DUST HANDLING SYSTEM

With the steady increase in various Industrial Plants generating dusts, the air pollution control norms are gradually getting stringent to protect the ambient air under stipulation of pollution control Boards.

For a dust generating industrial process, the effective particulate pollution control system comprises of two distinctive groups of machineries. In one part of machineries, the dust filtration is done from the emitted gas/air stream and in another part of machineries the filtered dust is propagated and collected at dust Silos in a completely concealed Dust handling system. Now a day, the CPCB is gradually disallowing any open type of dust conveying / handling system to avoid any contamination.

PNEUMATIC DUST HANDLING SYSTEM (LEAN PHASE)

The dust handling and pneumatic conveying system offered by us utilizes Lean phase (dilute phase) mode of solid particle propagation through an enclosed pipeline for the generated dusts after filtration, in the steel-melting, Ferro-alloy manufacturing and other units where existing dust extraction and filtration through bag filters etc. are present. Our developed system is considerably low cost, easy to operate, easy to maintain, involves minimum components and automated through PLC, ensuring real- time control.

The dust handling and pneumatic conveying system also has provisions to be coupled with the Gas cleaning plant system PLC, to bring in some unique and precise automatic control which runs the dust handling-conveying system flawlessly, with negligible manpower involvement. The system can as well be run in manual mode also.

The dust handling and pneumatic conveying system offered by us is a considerably cost effective alternative to a dense phase pneumatic system, since it involves minimum moving parts, eliminates use of costly leak-proof valves, have simpler operating accessories & ease of quick maintenance. The height & space requirement at the dust collecting points are also much less in comparison to a dense phase system.

THE OVERALL OPERATING PROCESS OF THE SYSTEM

The system collects dust from the outlet of each dust discharging RAV of Bag filter etc., through specially designed duct collectors, wherefrom the dusts are propagated in a suspension flow in a properly maintained velocity of air-stream through the conveying pipeline and ultimately discharged in the closed Silo where a vent-bag filter separates out the air. The airflow through the pipelines is maintained by a single small centrifugal ID Fan. The strategically placed dust duct line dampers control the gas flow as required.

Through our specially developed software in the PLC, the system automatically senses the dust level in the Bag filter etc. hopper through the installed level sensors, and depending on the dust level simultaneously starts the RAVs and the Pneumatic conveying fan for conveying dusts to the Silo. When the dust level in the Bag filter etc. hoppers comes below a certain pre-determined level, the entire dust handling and pneumatic conveying system stops operation saving substantial electrical power cost. The vent filter pulse purging system is also incorporated in the PLC program for consistency.

There are also other necessary safety & display features incorporated into the system.

MAJOR MACHINERIES /EQUIPMENTS INVOLVED

1. Convey pipe-line with flange gaskets/ long radius bends etc.
2. Dust collector assemblies for fitting with RAVs
3. Manual / Pneumatic Dampers
4. Pulse jet vent Filter on Silo
5. Centrifugal Fan with Motor
6. Silo (if required)
7. A dedicated PLC–MCC Panel with
   HMI with provision for interface with other system PLCs.

A conceptual line diagram of the system is enclosed.