



PEREGRINE MOBILE BOTTLING, LLC offers Premium Mobile Bottling Services on a **KRONES**-engineered production line. Our rotary, three-aggregate, pressure-sensitive labeler features electronic orientation by photo-electronic sensors as well as fiber-optic cable sensors. For further information and availability please contact Thomas Jordan at 707-637-7584 or [Thomas@PeregrineMobileBottling.com](mailto:Thomas@PeregrineMobileBottling.com).

### **Label Applications using Electronic Bottle Orientation**

Brand identity in the beverage industry is often reflected in packaging design. Marketing teams have developed distinct features to differentiate products from its competitors. This resulted in new label designs, label materials as well as a trend to custom bottles - bottles of specific shape or embossed bottles.

When it comes to handling these bottles on bottling lines new technologies nowadays allow for more flexibility than in the past. The use of electro-motors for bottle control on the production line as well as sensor and camera supported inspection systems provides this flexibility.

In the past many marketing ideas resulted in significant challenges for bottling operation teams. In most cases custom bottle molds needed to be purchased for bottles with orientation lugs in the base or on the bottle side-wall, new labeling equipment had to be purchased or existing machines needed modifications to handle special label applications, custom shaped or embossed bottles. Most of the existing rotary labelers still have cam driven bottle plates. In order to handle orientation, the machines needed to be retrofitted with custom bottle plates to orient the bottles via a lug in the bottle base (see photos 1 and 2) or with an orientation arm in the infeed star-wheel or on the bottle table for orientation via a lug on the outside of the bottle (see photos 3 and 4). This added cost as well as in some cases an un-attractive visual feature to the bottle. As a result, the production speed sometimes needed to be reduced and potentially the line efficiency went down due to higher complexity – all this potentially meant increased production costs which is not desirable.



**Photo 1: Lug in Bottle Base**



**Photo 2: Mechanical Lug Orientation on the bottle plate**

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Contact: Thomas Jordan | p: 707-637-7584 | e: [Thomas@PeregrineMobileBottling.com](mailto:Thomas@PeregrineMobileBottling.com)  
P.O. Box 4318 | Napa, CA 94558 | [www.PeregrineMobileBottling.com](http://www.PeregrineMobileBottling.com)

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Photo 3: Side-wall Orientation Lug



Photo 4: Mechanical Orientation for Side-wall Lug  
on Labeler Bottle Table

Electronic Bottle Orientation is a feature which gained great popularity in the last several years and opens up label applications with orientation for reasonable costs. **KRONES** and **KOSME**, its 100% subsidiary, as leading labeling equipment manufacturers offer several different technologies for Electronic Bottle Orientation.

In order to achieve highest label application accuracies **KRONES** and **KOSME** focus on rotary labeling equipment. This allows for best bottle control during regular front, back and neck label applications. On rotary labelers bottles are placed on individual bottle plates which are located on the rotating bottle table. Each bottle plate is individually driven by a mechanical cam, stepper motor or servo motor depending on customer requirements. Placed on the bottle plate bottles are held in place by a so-called centering bell (see photo 5). This avoids slippage during the label application process. This is a significant advantage of a rotary labeler vs. a linear labeler where bottles are transported via conveyor chain through the labeler without slippage control when the label is applied. Orientation of bottles on a rotary labeler also provides continuous operation with little or no speed reduction.

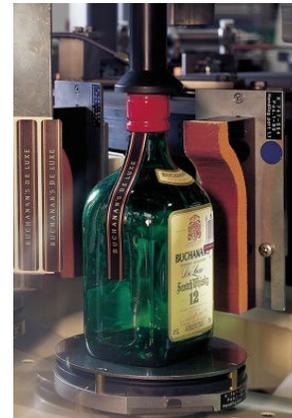


Photo 5: Centering Bell

For customers running multiple bottles and label set-ups on the same production line it is advisable to operate a rotary labeler with either stepper-motor or servo-motor driven bottle plates rather than mechanical cam driven bottle plates. For electronic bottle orientation applications stepper-motor or servo-motor driven bottle plates are a requirement. With this technology the individual product set-up parameters are set and stored via the bottle table controls. This allows for a much greater flexibility, faster change-over times and, therefore, higher production efficiency.

