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## Measurement of dryer condensing rates (vertical separator method)

### Scope

This Technical Information Paper outlines a method for measuring the average rate of steam condensation of the drying cylinders that discharge into a separator tank. The tank must be equipped with shut-off valves and a sight glass or magnetic level indicator for observing the level of condensate in the tank.

### Safety precautions

This method for measuring the rate of steam condensation places the technician near steam (hot water vapor) and condensate (hot liquid water) under pressure. Care must be taken to ensure that all equipment is properly and securely connected. Extreme care should be taken to avoid direct contact with hot pipes, valves, and other equipment. Use hand and eye protection when setting up and operating the equipment. Special care should be taken if atmospheric condensate drain valves are opened to help drain the separator. All specific mill safety requirements should be followed. Some mills require that paper machine operating personnel assist by turning hand valves.

### Introduction

To accurately measure the dryer section condensing rate with a vertical separator, it is necessary that all connections to the separator and all joints in piping and components be completely tight so that no condensate leakage occurs. To accurately time the condensate rise, hand valve(s) must be easily turned and provide tight shut-off and sight glass must be clean so condensate level can be easily seen.

To accurately calculate condensate flow, a calibrated pressure gauge or thermometer (or both) should be installed to determine condensate specific volume. If local gauges are not available at the tank, separator pressure may be estimated by subtracting dryer differential pressure from steam pressure to the dryer(s). The level control loop must be operational so level can be adjusted; specifically, it must be able to be lowered to provide a sufficient height of rise. If level is controlled through a distributed control system (DCS), it may be necessary to utilize radios to contact the control room to lower the level.