

## Consistency measurement problems after mixing tank.

Certain measurement problems sometimes occur after the mixing tank. These will then accumulate through control stages to the machine chest, whose consistency will fluctuate as a result.

Undissolved air is one source of the problem. These problems have been addressed seriously, and some mills have made more or less successful efforts to eliminate them.

Depending on the amount of undissolved air, its impact on the measurement differs in consistency transmitters based on different measurement concepts. As a general rule we may say that undissolved air disturbs all measurements. In the following we list some of the issues to be considered in order to eliminate the air problems.

### The elimination of air problems comprises two main issues:

1. Preventing the admission of air into the stock
2. Making the air in the stock "invisible"

#### 1. Prevent air from getting into the stock

Causes and corrective actions:

- a) The incoming pulp is dropped from too great a height to the tank.  
Try to inject the incoming pulp below the surface. (What will then happen to the pulp on the surface? Will it reach the next pumping stage at all?).
- b) The pulp is dropped directly on top of the agitator vane. As a result the agitator mixes the air in the incoming pulp effectively into the stock already in the tank.  
Move the pipe aside from above the agitator.
- c) The pulp is dropped directly on the suction inlet. As a result the air in the incoming pulp gets effectively to the suction side of the pump.  
Move the pipe aside from above the suction inlet.
- d) The pulp is injected with force from the pipe, taking possible air down to the bottom and thence to the suction inlet.  
Install a deflector plate at a suitable distance from the head of the pipe, so that the pulp will be deflected horizontally. As a result the air will rise immediately to the surface.
- e) Low level increases the mixing of air in the stock.  
Keep the level as high as possible (difficult in grade changes).

#### g) There are small leakages between the tank and pump, through which air is admitted into the stock (vacuum on the pump's suction side).

Eliminate the leaks (difficult to detect while process is running).

#### h) Air injected with dilution water ??

#### 2. Eliminate the effect of air

- a) The volume of air changes with pressure variations  
Maintain constant pressure at the measurement point (this works only when the amount of air is constant).
- b) Air effect at low pressures (MCA measurements)  
Raise the pressure above 1.5 bar (air will dissolve and become "invisible").  
Install at a location where pressure is as high as possible  
Make the pump more efficient and apply restriction  
Measure with separate pumping, for which you get pressure through a restrictor valve.