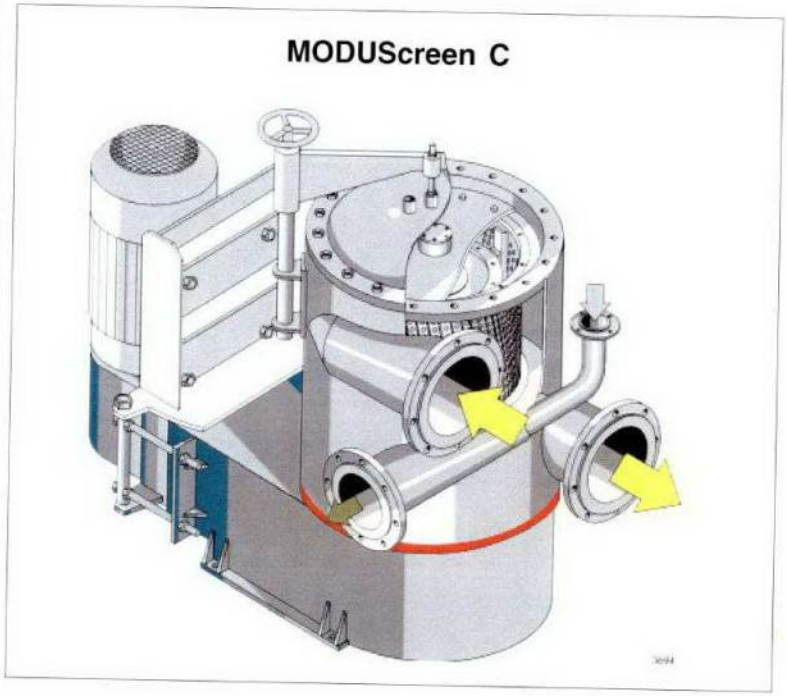
Process Description



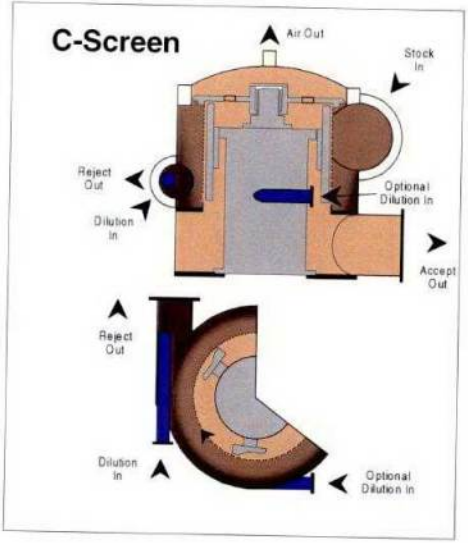
Knotter

The Ahlstrom MODUScreen™ CT4L knotter gently removes uncooked chips and knots to minimize the amount of uncooked wood particles in the accept flow. The CT4L knotter is designed with fixed hydrofoils and a rotating cylindrical screen. Pulp is fed tangentially to the outside of the screen cylinder that rotates in the same direction as the incoming pulp flow. In the knotter, pressure pulses are generated on the accept side of the rotating screen

cylinder as the cylinder passes by the fixed foils. Accepted pulp passes through the rotating screen and into an accepts chamber from which it flows out of the screen. Knots and rejects are directed to the outside edge of the feed section by centrifugal force where they progress to a reject chamber and are removed from the knotter.

HF Rotor

C-Screen



The feed pressure to the CT4L knotter is controlled by PV279. The design production rate to the knotter is approximately 470 ADST/D. The stock flow to the primary knotter is controlled by FIC278 located in the feed line to the knotter, which modulates valve FV278 in the accepts line of the primary knotter. The accepted pulp from the primary knotter is fed to the first stage washer. At full production and a 3.2% OD consistency to the screenroom, the accepted pulp flow

will be around 2,150 gpm. Pulp consistency to the system is controlled by a consistency controller loop, NIC277, which ties into the existing dilution system.

The rejects from the knotter are regulated with FFIC281. Knotter dilution and rejects streams are controlled in ratio to the main pulp flow FIC278. The rejects are diluted within the knotter by flow regulator FFIC280. The normal mass reject rate for the knotter is approximately twice the percentage of knots in the feed stream. The rejects discharged from the knotter are further diluted by FFIC293 to a consistency of approximately 1% and are fed to the Secondary Knotter Screen.

The differential pressure across the knotter is monitored by PDI279. The normal DP across the knotter is 2-3 psi. At 5.0 psi an alarm is activated, PDSH279. If the DP rises to 6.0 psi a second alarm, PDSHH279 is activated and the override sequence is initiated.

Knotter Override Sequence

The override sequence first takes the rejects flow controller FFIC281 out of ratio and holds its setpoint constant, then puts the feed controller FIC278 in manual and ramps it down at a rate of 1.5%

per second until the DP drops below the override setpoint. If the DP returns to normal the knotter feed controller FIC278 is transferred back to automatic mode but remains at the lower production rate. The rejects flow controller is transferred back to ratio control and ramps back to the appropriate setpoint for the lower production rate. This puts the screenroom in normal operation at a reduced production rate. It is the responsibility of the operator to increase production to the former level.

If the DP fails to return to normal, FIC278 continues to ramp down. When the low flow alarm FSL278 is initiated the operator should take control and initiate a shut down and flush out procedure. The low flow alarm is currently set at 1000 gpm.

If the DP remains above the high-high setpoint for longer than 15 seconds or goes above the high-high-high setpoint the Primary Knotter Feed Pump will shut down through interlock.