WINE, CIP WATER

**Typical end products**
Wine.

**Chemical curve:** R.I. per BRIX at Ref. Temp. of 20˚C

![Chemical curve graph]

**Introduction**

Many wine processing plants use the same filling station for a range of different products. For example, wine factories bottle wines from different barrels in the same station.

High-speed filling machine operations can be improved by utilizing real-time refractive index measurement technology. Automated monitoring and control of the Clean-In-Place (CIP) cleaning process allows wines to be switched without the need for a shutdown. This way, a higher productivity is achieved without compromising the end product.

**Application**

After the first wine batch is run through a pipeline to packaging, the pipes are flushed with CIP cleaning chemicals and water.

The cleaning water goes to the sewer and the drain valve is closed. After this the filling line is ready to pass the next product.

In order to save valuable production time, the second wine batch is pumped through the pipeline right after the wash cycle.

**Instrumentation and installation**


The K-Patents Sanitary Refractometer is installed at the end of the filling line to monitor the concentration level of the medium. When the concentration reaches a pre-set limit and there is no water present, the refractometer’s 4-20 mA or Ethernet signal activates the end product filling with no delay.

When there are separate lines for the product and for the CIP cleaning media, the water flows to the sewer while the pipe fills with the product. The refractometer gives an instant alarm when the concentration reaches its top limit, and this signal can be used to switch the valve direction. During filling, the valve is open to the filling line and closed to the sewer. During
CIP cleaning and at the start of a new wine batch, the valve closes the filling line and the stream is then diverted to the sewer.

The K-Patents refractometer is available with 3-A Sanitary and EHEDG certifications to meet the highest hygiene requirements for beverage production. Brix monitoring with the K-Patents refractometer allows for instantaneous and real-time filling station quality control.

The refractometer’s output signal can also be utilized for quality control monitoring, ensuring a correct product and bottle combinations, and that the end product complies with specifications. Colorimeters, which are commonly used in wine production, have been proven to be unreliable in detecting product-to-product wine interfaces.

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<th>Instrumentation</th>
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<td>K-Patents Sanitary Compact Refractometer PR-43-AC for hygienic installations in small pipe line sizes of 2.5 inch and smaller. The PR-43-AC refractometer is installed in the pipe bend. It is angle mounted on the outer corner of the pipe bend directly, or by a flow cell using a 3A Sanitary clamp, I-clamp or Varinline® connection.</td>
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| User Interface | Selectable multichannel MI, compact CI or a web-based WI user interface options allow the user to select the most preferred way to access and use the refractometer measurement and diagnostics data. |

| Measurement range | Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 Brix. |