Applications Information
MCS500
Dissolution Measurement

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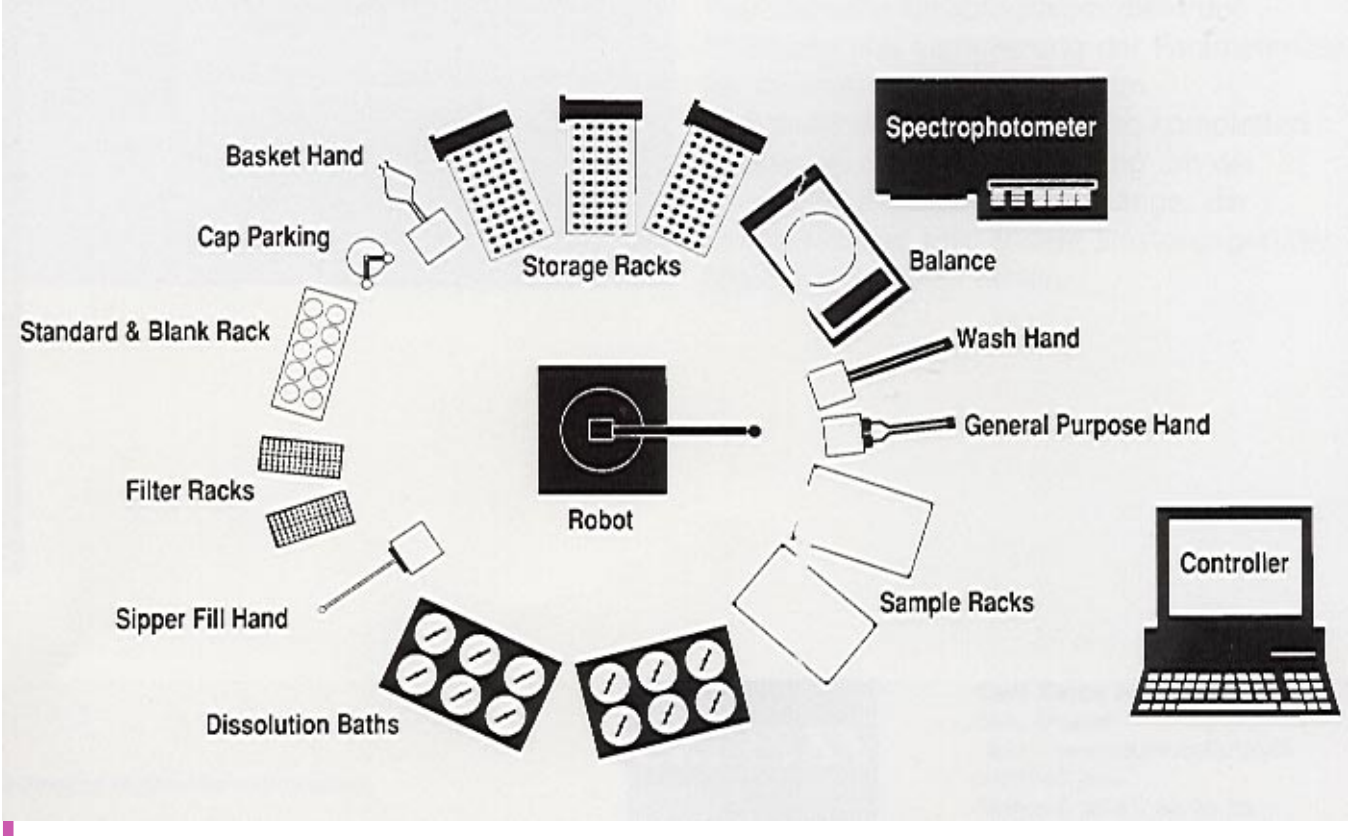
Process description

Dissolution measurements are carried out to determine the solubility or the liberation rates of pharmaceuticals.
The liberation rate is specified in %. It defines the dissolution of the substance of interest as a function of time.
The liberation rate provides information on the biological availability of the pharmaceuticals. Thus, it is an important parameter in the development of new drugs. Likewise important is the measurement of the liberation rate in product control (QC) to determine the homogeneity of drugs both within a batch and from batch to batch.

