

# Monitoring power usage on DC motors

## APPLICATION A116

Type of Company: [Coke Plant](#)

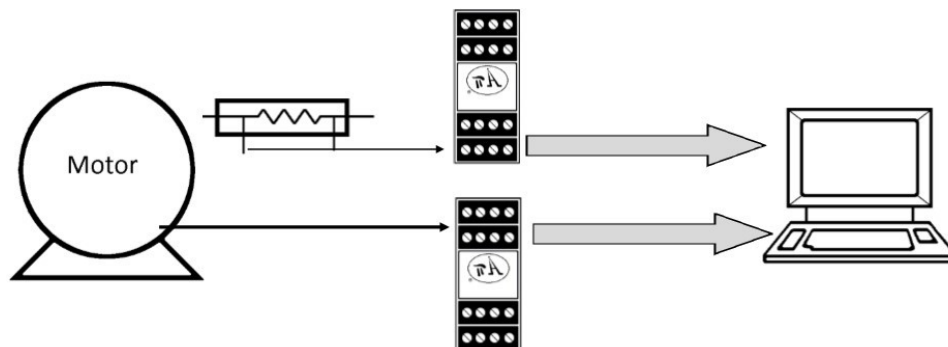
Location: [Pennsylvania](#)

Coke is used as a fuel and as a reducing agent in smelting iron ore in a blast furnace. It is there to reduce the iron oxide (haematite) in order to collect iron. During ironmaking, iron ore, coke, heated air and limestone or other fluxes are fed into a blast furnace. The heated air causes the coke combustion, which provides the heat and carbon sources for iron production. Limestone or other fluxes may be added to react with and remove the acidic impurities, called slag, from the molten iron.



## The Engineering Issue

- The engineer has a requirement to monitor both the voltage and current on large DC motors used in the smelting process.
- This information will be sent to a PLC to calculate power usage and efficiency and integrate this information into the plant control and power monitoring system. Isolation for the analog input card to the PLC is required.



The API engineer recommended an APD HV-DC and an APD 4300. He recommended they use a Simpson external shunt to develop the motor current signal to the range-specific APD 4300, then use the APD HV-DC for a high-voltage 500 VDC signal. The APD units provide isolation for the analog input card and also allow for sinking/sourcing for the 4-20 mA output signal for either single ended or differential inputs. The customer can now integrate motor usage/operation into their plant control and power monitoring system.

**Problem. Solved.**

