ABB UNIVERSITY COURSE DESCRIPTION

C105
QCS Machine Direction Transition Control

Learn to set-up, tune, and verify headbox control and machine direction transition controls in the ABB Quality Control System.

Course type and methods
This is an instructor led workshop with short presentations and demonstrations, extended exercises, and hands-on sessions and discussion.

Student Profile
This course is targeted to process control engineers.

Prerequisites
Students should have completed the C103 training and field modules or be able to demonstrate equivalent skills.

Course objectives
This course covers set-up, tuning, and validating headbox control, coordinated speed change, speed optimization (minimum steam range and dryer limited), and auto grade change. Laboratory exercises utilize a process simulator to provide hands-on practice of set-up, tuning, and verification steps.

Upon completion of this course the participants will be able to:
• Set-up, tune, and validate headbox control
• Test for a relationship between headbox pressure and moisture
• Set-up, tune, and validate transition machine direction controls:
  - Coordinated speed change
  - Speed optimization (minimum steam range and dryer limited)
  - Automatic grade change control

Duration
The duration is 5 days

The class will be taught from a System 800xA platform, but the fundamental machine direction control knowledge gained in this course can be applied to an ABB QCS with MP280, AC450, or System 800xA hardware. User interface and program differences will be related back to the other platforms.
## Course Outline

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### Lab
- Tune speed level 1
- Perform speed bumps to determine feedforward model
- Tune speed level 1
- Perform speed bumps to determine feedforward model
- Compare the results of the following speed changes: full manual, fast automatic, coordinated
- Tune speed level 1
- Perform speed bumps to determine feedforward model
- Test speed setup
- Test auto grade change without any scan level controls required
- Test auto grade change with scan level controls required
- Test speed setup
- Test auto grade change without any scan level controls required
- Test auto grade change with scan level controls required

### Case studies
- Auto grade change
- Objectives
- Coordinated
- Uncoordinated
- Operator Interface
- Abort/suspend conditions
- Tuning procedures
- Fast grade change option
- Setting Independent tuning options for feedback versus auto grade change
- Ash compensation options
- Lab
- Set-up and tune speed optimization: minimum steam range
- Set-up, tune, and test alternate speed optimization: dryer limited
- Lab
- Set-up and tune speed optimization: minimum steam range
- Set-up, tune, and test alternate speed optimization: dryer limited

### Troubleshooting
- Auto grade change
- Auto grade change static gain verification worksheet
- Grade change
- Speed optimization
- Data collection options
- Grade change performance monitoring
- Case studies
- Review field module 2 requirements