DAVIS-STANDARD®

Where your ideas take shape.

Liquid Coating & Laminating

COATING AIR SEPARATION SYSTEMS (CAS)

Overview

Foam jeopardizes many coating processes. The patented Coating Air Separation Systems (CAS) remove air bubbles from fluids resulting in a higher quality product and reducing production costs. Coming in a variety of sizes and viscosity capabilities, these systems prevent air from building up in the coating over time, allow higher machine speeds, use less chemical defoamers, make pinhole free products and enable new products to be made.

Features

- No Moving Parts
- Stainless Steel Construction
- NPT Connections
- Flow Rate from 5 GPM (19 LPM) and Higher

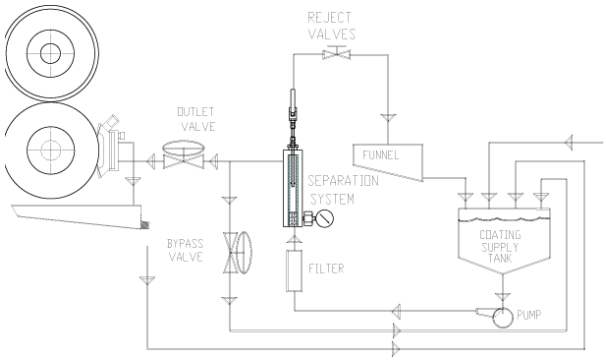
Options:

- Available in Sanitary Designs
- Installation, Start-Up and Training
- Sample Viscosity Analysis

COATING AIR SEPARATION SYSTEMS (CAS)

PRINCIPLES OF OPERATION

The fluid is made to spin as it enters a classification chamber. Centrifugal force causes the lighter bubbles to move to the center where they are rejected with some good fluid. Air free fluid continues on through the coating process. The rejected material is recycled. The reject stream has bubbles at high concentration causing them to break and leave the system.



PRINCIPLES OF BUBBLE SEPARATION

Bubble-laden coating enters a tube (separation cell) where it is forced to swirl. The centrifugal force of the swirling coating creates a pressure gradient that decreases toward the center of the tube. (Note that a plot of this pressure gradient is nearly constant over the length of the tube.)

Since a bubble occupies space in this pressure gradient, there is a higher pressure on one side of the bubble than on the other side. Since a bubble cannot maintain an internal pressure difference, the higher pressure pushes the bubble toward the center of the tube.

A reject tube extracts the air-rich coating, leaving an annulus of bubble-free coating. The bubble-free coating continues on to the process while the concentrated bubble-rich coating is returned to the coating supply tank. With the bubbles now close together in the reject line, some of them coalesce, break, and leave the system.

The centrifugal force required to drive the bubbles to the center of the tube increases with higher viscosities and smaller bubbles. This force can be increased by increasing the flow rate up to the design limit of 15 gal/min (60 L/min) per tube. The centrifugal force can also be adjusted when the unit is manufactured. This force can range from 5 PSI (0.3 bar) for low viscosity coatings with large bubbles up to 90 PSI (6 bar) for high viscosity coatings with small bubbles. Selecting the correct force level requires some information specific to your application to avoid excessive pressure drops or poor bubble removal performance.