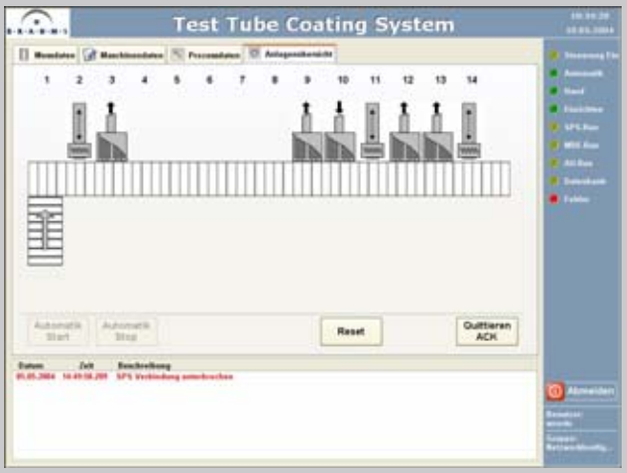
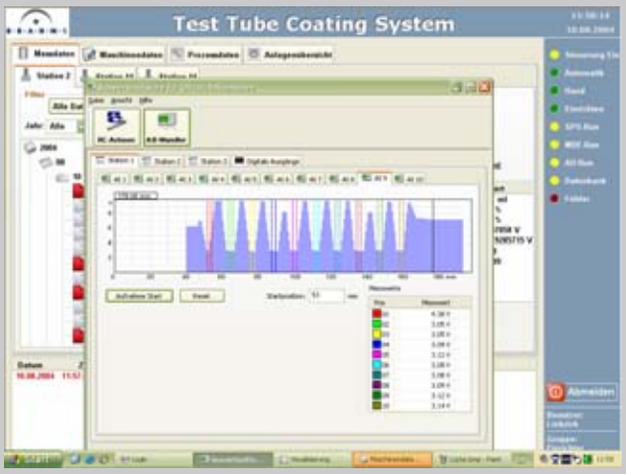
Measurement of moisture level of test tubes in the Oysterbay saturation equipment

The Oysterbay saturation equipment siphons filled test tubes and refills them with an aqueous non-sterile solution. The equipment processes 60,000 tubes of different dimensions per hour. Trays of 50 are processed 2 at a time every 3 seconds.

InSystems has fundamentally renewed and extended electrical and mechanical components as well as the PLC for this pharmaceutical company.

As an improvement of process control, 3 levels of control with measured value and visualization were added.
The ultrasonic sensors can scan up to 100 injections with in 2 seconds and verify the filling to with in 0.03 ml.
The entire project was accomplished and documented in accordance with the **GAMP4 Regulations**.





Determining Measured Value

Three measuring stages are installed in the processing line. One before the first suction head, one behind the filling head and one behind the last suction head.

Each stage contains 10 ultrasonic sensors that proceed via a linear drive 3 mm over each of the test tubes. The analogue output signals of the sensors, which are between 0 and 10 V, are processed in the computer using a 16bit analogue to digital converter plug-in card.

The sensors take approx. 300 measurements per tube. From these measurements, the moisture level in each tube is computed in a mode procedure.

Measured values are clearly assigned and the individual measuring range can be determined.

Analysis software

The control and analysis software implements the following functions:

- Calibration of the ultrasonic sensors with a “Master” (setting of the teach inputs)
- Creation of the measurement range by inputting tolerances
- Control of the measuring sequence (Position of the servo drive, evaluate positions, measurement start)
- Reading the Voltage levels of the ultrasonic sensors.
- Processing of the measured values
- Computation of the filling level and visualization on the screen