

# Intelligent digital positioner TZIDC

## with remote position sensor



Precise control of the boiler combustion air dampers for reduction of emissions, while reducing maintenance and operating costs

TZIDC

### Application area

Positioners for the power industry to control the windbox combustion air dampers and burner tilts for boilers and steam turbines.

### Case study

Pneumatic actuators are often used in windbox combustion air control / burner tilt applications due to the specific working environment which is very hot and dusty and with strong vibrations. The average power plant has hundreds of actuators controlling airflow and other variables to help maximize the combustion process and minimize emissions. The ABB positioner is a key part of the pneumatic actuator – it is compact, robust, easy to install and commission, resulting in more efficient boiler operation and reduced costs. The TZIDC is considered to be the best option for pneumatic actuators used in damper control of the boiler.

In order to protect the environment, the Chinese government has made a law that requires every power plant to meet specific requirements regarding boiler heat rate improvements and emissions reduction.

Many old power plants have old damper actuators that do not respond quickly or accurately to signals from the control system, leading to inefficient combustion. The result is poor heat-rate and undesirable emissions. Upgrading their facilities with low NOx combustion retrofit and oil-free ignition systems has become very common in China. Improvements like these can result in immediate fuel savings, better steam temperature control, and more efficient combustion.

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01 TZIDC Remote Sensor  
on windbox actuator

## ...Case study

Targeting these application needs and based upon the established and very successful TZIDC intelligent positioner, ABB developed the positioner with remote sensor. It is now well accepted by the customers in the power sector with many successful installations after 2 years of promotion Shaanxi Guohua Jinjie Power Plant, located in Shenmu county, Yulin city - Shaanxi province Jinjie economic and Technological Development Zone, located in China's major coal energy base – the Shenfu coalfield, large pithead power plant. The TZIDC positioner with remote sensor was adopted in its retrofit project of (2) sets of 600 MW boilers.

Another project was done at Huaneng Tongchuan Power Plant located in Tongchuan City, Shaanxi Province, Yaozhou area, retrofitting the 600 MW unit with the preferred TZIDC positioner with remote sensor.

At Shandong Huadian Power International Laicheng Power Plant, the ABB TZIDC positioner with remote sensor for windbox damper control was selected to retrofit the 300 MW unit.

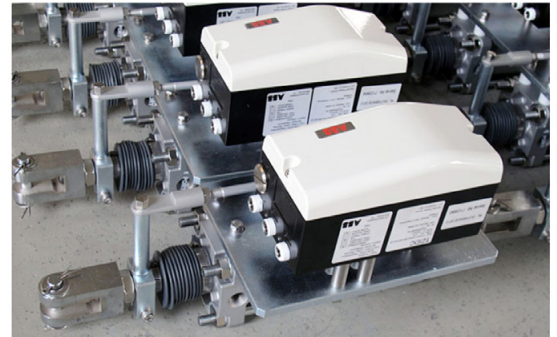
## The problem

Damper control of windbox or overfire air is the core component of the combustion control system of a boiler, but because of the installation location that is near the furnace wall, the ambient temperature is high, standard type positioners could have drift due to these conditions and influence the control accuracy; moreover because the vibration of the boilers are relatively large, traditional positioners or standard positioners will soon fall apart. Also due to the location of these dampers, accessibility for maintenance is very inconvenient.

## ABB TZIDC remote solution

In such boiler plant upgrade projects, we recommended the TZIDC positioner with remote sensor. The sensor housing is on the damper actuator, and will withstand the high temperature and high vibration of the damper / boiler, and the main control housing is mounted at the nearest control panel. The TZIDC positioner with remote sensor solves the problem of high temperature, and also solves the problem of vibration interference.

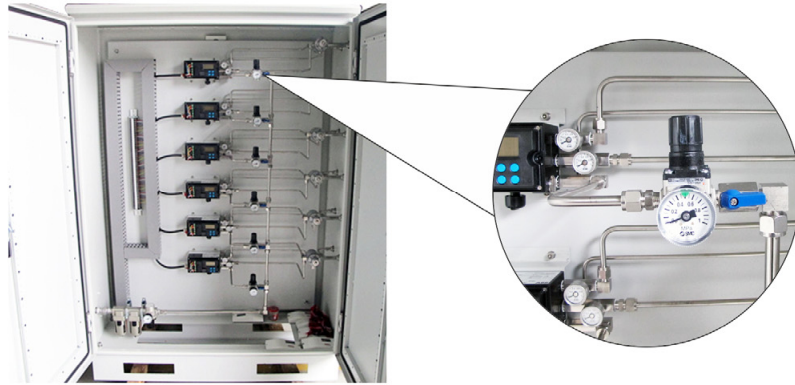
After operating for more than a year, the TZIDC positioner with remote sensor impressed the customer very much. The above-mentioned problems are no longer present.



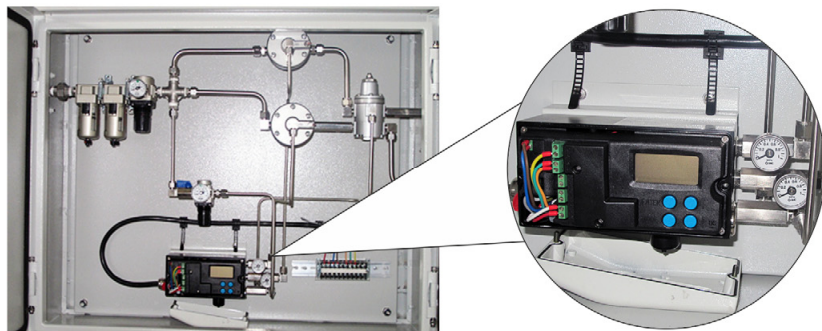
01

—  
02 TZIDC Control Unit  
mounted in cabinet with  
filter and regulator

—  
03 TZIDC Control Unit  
electronics housing with  
local setup and display



02



03

## Application results

The stability of the boiler combustion process control and its continuity has been a reliable guarantee.

- Emissions reduction
- Maintenance costs reduction
- Operating costs reduction

## Positioner specification and benefits

- Compact, aluminum alloy housing
- Simple operation, convenient parameterization, with local operation panel and digital display
- Optional Fail Freeze action
- Optional mechanical position indicator
- Auto-calibration function to facilitate the establishment of working parameters, self-tuning automatically, without manual intervention
- Proven and reliable Nozzle-Flapper principle of I/P-converter
- High vibration resistance up to 10 g
- Very low air consumption and wide temperature range
- Universal mounting for easy assembly to multiple manufacturer 's actuators
- Optional position feedback module
- Optional micro switch, limit switch
- Adaptive Control Mode - pattern, self-tuning in order to keep the valve stable and with high positioning accuracy.

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