

## Maselli Misure analyzers monitor and control beer production process.

**O**ne of the necessities mostly felt by production managers in many industrial fields is to monitor "on-line" variables and automatically control in real time the process.

This condition is even more important where the success of the final product on the market depends exclusively on its high quality and low cost.

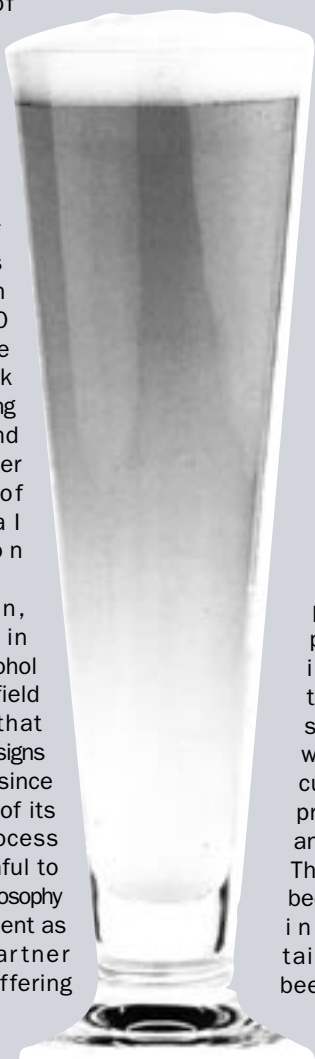
The beer operators are working since a long time in this context always looking for better solutions in the automation of the analysis and control area.

Maselli Misure, which is working since 40 years in the on-line analysis of liquids, has specialized in the past 20 years in the juice and softdrink sectors becoming a reliable and efficient partner for all kind of analytical automation projects. Concentration, turbidity, gas in liquids and alcohol analyzers are field tested units that our company designs and produces since the beginning of its activity in process analysis. Faithful to our business philosophy to serve the client as an active partner by always offering

personalized high quality products and service, we have made an effort to study how to integrate the existing Maselli technology and experience with the specific problems of the beer production process.

This entry in the beer sector has been very "natural" because our technical solutions have been able to capitalize all the similar positive experiences that we achieved in previous applications.

Research and development have always been the most important activities for Maselli, a company which wants to respond quickly with innovative, high quality and reliable solutions to different exigences. Also in developing beer application Maselli Misure has followed the strategy of strong investments both in highly professional personnel and in leading edge technology and strong cooperation with specific customers during product definition and development. The results have been "customized" instruments tailored for the beer application.



### Maselli: a international group contributing to the evolution of liquid analysis.

Maselli Misure has continued to make important technical contributions to the evolution of liquid analysis instrumentation since its organization in 1948. Today Maselli Misure is one of only a few companies worldwide capable of developing and constructing automatic on-line and laboratory liquid analyzers. Collaboration with varied industries, combined with continuous research and development, have

