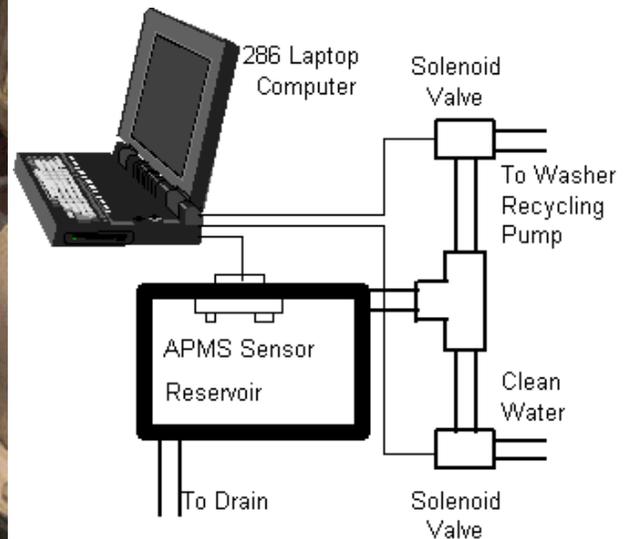


## Turbidity Sensing in PCB Washer

Solid State Sensor

AP 00280



### PRODUCT

Turbidity Sensor

### APPLICATION DESCRIPTION

The cleanliness of printed circuit boards can affect conformal coating operations. Boards must be free of flux and detergent residue. To minimize rework, a PCB washer was fitted with a Honeywell APMS Wash Process Sensor. Using an optical turbidity sensor, the Wash Process Sensor (WPS) determines how dirty the post-wash rinse tank water is. The sensor also incorporates conductivity measurement to check the amount of detergent in the rinse water.

The WPS is installed in a non-conductive reservoir with lines running from the PCB washer's recycling pump and the reservoir to a drain. The plastic reservoir does not interfere with conductivity

readings the way in which steel-walled rinse tanks do. The reservoir also has a lid to prevent ambient light from interfering with the optical turbidity readings. Another line providing clean water also runs into the reservoir. Clean water is used to flush any detergent film from the optical face of the sensor and ensure the sensor remains submerged at all times. Repeated wet/dry cycles can leave an opaque mineral buildup on the polysulfone sensor housing.

The WPS sensor is connected to a 286 laptop computer's parallel port. Taking readings every 30 seconds, the computer compares measurement data to threshold levels determined by experimentation. The computer provides a visual indication to the operator if the rinse tank's water is too dirty or there is too much detergent in the water.

Honeywell Skinner Valve 71215SN2VV00N0C111C1 twelve VDC relay-operated valves control the flow in both the recycling pump and clean water lines. The relays are also controlled by software from the laptop. When the operator is done taking readings, the sensor is flushed with clean water.

### SIMILAR APPLICATIONS

Many other industrial and commercial bath applications can make use of integrated turbidity and conductivity sensing to improve product quality, minimize ingredient consumption, and reduce waste water discharge. Post-machining parts washers, plating rinse tanks, mixing tanks, lab glassware washers, and pool/spa controls are all candidates for WPS applications.