API-Cecomp Group n'fo

Technical & Application Note A116

Application:	Monitoring power usage on DC motors
Type Of company:	Coke Plant
Location:	Pennsylvania

Problem: The customer is a coke plant. 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.

Note: For additional information on coke plants see http://en.wikipedia.org/wiki/Coke_(fuel)

The customer has a requirement to monitor both the voltage and current on 500V 350A DC motors. 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.

Solution: The customer purchased an APD HV-DC and an APD 4300. The API application engineering representative recommended the customer use a Simpson external shunt to develop the motor current signal to the range specific APD 4300 and then use the APD HV-DC for the 500 VDC signal. The customer does require isolation for the analog input card to the PLC and the APD provides this as well as the ability for sinking/sourcing for the 4-20 mA output signal for either single ended or differential inputs. This solution allows the customer to integrate the motor usage/operation information into their plant control and power monitoring system.
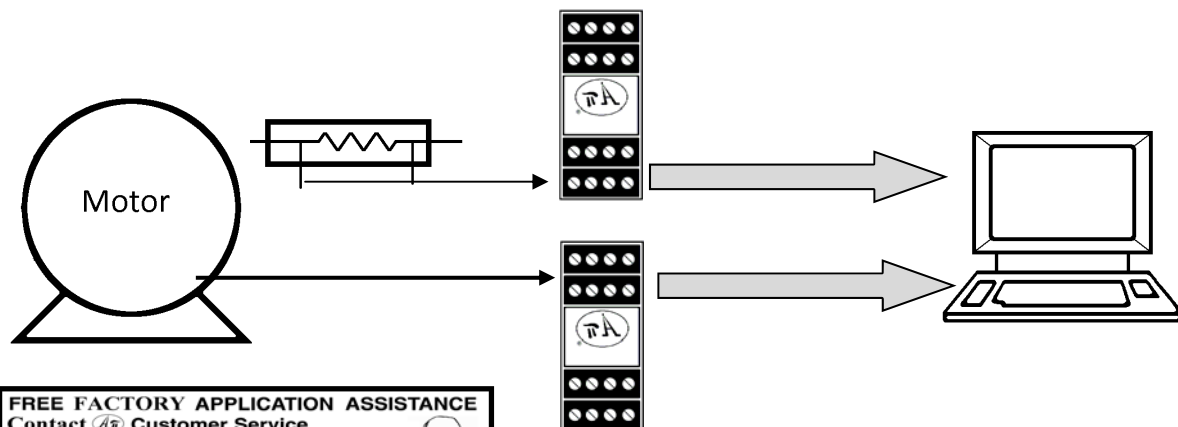

APD HV-DC

High Voltage DC to DC
Isolated Transmitter

APD 4300

DC to DC
Isolated Transmitter

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