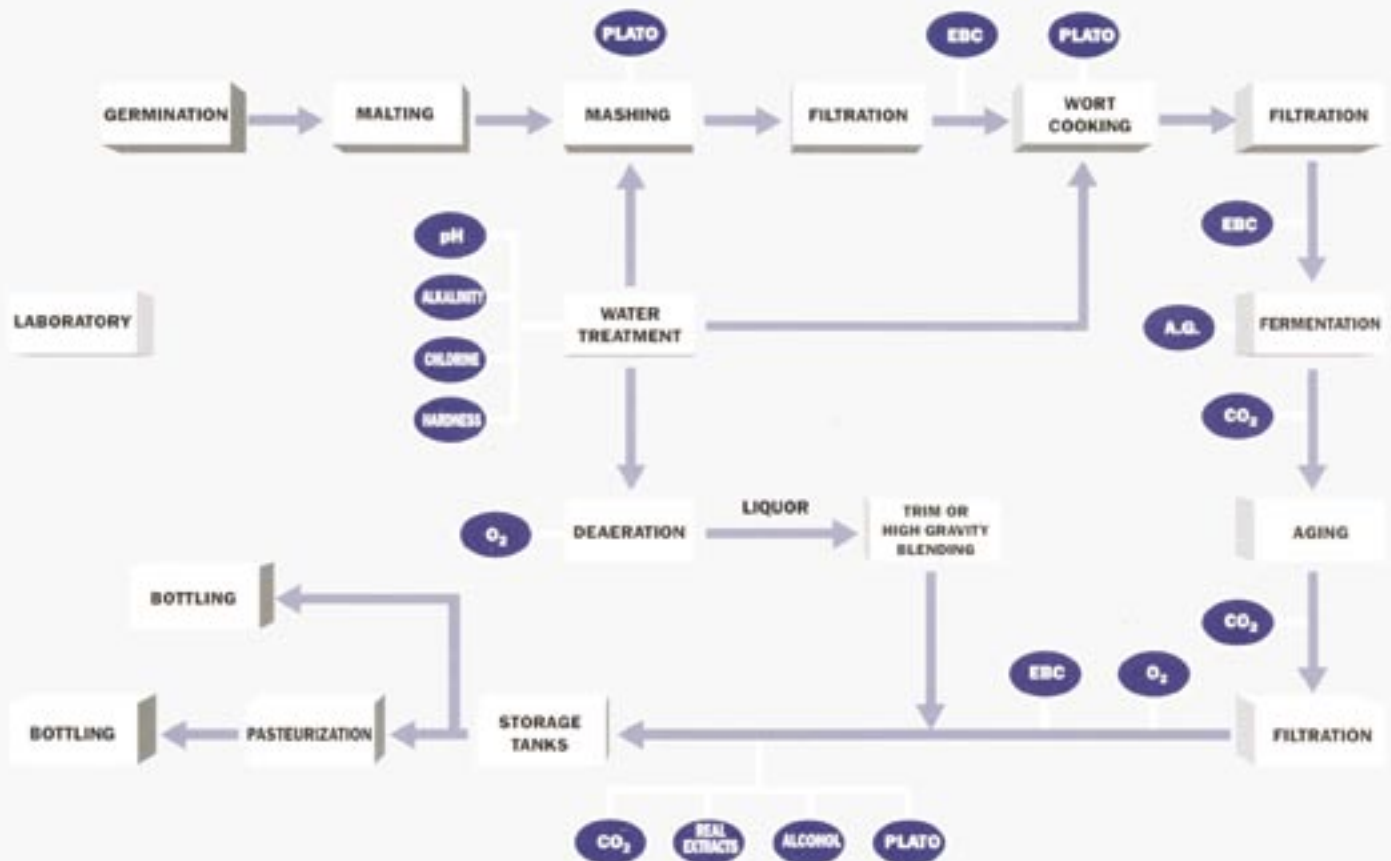
of local agents efficiently cover the European markets, reporting directly to the Maselli headquarters in Italy. Meanwhile, in order to better respond to the special needs overseas, Maselli Measurements was established in the USA to coordinate activities in North America. More recently, Maselli Measurements de Mexico was formed to serve the Mexican and Central American markets. Additional market expansion plans for the near future include Asia



given Maselli the unique ability to make difficult analyses over a wide range of applications. A multifaceted and versatile organization, Maselli Misure markets their products and services throughout the industrialized world. A network

and the Pacific Rim countries. This international Maselli group form a coherent sales and service network, guaranteeing professionalism, competence, quality and technical support worldwide.

**In the production process, we are present from the**



## Mashing, Cooking & Fermentation: Model UR-20 Refractometer

**I**n the mashing and wort cooking phases, the model UR-20 process refractometers are used to continuously measure the Plato degree. The refractometric unit mod. UR-20 can also be used in the fermentation processes: for this purpose it is equipped with a special software to have the data directly expressed in A.G. (Apparent Gravity). The Model UR-20 in-line refractometer, which utilizes digital CCD sensor technology, can be configured with a range of 5-20 Plato with accuracy better than 0.05 Plato. This UR-20 together with process controller can also automatically control the mashing and cooking process. Even when only monitoring, the measurement can be

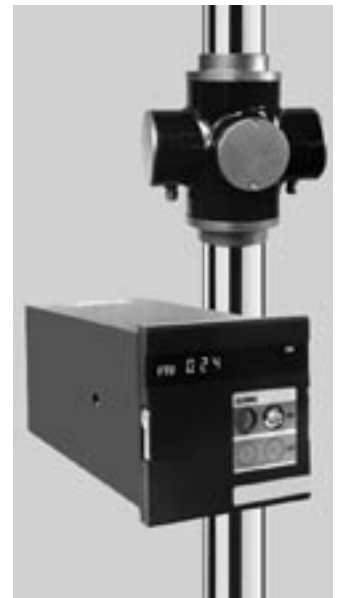


continuously recorded and the instrument's standard internal alarms can alert the operator to problem conditions. Precipitations, coatings and deposits on the prism which might obstruct the measurement are automatically removed by a modern, programmable prism cleaning system, which keeps the instrument accurate and reliable.

