Meeting SIL requirements for biomass power plant

Lisbjerg straw-fired power plant, Denmark

AR18004 | AUMA APPLICATION REPORT

An AUMA SA actuator with AC 01.2 actuator controls in SIL version meets stringent SIL 2 requirements at Lisbjerg power plant.

RENEWABLE ENERGY FOR AARHUS

The straw-fired Lisbjerg power plant, commissioned in 2016, is one of the largest of its kind in Denmark. With its output of 38 MW of electricity and 78 MW of heat, the plant supplies 20 percent of the district heating demand of Aarhus, the second largest city in Denmark. The plant burns up to 240,000 t/y of straw, supplemented when necessary with up to 50 % wood chips. Four parallel conveying lanes and feeders supply straw to the boiler.

EXTRA SAFETY

Around 50 valves in the plant are fitted with latest-generation SA and SAR electric actuators from AUMA. All the actuators are centrally controlled via Profibus DP V1 communications.

Notable is the actuator on the condenser bypass damper, which has special safety requirements. To make full use of its residual heat, the flue gas passes through a condenser. In case this condenser needs to be taken offline for maintenance, the plant has a large bypass damper that allows the flue gas to be routed directly to the chimney so that plant operation can continue. Failure of the damper to open when required could lead to a plant shutdown.

The designers therefore specified that the actuator must meet the requirements of at least Safety Integrity Level (SIL) 1, as specified by IEC 61508. They contacted Danish damper manufacturer Kolster of K.S.M. Kragelund who has a long history of working with AUMA. Kolster and AUMA experts worked closely together to find the most suitable actuation solution for this critical application. They chose a Kolster KLS 1500 × 2750 mm damper with an AUMA SA 14.6 actuator, AC 01.2 actuator controls in SIL version, and a GS 250.3 part-turn gearbox.

This actuator combination ist TÜV-certified for use in safety-related systems and fully complies with the second edition of IEC 61508. The system configuration in Lisbjerg even meets SIL 2 requirements, the actuator operates in safety function Safe OPENING.

POWER

APPLICATION

Biomass power plant

AUMA SOLUTION

- SA 14.6 actuator with intelligent AC 01.2 actuator controls in SIL version
- Safety function Safe OPENING
- Profibus DP
- GS 250.3 gear box

CUSTOMER BENEFITS

- SIL 2 in accordance with IEC 61508, second edition

Project responsibility:
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