High quality soy oil for delicious dishes

Quality assurance with the optical sensor OUSAF21

For quality assurance, the soybean oil has to be filtered in an elaborate process, which incurs high costs.

Benefits at a glance:

- Reliable quality assurance by measuring the optical color concentration
- Optimized clay consumption which can result in high savings on the filter material
- The investment pays off within a very short time due to the ideal dosage of the filter material

The quality of soy oil is determined by its color. The coloration is different when undesirable substances such as chlorophyll or other substances are present. To avoid contamination and to achieve the best quality, a special filtration and absorption process is used, which needs to be monitored for optimal results. In order to reduce operating costs, as little filtration material as possible should be used, while still ensuring efficient filtration.

Customer challenge

During the clarification process of soy oil, a special, expensive clay is used to bind the undesirable substances, such as chlorophyll. The dosage of this clay is proportional to the chlorophyll concentration. With the help of online monitoring a more precise and economical dosing system for the clay is possible.
It also allows to react quickly in case of unforeseen events. For example, if the chlorophyll concentration is outside the permissible range or other limit values are exceeded. In this case, the soy oil can be returned to previous process stages for reprocessing.
Another challenge, besides the costly filtering process, are process pressure and temperature conditions, which must be considered and observed at all times during the process. Normally the temperature is around 80°C and the pressure amounts 2 bar (g).

Our Solution

Endress+Hauser supports operators to ensure the product quality of the soy oil and the profitability of the operation. In addition to the Liquiline CM44P transmitter, the optical sensor OUSAF21 is installed in the plant to measure the concentration. First of all, the correct correlation between the measured value of the OUSAF21 in AU and the chlorophyll concentration needs to be identified. Therefore, several laboratory samples are evaluated. Once the correct correlation

is found, the sensor helps to improve the process. On the one hand, the sensor serves as a quality barrier if the oil does not meet the corresponding specifications. Consequently, the oil can be reprocessed to achieve the required quality standard.
On the other hand, OUSAF21 controls a control circuit for the precise dosage of the clay that removes the impurities from the soybean oil. This optimizes both process time and costs.

Results and benefits

Operators benefit above all from the optimized dosage of the clay. As the clay is very expensive and accounts for about 70% of the operating costs, even the smallest improvements can lead to enormous savings. Thanks to Endress+Hauser's automation solution, manual sampling is no longer necessary. This had previously caused inconsistencies and prevented the fast adjustment of the clay dosage. These savings succeed regardless of the fluctuating quality of soybeans due to climatic conditions, which also affects the clay dosage.

Components

The Endress+Hauser solution includes the following components:

- Optical sensor for the measurement of low color concentrations OUSAF21-Y0C0D1D3C4A1A,Y=71306716
- Cable set CUK80-4E15A
- Multichannel transmitter Liquiline CM44P-AAFIHP1M01A1F010BAAA

Color sensor OUSAF21 for low color concentrations

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