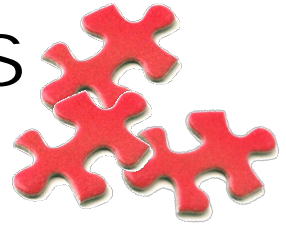




# SOLUTIONS

PIECING IT TOGETHER FOR YOU



## THE CUSTOMER

LCD Display Manufacturer

## The Application

Apply a thin layer of a UV curable fluid to a glass panel for the process of manufacturing LCD display panels.

## THE SOLUTION

### AIR-FREE FLUID DELIVERY SYSTEM

A system was developed using an air free fluid deliver system with positive displacement metering, fluid monitoring, and flow coat dispense head.

This system uses a pressure reservoir that has the ability to degas the fluid and eliminate any entrapped air bubbles. From there a specially designed pumping system draws the fluid from the reservoir eliminating the need to apply pressure.

In order to apply a metered volume of fluid, a servo driven positive displacement pump is integrated with a flow monitor to verify the exact amount of fluid that is applied to each part. By building this system with Stainless Steel and Teflon wetted parts throughout, the possibility of oxidation or curing the UV fluids within the system has been eliminated. With using this equipment combination, variables in the production process, such as micro air bubbles and controlling flow that could cause imperfections or defects in the final product are eradicated, saving the manufacturer from costly scrap.

*(See page 2 for full list of equipment used.)*



## THE CHALLENGE



To manufacture LCD display panels, the fluid delivery system for applying UV curable fluid to the glass panel must be designed correctly to avoid visual defects.

The first challenge is to eliminate all micro air bubbles in the fluid that could potentially create visual defects on the glass. Several different factors can be responsible for air in the material such as; being packaged with entrapped air, agitation during shipping, pouring material into a container, or the absorption of moisture into the fluid bringing air along with it. Also, when UV curable materials are placed under pressure for long periods of time, they tend to absorb micro air bubbles into the adhesive.

In addition to visual defects, having air in the adhesive affects the volume of material that is transferred from the valve to the part. There is a very close tolerance of acceptable material volume on each part. Too much or too little adhesive will result in a failed assembly during inspection and the part will likely be scrapped, thus adding cost to the manufacturer.

The second challenge is to control the flow of adhesive. As the volume of material in the pressure tank decreases, material flows slightly faster, or if temperature in the plant rises, material viscosity will decrease thus increasing flow of material. If no adjustments are made to a time and pressure valve, more material will be applied to the part.

The manufacturer is looking to achieve more control repeatability over time to the dispensed volume by eliminating these variables.

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## THE SOLUTION

(continued)



### FLUID DELIVERY SYSTEM OPTIONS

- 10-Gallon Stainless Steel Reservoir
- Check Valve on Dip Tube of Tank
- Material Agitator and Vacuum Pump
- Material Low Level Scale
- Optional Auto-Crossover System for High Volume Production
- Diaphragm Pump
- Diaphragm Material Regulator
- Servo Driven Precision Gear Pump w/ Closed Loop Encoder Feedback
- Digital Pressure Transducer
- Precision Flow Monitoring Device
- Front Closing Stainless Steel Dispense/Flow Coat Valve

