernel oil, solid fat is used as cocoa butter substitute.

In a crystallization unit, the temperature is slowly lowered until semisolid palm oil forms crystals. The resulting solid fat consists of high melting fat crystals (Stearins). The liquid fat fraction (Oleins) is separated by high-pressure membrane filtration.

The maintenance-free LiquiSonic® analyzers provide a real-time dry fractionation monitoring, based on sonic velocity and attenuation. Once the target SFC is reached, the edible oil fractions will be filtered and a consistent product quality is obtained.

Customer value

LiquiSonic® convinces customers with precise inline solid fat content determination and real-time process monitoring, based on sonic velocity and attenuation.

The robust sensor construction without moving parts enables a long-time use in process. The crystallization time is reduced by optimal monitoring of nucleation, cooling rate and SFC. That increases the dry fractionation efficiency.

Additional advantages are:

- optimum line control and reliable process data
- quality check and SFC determination
- stable product properties and texture
- early recognition of nucleation or malfunctions in a matter of seconds
- reduced material, maintenance and energy costs
- reduced sampling and lab analyze

Investment: approx. 15.000 € (18.000 $)

Amortization: approx. 1 year

Installation

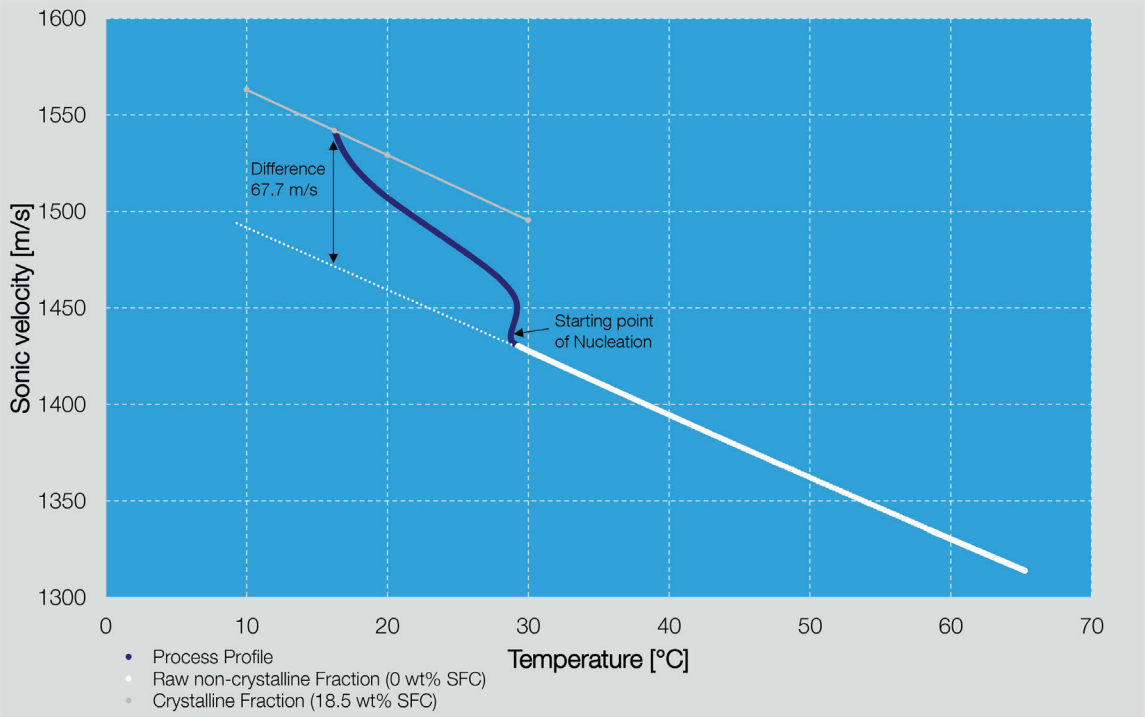
The LiquiSonic® immersion sensor can easily be installed directly into the crystallizer or into pipelines. Based by high power electronics, it is well-equipped for measurements in highly viscous suspensions.

By using the LiquiSonic® controller 30, up to four sensors can be connected, allowing the process at several crystallizers to be monitored.

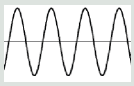
A typical application is the crystallization process control and SFC calculation, based on sonic velocity, attenuation and temperature. LiquiSonic® parameter can be easily implemented into the process control system.

Typical measuring range:
concentration: 0 to 20 wt% SFC - Palm oil (RBDPO)
temperature: 10 to 70 °C (50 to 160 °F)

LiquiSonic® sonic velocity profile of RBDPO dry fractionation



LiquiSonic® 30

	21001311 LiquiSonic® Controller 30 V10
	21010114 Immersion sensor V10 40-14, DIN DN50, L150
BUS	21004435 BUS connection: Profibus DP
	21004449 Network integration
	21004110 High power sensor electronic
	21004402 Attenuation measurement
	21004202 Bus cable indoor (100m)

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