Container orientation is generally necessary when labels have to be applied at a designated position of the bottle or to avoid that labels are placed on the glass seam. The **KRONES** and **KOSME** electronic

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orientation technology allows orientation by signal transmission with the labeling machine without any mechanical features. Through a camera system, fiber-optic cable sensors or photo-electric sensors various orientation scenarios are possible by detecting the bottle seam, a bottle embossing or an orientation lug.

## **Orientation via Bottle Seam Detection:**

The bottles are rotated in front of a camera system or fiber-optic cable sensors and recognize both glass seams. Each of the seam readings provides a signal which allows identifying the seam position of the bottle. Together with the label size information the bottle is turned into the position to place the label in-between the two seams.



**Photo 6: Seam Oriented Label Application**

## **Orientation via Embossing Detection:**

Embossed bottles require orientation since the label has to be applied at a designated position on the bottle. Based on the embossing detection the label position will be determined and the label parameters will be set accordingly in the controls.

## **Orientation via Side-Wall Lug:**

For companies already running a bottle with a side-wall orientation lug and orient mechanically, this lug can be detected as a clear feature so that a detection rate of > 99% can be achieved. The lug has to be of specific minimum dimensions and shape to be detected correctly.

All three orientation methods require dry bottles since water drops can be detected and may cause faulty bottle orientation. The same applies to the bottle quality; scratches or scuffing, if significant, might wrongly be detected and may lead to faulty detections. Experience shows that a better detection rate is ensured for dark bottles compared to lighter ones.

Below Photos 7-10 show different camera and sensor technologies installed on labelers.



**Photo 7: Embossing Detection via sensor (Peregrine Mobile Bottling)**



**Photo 8: Side-wall Lug Detection via Photo-Electronic Sensor**

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Sensor orientation requires individual sensors for each bottle plate. While the bottle table is rotating the stepper-motor or servo-motor at the same time rotates the bottle plate with the bottle, detects the seam, embossing or lug and positions it accordingly for correct label placement.

Orientation via camera requires a set of 3 cameras to be installed in a fixed position on the bottle table. The three-camera set-up allows detecting the seam, embossing or lug while the bottles pass by the cameras. The processing of the camera images and the recording of the calculated results are transferred to a central processing unit, which then provides information to the bottle plate motors to position the bottle for the correct label placement. This technology is the most advanced and is usually implemented for very sensitive detection and/or high speed applications. **KRONES** has field installations for labelers operating at up to 900 bpm using seam detection camera systems for clear pressure sensitive label applications. In this case a fourth camera is placed directly in the position before the PS label applicator for final adjustment to ensure highest label placement accuracy (see photo 10).

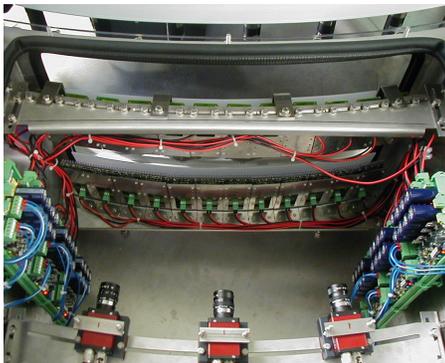


Photo 9: Stationary 3-Camera –Set-Up

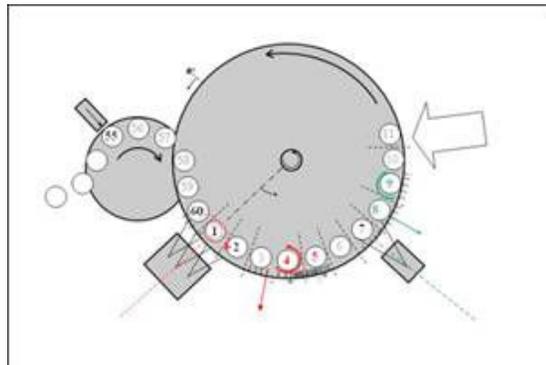


Photo 10: Schematic of a 4-Camera Set-Up

For additional information on Mobile Bottling Services, Label Applications Using Electronic Bottle Orientation or any other Bottling Related Subjects please contact:

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[www.KRONES.com](http://www.KRONES.com)

[www.PeregrineMobileBottling.com](http://www.PeregrineMobileBottling.com)

[www.KOSME.it](http://www.KOSME.it)

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