At the same time, the rate is a measure of the shelf life of the product under different storage conditions.
Logically, the liberation rate is to be determined in an environment that is very similar to that in the human organism where the substance is applied. Hence, the determination requires solutions that come very close to the composition existing in the stomach or intestine. In addition, this medium of defined volume (approximately real concentrations) must be thermostatted and steadily moved.
Typically, the samples to be measured are taken from this environment at regular intervals.

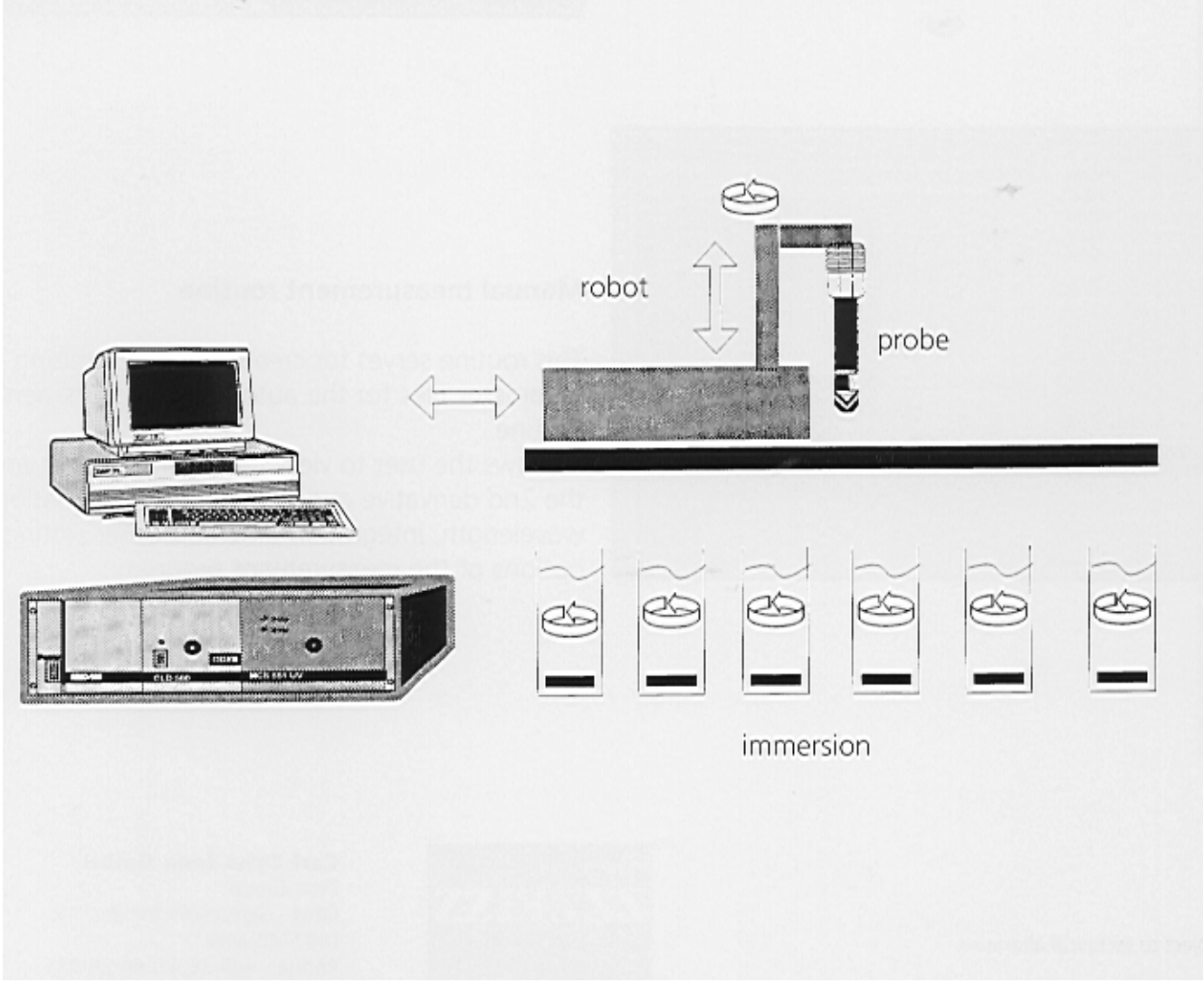
Automatic process of a dissolution measurement



