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CASE STUDY OF AN IMPROVED ONLINE COAL ANALYSIS SYSTEM

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The Online XRF technology was developed by Indutech in 1997 with the financial support of EPRI through a technology showcase project hosted by DTE Monroe Power Plant to measure sulphur content of coal without using nuclear sources. The next generation of Online X-ray Elemental Analyzer, OXEA[®] was recently installed at the Conemaugh Generating Station operated by NRG Energy. This XRF-analyzer generation is able to determine Ash, Sulphur, BTU and Moisture content as well as ash viscosity and fusion temperatures. The improvements of OXEA allow the power-plant to control and meet environmental tolerances to a higher precision than had been previously possible with the method.

At Conemaugh a new concept for an online coal analyzer is being developed and tested [1]. Here the advantages of an analyzer installed on a bypass system are described: It allows adaptation of the online analyser calibration periodically, based on the results of samples, which are taken by an automatic sampling system and analysed in the laboratory. This semiautomatic system allows batch verification of the analyzer and recalibration, if necessary.

ECG introduced another idea for the specific application in a power-station by building a database collecting all available coal and process data to check the analyser in real time. For this comparison the delay between the different measuring points must be taken in account which needs among others to model the material flow in a silo or bunker. In this context, the OXEA readings can be compared with the results of the heat balance and the SO₂ in the flue gas entering the FGD equipment. The paper will present detailed results regarding all above mentioned parameters.

Finally the OXEA will be recalibrated automatically based on the data obtained with the ECG Accutrack system. Hereby, the influence of different types of coal can be compensated by a highly accurate, long-term stable measurement of the coal quality. This is a precondition to control the process to meet ever-changing fuel strategies which include more flexibility to burn a wider variety of coals while mitigating the impacts of the mineral matter.

[1] Klein, A.: An improved Concept for Online Coal Analysis”
Proc. 17th Int. Coal Prep. Congress (1-6 Oct. 2013). P. 71.
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OXEA installed at a bypass in the Conemaugh power - plant (2013).