



# **APEXIND INNOVATIVE INDUSTRY LLP**

# **CEMENT PLANTS**

**BUILT RIGHT. BUILT TO LAST. ENGINEERING  
YOU CAN RELY ON..!**



**DESIGN | MANUFACTURING & FABRICATION | SUPPLY | INSTALLATION & COMMISSIONING  
| ELECTRICAL, INSTRUMENTATION, CONTROL & AUTOMATION INTEGRATION**

**ENGINEERED SOLUTIONS COVERING LIMESTONE,  
CLINKER, GYPSUM, COAL, FLY ASH, ADDITIVES AND  
CEMENT HANDLING FROM INTAKE TO STORAGE,  
CONVEYING AND DISPATCH SUPPORT, EXECUTED  
UNDER SINGLE-POINT RESPONSIBILITY.**

**SINGLE-POINT  
RESPONSIBILITY**

**HONEST ENGINEERING  
CONTINUOUS-DUTY DESIGN**

## INTRODUCTION TO CEMENT PLANT MATERIAL HANDLING

Cement manufacturing depends heavily on reliable bulk material handling. From limestone receipt and crushing to clinker transfer, gypsum dosing, fly ash handling, coal handling, cement storage, and dispatch, every stage requires robust equipment designed for abrasive, dusty, and continuous-duty operation.

Cement plants operate under demanding conditions involving high capacities, large transfer distances, dusty materials, variable particle sizes, heavy loads, and continuous production schedules. Any failure in the conveying, feeding, storage, or transfer system can directly affect kiln operation, grinding performance, production output, and dispatch commitments.

A well-designed cement plant material handling system must therefore fulfil four fundamental requirements: reliable movement of abrasive bulk materials, controlled feeding to process equipment, dust-controlled transfer at every stage, and safe access for inspection and maintenance.

## TYPICAL MATERIALS HANDLED

Typical materials handled in cement manufacturing include limestone, laterite, bauxite, iron ore, clay, shale, gypsum, clinker, coal, pet coke, fly ash, slag, cement, raw meal, kiln dust, additives, mineral fillers, and packing plant rejects. Depending on the plant type, the system may also handle AFR materials, limestone powder, filter dust, and process rejects.

## PROCESS OVERVIEW

Raw materials such as limestone, clay, laterite, and iron ore are received by truck, wagon, or stockyard arrangement. These materials are crushed, screened, stored, and conveyed to raw material bins or blending systems. Controlled feeders discharge the material to grinding mills or process equipment.

Coal or pet coke is handled separately through storage, conveying, and controlled feeding systems. Clinker from the kiln or clinker storage area is transported to clinker silos or grinding units. Gypsum, fly ash, slag, and other additives are weighed or metered and added to the cement grinding system as per the required cement grade.

Finished cement is conveyed to storage silos and then transferred to packing machines, bulk loading systems, or dispatch points. The actual plant configuration depends on plant capacity, cement grade, raw material source, layout, process equipment, and level of automation.

## EQUIPMENT SUPPLIED FOR CEMENT MANUFACTURING PLANTS

Apexind can design and supply the material handling equipment required for cement plant applications, including raw material handling, additive handling, clinker handling, coal handling, fly ash handling, cement transfer, and dispatch support systems.

- ❑ **Belt Conveyors:** Used for high-capacity horizontal and inclined conveying of limestone, clinker, gypsum, coal, slag, and other bulk materials. Conveyors are designed considering material abrasiveness, lump size, belt speed, capacity, conveyor profile, transfer points, and maintenance access. Supplied complete with pulleys, idlers, belt, drive system, take-up, safety switches, scrapers, skirts, chutes, galleries, and walkways.