**Filtration:**  
**Model UT-02 Turbidimeter**

**I**t is a continuous analyzer that measures the light diffused by solid particles suspended in a liquid flowing past it. The instrument is insensitive to variations in the color of the beer or wort, or to variations in light source intensity. The UT-02 will measure the degree of turbidity in a liquid and, upon reaching a preset value, provide an output alarm signal to stop the process or to warn the operator. The instrument is normally mounted downstream of the filter to monitor the existing liquid. It can be used in both the filtration and CIP phases of the beer. The UT-02 turbidimeter generates

a mA signal proportional to the measurement, suitable for recording or controlling the system.



# mashing to the bottling.

In the Brewery industry there are any applications areas where Maselli analysis and control systems are used. They include routine manual measurements, continuous analytical on line analysis and more complex control systems.

## Water Treatment

In this phase we realize an automatic control of the water treatment process with our process titrator model AT-02 which replaces the laboratory analysis.

## Deaeration

Automatic control of the oxygen residues on the deaerator.

## Mashing

In this phase we automatically monitor and control the maltose's diffusion to maintain the sugared wort at the required values by means of a refractometric analysis unit model UR-20.

## Wort Cooking and Concentration

Automatic control of the wort cooking and concentration cycle and automation of the whole process by means of a refractometric analysis unit model UR-20.

## Filtration

Monitoring, control and alarm of the outlet product of the several filtration processes by means of a turbidimeter model UT-02.

In the last filtration phase, we can control also the product's oxygen.

## Fermentation

The process fermentation phase is controlled by following the sugars decreasing by means of a refractometric analysis unit model UR-20.

## Blending Transducer

In this process phase, the original gravity, alcohol, extract and CO<sub>2</sub> parameters are monitored and standardized by means of a model IB-04 analysis unit and controlled by means of BAS-02 system.

## Laboratory

In the laboratory, by means of our model LR-01 refractometer, it is possible to realize the routine analysis on the product coming from the different phases of the process.

## Carbonation: Model UC-05 Carbometer

**T**he Maselli model UC-05 carbometer is installed on line.

The analysis method is based on the determination of saturation pressure of the product.

The carbometer, during its automatic measurement cycle, measures temperature and saturation pressure of the sample and calculates the quantity of dissolved CO<sub>2</sub> applying Henry's law physical formula. The instrument's scale is 0-5 V/V CO<sub>2</sub> with an accuracy of +/- 0.05 V/V CO<sub>2</sub>. The unit is contained in a waterproof housing suitable for all industrial environments.

The Maselli UC-05 carbometer is normally installed between the fermentation and the filtration area according to the specific process requirements.



## Beer Monitors

**Basic:** refractometer + sound velocity transducer for Alcohol, Extract and Original Gravity measurements



The microprocessed controller of the system is able to combine the measurements coming from a sound velocity transducer and a refractometer installed directly in line in the main piping.

*Technical specifications:*

### Alcohol

Range: 0 – 10 % w/w  
(0 to 12 % V/V)  
Accuracy: better than  
+/- 0.02 % w/w

### Extract

Range: 0 – 10°Plato  
Accuracy: better than +/- 0.02°Plato

### Original Gravity

Range: 0 – 30°Plato  
Accuracy: better than  
+/- 0.05°Plato

\*after on site specific  
beer adjustment

**Full Option:** IB-04 integrate analysis system for Alcohol, Extract, Original Gravity, CO<sub>2</sub> and O<sub>2</sub> measurements

The Maselli IB-04, installed between the filter and the storage tank, achieves the analysis of all the fiscal parameters needed by the operator combining the measurement provided by a sound velocity transducer, a refractometer, a carbometer and a O<sub>2</sub> electrode.

