

# ACE (Advanced Control Expert)

Optimization solutions for recovery boilers



# The challenge: To fully optimize recovery boiler combustion controls



## The solution: Recovery Boiler Combustion ACE

**ACE (Advanced Control Expert) is an advanced control solution for recovery boiler combustion optimization. ACE manages all aspects of recovery boiler operation while communicating its actions to the operator. ACE helps make sure that production goals are met and that the operating costs are kept at their lowest possible level.**

Because recovery boilers are difficult process areas to control, they are often managed to less than full advantage by human

operators. ACE focuses on all the important metrics that affect boiler operation, keeping them within an ideal range.

ACE is able to manage liquor feed and combustion by smoothly maintaining firing rate (load changes), thus stabilizing the heat input into the furnace. Should heat values vary, ACE will recommend liquor gun changes based on nozzle characteristics and actual firing rate.

ACE manages control of air feed based on total air demand and air distribution (primary, secondary and tertiary air). This is primarily

calculated as a function of boiler load and liquor solids, and ensures optimal combustion and reduction. The O<sub>2</sub>/CO control will actively manage the air levels and/or load targets to keep the combustion optimized at all times. Char bed and the lower furnace reactions are maintained at an optimum range through soft sensors that analyze liquor quality, nozzle characteristics, and operational data on the furnace. ACE can then predict liquor viscosity and droplet sizes to determine optimal spraying temperature.

ACE monitors the symmetry of combustion, flue gas flow patterns, steam superheating,



and liquor and air feed by using measurement data and predictive process calculations to keep the boiler operating at top efficiency.

The coordinated production control within ACE is linked to information from other process departments, including key quality parameters and production plans. This integration helps achieve more predictable and stabilized boiler operation and helps manage liquor inventories.

ANDRITZ's experts set all the operational limits and goals to ensure safe and efficient operation of your operation's recovery boilers. In boilers where the objective is to increase the liquor firing capacity, Combustion ACE can be implemented to minimize the air demand and flue gas flows to remove the recovery boiler as the bottleneck. In cases where the objective is to stabilize and maximize steam production, Combustion ACE will push the boiler to its limit to maximize the liquor-firing rate. When the objective is to



maximize boiler efficiency, Combustion ACE will work aggressively to minimize the excess air ( $O_2$ ) in the furnace.

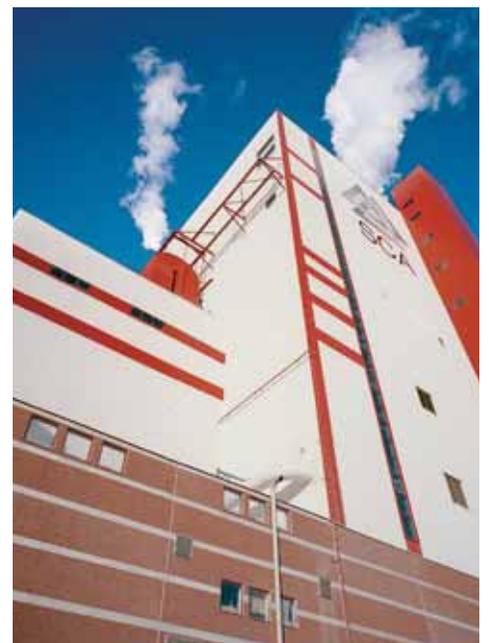
With ACE managing the process, your recovery boiler will operate at peak performance, achieving the highest level of efficiency. Operator workload will be reduced, allowing mill personnel to focus on managing production.

#### **Our technology**

ACE is our virtual expert operator that manages a process area with the goal of keeping costs as low as possible, while continuously delivering a product that meets all necessary specifications. ACE manages all of the operational constraints and limits, reconciles lab test data with operational goals while validating instrument accuracy, and further provides shift-to-shift stability. ACE advises the operator what is occurring and why.

#### **Benefits**

- Increases predictability and stability of process performance and operation
- Increases reduction rate and liquor firing capacity
- Maximizes electricity production
- Minimizes emissions
- Increases equipment lifetime
- Maximizes process and equipment availability
- Increases coordination of complete pulp mill operation
- Reduces operator workload



# Automation solutions

## Release your full potential



We offer a full range of advanced control and optimization solutions for pulp operations, including:

- Bleaching ACE
- Brown Stock Washing ACE
- Digester ACE
- Evaporator ACE
- Kiln ACE
- O<sub>2</sub> Delignification ACE
- Pulp Dryer ACE
- Recaust ACE
- Recovery Boiler Combustion ACE
- Screening ACE
- Washing ACE

### Call our sales staff today:

Steve Crotty (Global)  
Mobile: +1 (404) 229 6349  
steve.crotty@andritz.com

Andrés Rojas G. (Latin America)  
Mobile: +56 (9) 8230 8752  
andres.rojas@andritz.com

Luiz Vega (Brazil)  
Mobile: +55 (31) 9299 1201  
luiz.vega@andritz.com

Josef Czmaidalka (Europe)  
Mobile: +43 (664) 4137990  
josef.czmaidalka@andritz.com

Marcos Freitas (Australasia)  
Mobile: +61 (407) 487 568  
marcos.freitas@andritz.com

### ANDRITZ Inc.

Atlanta, GA, USA  
Phone: +1 (404) 370 1350

Australia: Melbourne | Austria: Vienna | Brazil: Belo Horizonte, Curitiba | Canada: Nanaimo, Prince George, Richmond, Terrace | Chile: Santiago | Finland: Kotka, Tampere, Varkaus | India: Bangalore | USA: Bellingham, Montoursville

[www.andritz.com](http://www.andritz.com)  
[automation-sales@andritz.com](mailto:automation-sales@andritz.com)