- ❑ **Belt Feeders:** Installed below hoppers, stockpile reclaim points, crusher discharge points, and bins for controlled extraction of bulk materials. Belt feeders are designed for heavy-duty operation and can be VFD-controlled for adjustable feed rates.
- ❑ **Bucket Elevators:** Used for vertical lifting of clinker, cement, gypsum, fly ash, coal, raw meal, and additives. Belt or chain type elevators are selected based on temperature, capacity, lump size, and duty. Elevators can be supplied with inspection doors, boot take-up, backstop, casing, buckets, and safety switches.
- ❑ **Screw Conveyors:** Used for enclosed handling of cement, fly ash, kiln dust, gypsum powder, additives, and fine materials. Screw conveyors are suitable for short-distance transfer, dosing, discharge from filters, and dust-tight conveying application.
- ❑ **Drag Chain Conveyors:** Suitable for clinker, hot material, abrasive material, and enclosed horizontal conveying applications. Drag chain conveyors reduce spillage and are useful where belt conveyors are not suitable due to high temperature, confined layout, or dust-control requirements.
- ❑ **Rotary Screens and Vibratory Screens:** Used for screening of raw materials, additives, rejects, and process materials. Screens help remove oversize particles, foreign matter, and lumps before storage or feeding to downstream equipment.
- ❑ **Storage Silos, Hoppers and Bins:** Designed for limestone, clinker, cement, fly ash, coal, gypsum, slag, and additives. Silo and hopper geometry is selected based on bulk density, flowability, moisture content, angle of repose, and discharge requirement. Storage systems may include level instruments, aeration pads, fluidizing arrangements, discharge gates, and access platforms.
- ❑ **Pneumatic Conveying Systems:** Used for cement, fly ash, raw meal, kiln dust, and other powder materials. Pneumatic and air-slide systems enable enclosed, dust-controlled transfer over medium and long distances. These systems can include blowers, airlocks, pipelines, flow-control valves, diverters, and receiving vessels.
- ❑ **Feeders and Dosing Systems:** Screw feeders, belt feeders, rotary feeders, weigh feeders, and vibratory feeders are used for controlled addition of gypsum, fly ash, slag, coal, additives, and raw materials. The feeder selection depends on required accuracy, capacity, material type, and process requirement.
- ❑ **Rotary Airlock Valves and Diverter Valves:** Used for controlled discharge, pressure sealing, and routing of cement, fly ash, kiln dust, and other powder materials. Diverter valves allow material routing to multiple silos, lines, or process destinations.
- ❑ **Transfer Chutes and Dust-Control Arrangements:** Chutes are designed for abrasive material flow, controlled velocity, easy inspection, and reduced dust generation. Wear liners, access doors, skirt sealing, dust extraction points, and inspection ports can be provided.



- ❑ **Technological Structures and Plant Building Steel:** Apexind can supply conveyor galleries, trestles, platforms, equipment support structures, bin supports, access ladders, maintenance platforms, and dispatch area structures as part of the integrated material handling package.
- ❑ **Dust Collector System/ Bag Filter with Reverse Pulse Jet Cleaning:** Designed for collection & control of process dust generated during material handling and transfer operations. The system includes dust extraction ducting, bag filter housing, filter bags, compressed air pulse cleaning arrangement, hopper, rotary airlock valve, exhaust fan, dampers, access doors, and control panel as required.

## THE APEXIND TURNKEY SCOPE

Apexind undertakes cement plant material handling packages on a single-point responsibility basis. Clients work with one team for engineering, manufacturing, fabrication, supply, installation, and commissioning of the handling equipment package.

- ❑ **Concept and Detailed Engineering:** Each project begins with understanding plant capacity, material properties, process flow, routing constraints, equipment interface points, storage requirements, and dispatch arrangement. Apexind develops equipment sizing, conveyor layouts, chute design, support structures, access systems, and integration details.
- ❑ **Manufacturing and Fabrication:** Conveyors, feeders, elevators, hoppers, bins, chutes, gates, ducting, structures, platforms, and accessories are manufactured and fabricated as per application-specific requirements. Equipment is designed for abrasive service, continuous-duty operation, and field maintainability.
- ❑ **Supply, Installation and Commissioning:** Apexind can execute site erection, alignment, assembly, installation, no-load trials, load trials, and commissioning support. Brownfield modification and integration with existing systems can also be undertaken with proper site study and engineering planning.
- ❑ **Electrical, Instrumentation, Control and Automation:** Apexind can integrate motor control panels, VFDs, field instrumentation, level switches, zero-speed switches, belt sway switches, pull cord switches, load cells, weigh feeders, PLC, HMI, interlocks, alarms, and sequence control for reliable plant operation.
- ❑ **Equipment Outside Our Manufacturing Scope:** Certain items such as crushers, mills, kilns, packing machines, bag filters, compressors, belt scales, PLCs, drives, specialty valves, and proprietary process equipment may fall outside Apexind's direct manufacturing scope. These items can be procured from approved vendors and integrated into the overall package, or supplied by the client for integration.

## WHY APEXIND

More than 2 decades of engineering experience • Strong understanding of bulk material handling • In-house design and fabrication capability • Practical solutions for dusty and abrasive applications • Strong vendor network • Honest timelines • Honest costing • Single-point accountability.



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