*Technical specifications:*

### Alcohol

Range: 0 – 10% w/w  
(0 to 12% V/V)  
Accuracy: better than  
+/- 0.02% w/w

### Extract

Range: 0 – 10°Plato  
Accuracy: better than  
+/- 0.02°Plato

### Original Gravity

Range: 0 – 30°Plato  
Accuracy: better than  
+/- 0.05°Plato

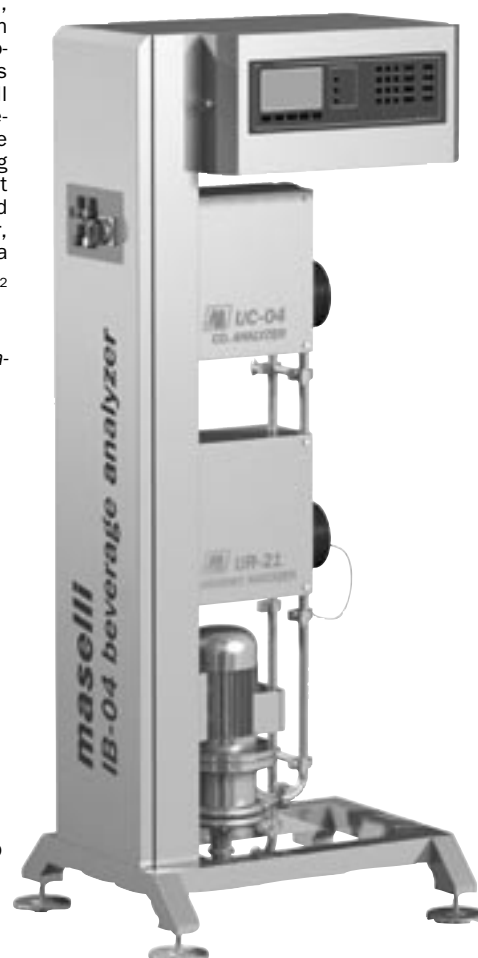
### CO<sub>2</sub>

Range: from 0- 5 V/V  
Accuracy: better than  
+/-0.05 V/V

### O<sub>2</sub>

Range: from 0-150ppb  
Accuracy: better than  
+/-2ppb

\*after on site specific  
beer adjustment



# Laboratory: Model LR-01 Lab Refractometer

**T**he Maselli LR-01 digital refractometer is an important element for use in laboratory analysis.

The 0-95 operating range with 0.05 Brix accuracy and automatic temperature compensation allows it to be used for many purposes.

In addition to the Brix range, the LR-01 has PLATO and Nd scales: other operating ranges can be programmed by the operator for other products measured in the lab. For example, the instrument might be personalized to measure the



concentration of CIP solutions. The LR-01 has internal alarms that can be set to detect va-

riations from target values, and can be connected to a computer and standard printer.

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- Germany - Switzerland - CSI  
- Bulgaria - Greece - Israel  
- South Africa - Taiwan - Japan  
- South Korea - Australia  
- Canada - Guatemala - Colombia  
- Venezuela - Chile - Brazil

*If you would like more information on Maselli system  
for beer quality control, fill in and send (also by fax) this inquiry form  
directly to Maselli Misure Parma or to our local agent, see label.*

## MASELLI MISURE INQUIRY FORM

### I would like more information on:

- ☐ Model UR-20  
Refractometer
- ☐ Model IB-04  
Analysis Unit
- ☐ Model UT-02  
Turbidimeter
- ☐ Model UC-05  
Carbometer
- ☐ Sound Velocity  
Transducer
- ☐ Model LR-01  
Lab Refractometer

☐ I wish to be contacted  
by one of your staff

Name \_\_\_\_\_

Surname \_\_\_\_\_

Company \_\_\_\_\_

Department \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Address \_\_\_\_\_

Telephone ( \_\_\_\_\_ ) \_\_\_\_\_

Fax ( \_\_\_\_\_ ) \_\_\_\_\_



**Maselli's technical and commercial departments are at your complete disposal. If you would like more information about Maselli's equipments for beverage industry contact us by e-mail or fill in and send (also by fax) this inquiry card to our local agent (see label).**