System description

In the example introduced here, a measurement is taken directly in the dissolution vessel by means of a fibre-optical immersion probe. This setup optimally meets the demands for minimised intervention in the system to be measured.
Measurement stations with immersion probes can be set up in different ways:
It is possible to integrate a measuring probe each in every vessel to be inspected and collect the measured data by means of an optical multiplexer.

Another setup uses a robot to immerse the probe successively in the vessels to be inspected.
The immersion probes are made of quartz glass and corrosion-proof steel. For the measurement, only the quartz body dips into the sample. The outside diameter of this measuring body is 15 mm. It can stand temperatures of up to 100 °C. The probe is available with optical pathlengths of 1 ... 20 mm.

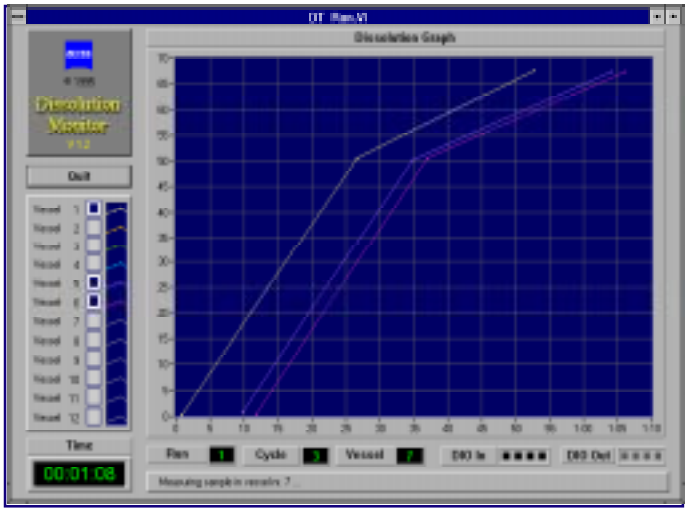


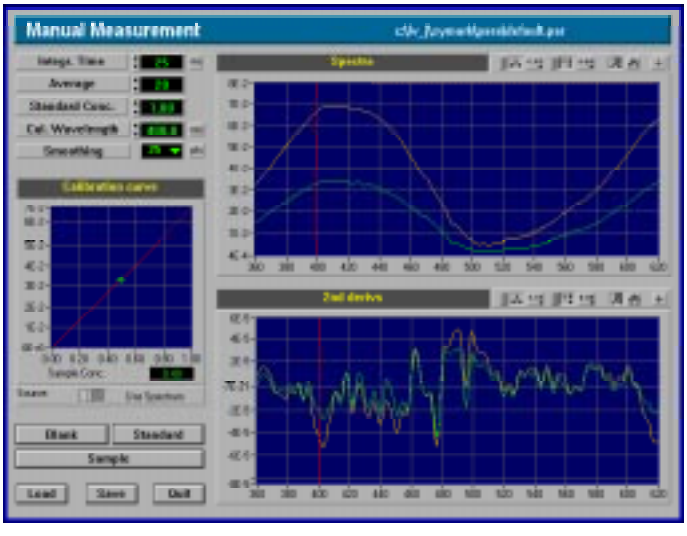
Software

The software consists of an automatic and a manual measurement routine.

Automatic measurement routine

This routine serves for displaying the dissolution curves of one or all dissolution containers. Besides, the program informs of the current period of dissolution measurement, cycle number and currently measured sample vessel.





Manual measurement routine

This routine serves for creating and optimising parameter files for the automatic measurement routine.
It allows the user to view the total spectrum and the 2nd derivative and thus optimise calibration wavelength, integration time and other setting options of the measurement program.

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