

# NIVELCO CASE STUDIES

## NIVELCO INSTRUMENTS IN THE STEEL INDUSTRY – HUNGARY

### Test of reliability and quality

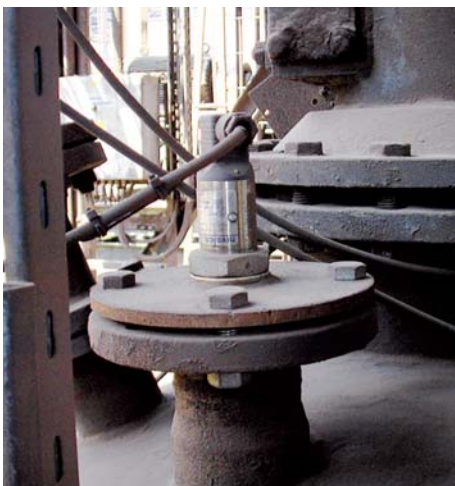
Steel-works in Dunaújváros. A factory-city inside the city. Those who have been there, know, those who have not been there need strong imagination to be able to imagine the milieu of this factory, the only one steel and coke production plant of Hungary, which is also famous throughout Europe and all over the world.

Fifty years of technology, knowledge and experience are combined with one of today's most advanced technologies in the citadel of Hungarian heavy industry.

This corner of Hungary puts both human, machine and technology to the test. Workers are giving testimony of to the perseverance and commitment of their profession in Dunaújváros. NIVELCO Process Co. is proud to



have the opportunity to take part in the life of this high-value represented, leading producer both in social and economical aspects. NIVELCO is present in almost every section of the plant with instrumentation solutions. Within this in the coke works NIVELCO provides unique measurement possibilities in many areas contributing mutual success to each other.



Pyrolysis of coal means the heating of the coal in oxidation-free medium producing gases, liquids and solid residues (coke or char). High-temperature pyrolysis of coal is called to carbonization.

Temperature of the flue gases is 1150-1350 °C heating the coal indirectly to 1000-1100 °C producing furnace and foundry coke. In the furnace coke is the primary reducing material, cannot be fully replaced by other materials such as coal. Coke is an auxiliary material which helps the gas to circulate in the process material. Coke dust is an important raw material in several branches such as chemical industry. Only certain coals can be transformed into coke and numerous types can be mixed into compound, for example coking or bituminous coals having statuesque properties.

Processes of coke production can be divided into several subclasses, one of these is the coal treatment and the coal charging between the block operations, classification of the finished product of the coking. Instrumentation of the coke-works and controlling of the processes are the connection points to NIVELCO.

Coal is placed into open tanks or closed coal bunkers. Closed coal bunkers mean a group of huge concrete silos with 34 m height and 9 m diameter. Coal inside them is in divers forms, in blocks with diameter up to 30 cm, as a wet dollop, or very fine dusty particular material caving or arching, regularly sticking up even to the vertical walls of the silo. Filling level of the closed tanks is very important information for the technology. Measurement in this and in similar areas is one of the strengths of NIVELCO. Excellent and suitable instrument offered by our specialists is the EchoTREK SBD-31J-8 Ex ultrasonic level transmitter. This instrument has a range up to 60 meters with a narrow beam angle. Well-chosen mounting place guarantee measurement even during the filling of the tank. Efficient signal

processing and noise suppression, temperature compensation in the whole range and 'Dust Ex' type makes our EchoTREK to the best choice. Unique console setting of the instrument complies with the arching resulted by the different grain-size pieces. Presently 14 of these instruments are operating perfectly in the coal bunkers. During the classification of the finished product of the coking process, vast amount of very fine dust is issued. Separation of this dust is made by the static dust cleaning section with high-voltage. In this process, the collected dust are stored in dust-tanks,



filling and emptying control of these tanks is done by NIVOSWITCH RLH-304-EEEx vibrating fork level switches in 4 tanks in each floor. These switches with non-parallel fork tines make possible a reliable switching even in case of sticky dust. THERMOCONT temperature transmitters and NIPRESS pressure transmitters are also applied in the coke-works for gauging temperature and pressure of the gases used and produced during the coking process.

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