

# Multi-Ply Paper Machine Controls (AC800 Controller Solution)

Machine-Direction Controls provide advanced supervisory and regulatory level control applications for the paper machine.

The Multi-Ply Paper Machine Controls package includes additional control modules which provide added capabilities for the unique process characteristics of the multi-ply paper-making process.

## Description

The Multi-Ply Paper Machine Controls package includes the following features:

### Stock and Ply Loading Control

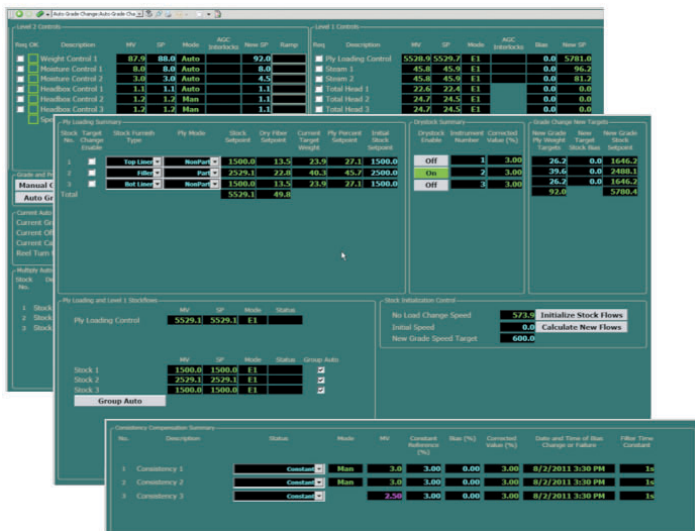
The Stock and Ply Loading Control feature distributes thick stock feedback and feed forward corrections to the appropriate stock flow control loop in a multi-stock application. This control also allows the operator to specify the distribution of the stock corrections by entering ply weight targets in basis weight units or as percentages of basis weight, stock flow or dry fiber flow. All stock flows are dynamically coordinated such that entering a new set of ply weights or making a speed change can be accomplished without an upset to the MD Weight Control. The stock distribution is based on dry fiber flow, not wet flow, which eliminates upsets because of unequal consistency measurements.



Each stock flow is modeled separately, which allows for accurate feedback weight control. This is accomplished by dynamically compensating each stock flow to allow one unified wet end model. The Multi-Stock Overview display allows the operator to easily change stock flow and ply weight targets, set operating modes, specify furnish types, and assign a particular consistency meter to a specific stock flow.

### Consistency Compensation

The Consistency Compensation feature provides flexibility in determining the actual consistency measurement to be used by the Ply Loading and Multiple Dry Stock Flow Control features. The operator can select whether to use the actual instrument reading, the reading plus a calculate bias, or a constant reference consistency value determined by the lab. The operator can easily change modes, bias value, and reference value on line, as well as change the assignment of consistency instruments to individual flows. An alarm condition is recorded any time a consistency measurement fails or becomes unreliable. This also allows a constant reference to be used as the compensated consistency enabling the stock and ply loading control to operate uninterrupted.



The operator's MD control window displays not only current, but also historical data, providing key information for necessary process decisions.

### Multiple Dry Stock Flow Control

The Multiple Dry Stock Flow Control feature utilizes a consistency measurement to maintain a constant dry fiber flow in the presence of consistency variations. This measurement may be the compensated reading from the Consistency Compensation calculation and may also have its own regulatory control loop to correct large consistency variations.

### Multi Former Control

The Multi-Headbox Control feature provides multiple, coordinated controls of rush/drag, dryline, and headbox level for multi-headbox applications. This feature provides smooth control of the headbox during changing process conditions, such as speed changes or grade changes.

### Multi Former Grade Change Control

The Multi-Ply Grade Change Control feature works with Automatic Grade Change Control to provide smooth transitions from one grade to another in the least amount of time possible.

This feature provides the capability to handle multiple stock flows and multiple headboxes/formers in a coordinated fashion. Stocks which are designated as liners or under-liners will be ramped to their new setpoints based on weight target entries in the product code file.

Stocks designated as fillers will automatically be ramped to a calculated setpoint to make up the difference between the new grade's total weight and the sum of the individual liner weights. The system will also continuously calculate the "no load change" speed target based on the desired new grade. This calculation makes it easier for the operator to determine optimum production rates when running at dryer limited conditions.

### Features

- Dynamic coordination of feedback and feed forward stock flow corrections
- Bumpless on-line redistribution of ply weights
- Easy assignment of consistency instruments to flow loops and compensation of instrument readings
- Smooth, trouble-free grade changes through coordinated feed forward and feedback corrections
- Automatic calculation of "no load change" speed target
- Controls up to 10 stocks/headboxes

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