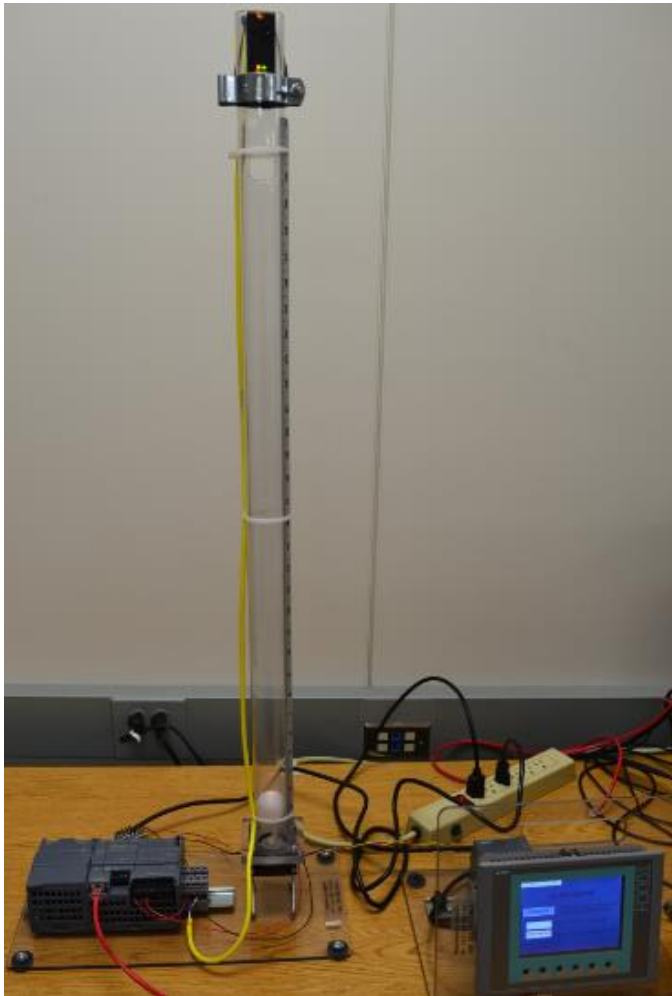


## Chapter 22 Ball-in-Tube - PID

### Ball-in-Tube Lab

This lab is one of the more successful labs. It is used by the PLC courses as well as the automatic controls course. These courses can use the lab separately in the same day and not interfere with the other. These are extremely good characteristics for a lab and much planning has gone onto the present labs to accomplish these goals. The cost is approximately \$500. This cost has dropped somewhat in the past years due to the decreased cost of lasers used as the feedback device. The planning for this lab has been ongoing. The most recent change included a separate PLC for the auto-controls lab. While the tube is very cumbersome and difficult to store, protecting the ball in the tube is an important part of the lab. The ball must be suspended slightly above the fan in order for it to take off. The tube can be removed from the base for shipment as necessary.



Flow Control  
Levitation of a Ball using  
Fan with Laser Feedback



