

Application Report

Turbidity in free-run Must

For the production of quality wine, it is necessary to control each single step of the process. After the de-stemming and mashing, the pre-clarifying of the grape juice is an important phase for the quality of the wine.

Benefits

When the pre-clarification container is emptied, the clear must is drained while the sludge which has collected in the lower and upper portion of the container is avoided. In case of light-coloured juices (white wine, rosé wine), it can be detected with the naked eye as the solids can be seen easily in the free-run must; however, measuring the turbidity results is a fast and reliable optimization. In case of coloured juices (red wine), visual detection is impossible and measuring turbidity is the only option.

Typical application

Eliminating solids in the must reduces the formation of higher alcohols and increases the ester content during fermentation. This intensifies the aroma and enhances the quality of the wine.

The separation of the solids in the pre-clarification container is achieved by settling and floating, so they collect in the upper and lower portion of the container.

The TurbiGuard is installed in the pump line at the outlet of the pre-clarification, for example on a pump trolley as in picture 1.



Picture 1: Mounting of TurbiGuard (circle) on a pump trolley

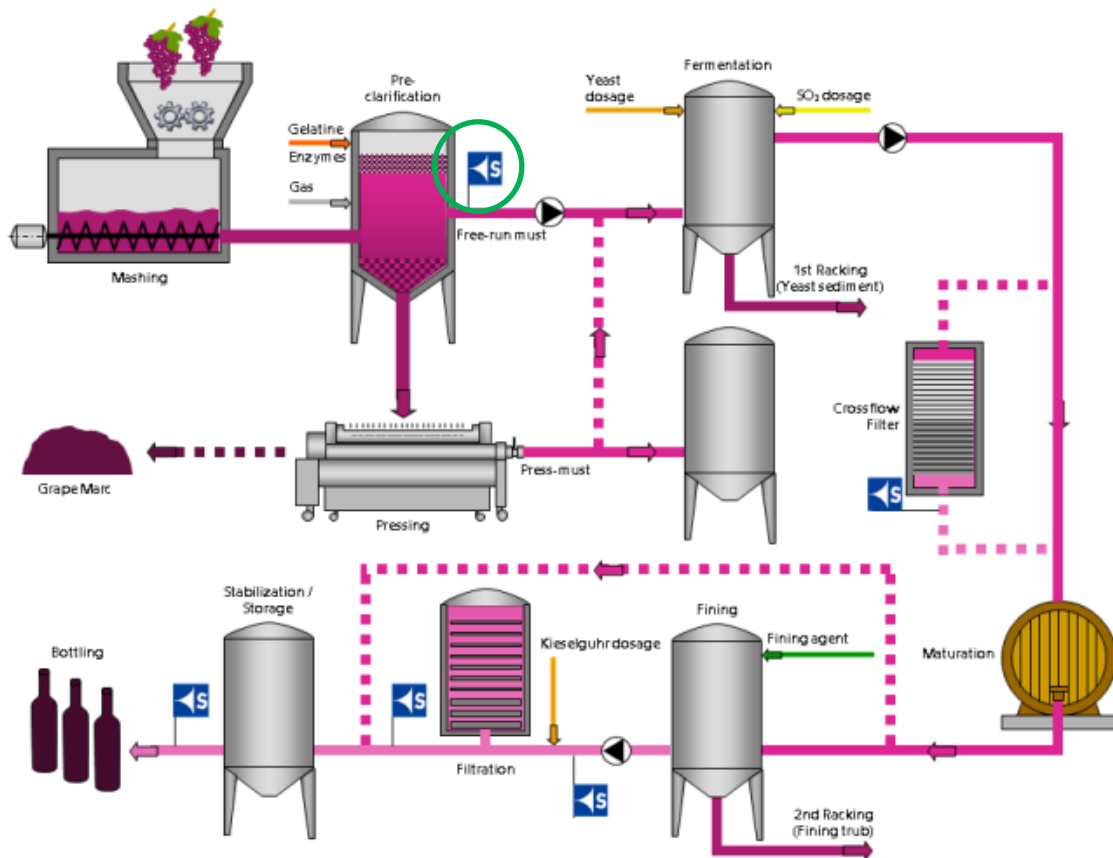


Diagram of the production steps of red wine: the green circle marks the measuring point at the drainage

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Comparison of the on-line measurements with laboratory measurements

Comparative measurements which were carried out in the company ID Fluides and IFV („Institut Français de la Vigne et du Vin“) clearly show that the TurbiGuard (on-line measurement of high turbidities) is ideal for these applications. The comparison of measured values of the TurbiGuard with those of the laboratory apparatus confirms the correlation of the on-line measurement. The absolute values of the two measuring techniques are not identical (see figures 2 and 3) since the optical principles applied are different. The laboratory measurement detects scattered light whereas the on-line measurement measures the absorption of light.

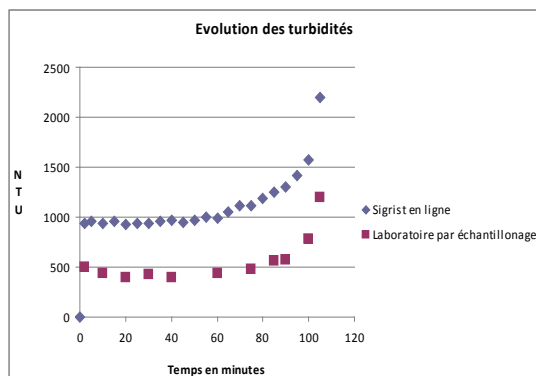


Figure 2: On-line and laboratory measurement of turbidity

Adaptation of the on-line measurement to the laboratory values

The results of the two techniques show a clear connection. If the measured values of the TurbiGuard are multiplied with the factor 0.46, the two curves overlap (see curve «Sigris 0.46» in Figure 3).

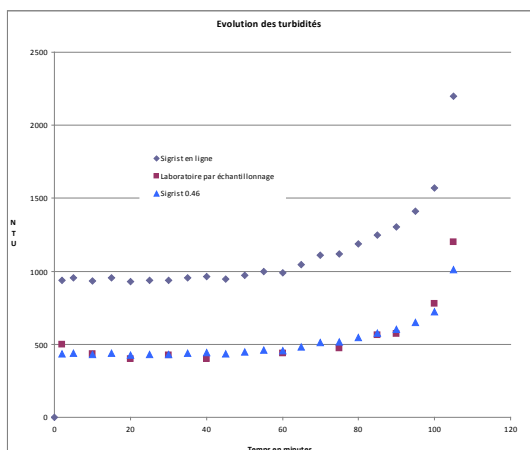


Figure 3: Adaptation of the measured values

Products

SIGRIST product and configuration

- TurbiGuard
- Optional: control unit SICON
- Suitable Varivent® housing

Adjusting the parameter

- The configuration adjustment is easily done using a serial Ethernet interface via the web browser or via the control unit SICON which can optionally be connected.

Advantages of the SIGRIST TurbiGuard

- LED light source, only 2W of power consumption
- No purge air necessary
- Sealless design
- Extremely low maintenance costs
- As a result of its compact design, simple mounting for mobile applications



Picture 4: TurbiGuard in Varivent® housing



Picture 5: Sensor head TurbiGuard