Kiln Process

October 27-28, 2021

Wednesday, October 27

8:00	***WELCOME***
8:05	Introduction & Chemistry
10:00	**BREAK**
10:15	Preheaters and Precalciners
12:15	**LUNCH**
1:00	Kilns
2:45	**BREAK**
3:00	Coolers
4:30	***EVALUATION***

Thursday, October 28

8:00	Burners and Combustion
9:45	**BREAK**
10:00	Kiln System Emissions
11:45	**LUNCH**
12:30	Volatile Cycles
2:15	**BREAK**
2:30	Heat Consumption
4:30	***EVALUATION & ADJOURN***

Kiln Process

Course Content

1. Raw material design and chemistry
    - 1.1. Introduction
        - 1.1.1.Chemical requirements for Portland Cement
        - 1.1.2.Cement types
        - 1.1.3.Clinker compounds
    - 1.2. Typical raw materials used for cement manufacture
        - 1.2.1.Limestones
        - 1.2.2.Argillaceous materials
    - 1.3. Mix design factors and their meaning
        - 1.3.1.Lime saturation factor
        - 1.3.2.Silica modulus
        - 1.3.3.Alumina modulus
    - 1.4. Chemical impacts on operations
        - 1.4.1.Strength
        - 1.4.2.Set-time
        - 1.4.3.Minor element impacts
    - 1.5. Summary & conclusions
    - 1.6. Questions & answers

2. Kiln Systems, preheaters, & precalciners (Ove)
    - 2.1. Introduction
    - 2.2. Evolution of kiln, preheater & precalciner design
        - 2.2.1.Kilns
        - 2.2.2.Preheaters
        - 2.2.3.Precalciners
    - 2.3. Principles of operation of the preheater
        - 2.3.1.Heat transfer
        - 2.3.2.Dust collection efficiency
    - 2.4. Preheater Components
        - 2.4.1.Cyclone thimble / dip tube
        - 2.4.2.Material seal / flap valve
        - 2.4.3.Splash box
    - 2.5. Precalciner Basics
        - 2.5.1.Residence time and fuel burn-out
        - 2.5.2.Mixing effects
        - 2.5.3.Low NOx designs & operation
        - 2.5.4.Build-ups & solutions
    - 2.6. Summary & Conclusions
    - 2.7. Questions & Answers