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**MARKETING INFORMATION**
*Applications in the METALLURGICAL sector*
**Mechanical machining Department**

## LUBRIFICATION AND COOLING OILS

In companies that carry out mechanical machining or pressed sheeting lubrication and cooling oils are used. There are a number of types of products, depending on the machining features as well as those of the oil components. Various chemical-physical analyses are carried out for controlling the process in the lubrication and cooling oils preparation plants. The automatic analyzers can be used in two phases:

- For checking the dilution of the lubrication and cooling oil
- For checking the ready emulsion tanks, in recirculation on machine tools.

We have installed various automatic analyzers that concern these measuring points.

A plant for the preparation and maintenance of lubrication and cooling oil baths can be represented as shown in the figure below.

**PROCESSES INVOLVED:**
***Dilution of lubrication and cooling oil***

The lubrication and cooling oil is diluted so that it can be sent to the machine tools. For this operation there are dosing systems with orifices, which are, however, greatly influenced by changes in the viscosity of the oil, especially because of the temperature. To solve this problem, the **UR20** refractometer is fitted directly on the mixer outlet for indication and alarm of **% of oil**.

***Emulsion tank***

In companies where there are many machine tools the lubrication and cooling oil unit is not present on each user but there is just one for all the machine tools. The tanks may contain up to a few hundred cubic meters of oil with the evident need to check the following:

- the % of oil must be kept constant to protect the tools and optimize operations;
- the emulsion must not cause oxidation of the machined mechanical parts;
- there must be no fermentation in the tank resulting in the formation of harmful and/or foul-smelling substances.

To check these characteristics the **AT-02 automatic titrator** directly takes samples from the emulsion tank, to carry out the following analyses:

- measuring the **% of oil**, by means of an internal refractometer;
- measuring the pH, by means of a combined electrode
- measuring the total alkalinity, by means of an acid/base titration, using soda as the titration reagent;
- measuring the conductivity, by means of a specific probe.

After each analysis cycle, the analyzer carries out a washing and deterging cycle to remove the fouling caused (particularly by the hydraulic oil) from the machine tools.

