

Control Valve Automation with Digital Positioners in Steam Distribution of a Paper Machine

TZIDC and EDP300



TZIDC and EDP300 Positioners offer optimal energy efficiency and cost savings, thanks to high precision control.

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TZIDC & EDP300
Positioner

Introduction

Paper machines have steam systems used for drying paper during the production process, the amount of steam needed depends on the thickness of the paper, the production speed, and width of the paper web.

In many cases well over 100 ton of steam per hour is needed for the drying process.

The cost of steam may vary due to several factors, but according to the US Department of Energy, the average cost per one ton of steam from a natural gas fired boiler is \$18.78.

The yearly operating hours of a paper machine will vary, but assuming a total of eight thousand hours per year, the cost of steam per year can be up to \$15,024,000.

Challenge

If the Control Valve Positioner on the main steam distributor feeder, and in the branches to the drying groups, have a permanent control deviation of up to 1%, then this already adds up to an additional cost of approximately \$150,240.00 per year.

Energy conservation is an important factor in all industries, and it is no different for the Paper processing industry.

Any effort to improve the positioning accuracy and response time of the control valves in the steam distribution system, has a direct impact on cost reduction, that leads to large financial savings.

The solution

The TZIDC and EDP300 digital positioners significantly contribute to optimized energy efficiency and product quality based on their outstanding control characteristics and accuracy.

The control algorithm of the positioner avoids overshoot during the positioning of the valve, such that the reduced valve movement has an advantageous effect on maintenance costs and the overall lifecycle of the control valve.

This performance capability is achieved with the unique Adaptive control mode function of the positioner, this mode allows real time optimization of the positioner to ensure stable positioning of the control valve assembly.

The improved control stability reduces process variability that leads to overall cost savings of the process.

These positioners have been proving their worth for years, especially in harsh ambient conditions with elevated temperatures, high humidity and heavy vibration that is typical in paper machine applications.



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The ABB offering

The TZIDC and EDP300 positioners are suitable for any type of Control Valve:

- Single Acting or Double Acting
- Linear or Part Turn travel

For control loop safety on loss of the demand signal, the TZIDC and EDP300 provides the following behavior option:

- Fail-Safe or Fail Freeze (Fail-in-Place)

For optimization of the control valve assembly the TZIDC and EDP300 provides the following modes:

- Fixed or Adaptive control mode

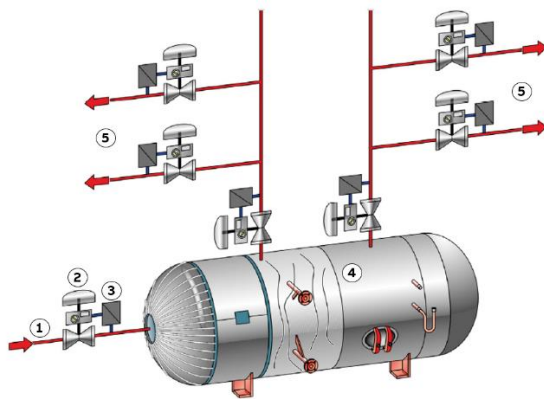
The use of either the TZIDC or the EDP300 positioner for control valve solutions can be determined as follow:

- TZIDC for standard solutions
- EDP300 for advanced solutions

Follow this secure link for more information on the ABB solutions for:

- [Efficient Positioners and I/P Converters](#)

Steam distribution on the Paper Machine



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1. Main steam supply from the boiler
2. Valve with TZIDC or EDP300 positioner
3. Steam flow measuring point
4. Steam distributor
5. Steam distribution to Drying groups



ABB Measurement & Analytics

For your local ABB contact, visit:

www.abb.com/contacts

For more product information, visit:

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