APEXIND INNOVATIVE INDUSTRY LLP

MINING INDUSTRY

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

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

ENGINEERED SOLUTIONS COVERING ORE HANDLING, MINERAL HANDLING, CRUSHED MATERIAL TRANSFER, SCREENING, STORAGE, FEEDING, DUST CONTROL AND PLANT CONVEYING SYSTEMS, EXECUTED UNDER SINGLE-POINT RESPONSIBILITY.

SINGLE-POINT RESPONSIBILITY

HONEST ENGINEERING

CONTINUOUS-DUTY DESIGN

INTRODUCTION TO CHEMICAL PLANT EQUIPMENT

Mining operations require rugged and reliable material handling systems for continuous movement of ore, minerals, overburden, rejects, crushed material, screened fractions, and processed material. These systems operate in harsh conditions involving high loads, abrasive materials, impact loading, dust generation, outdoor exposure, vibration, and long operating hours.

In a mining plant, the material handling system directly affects production continuity, crusher availability, screening efficiency, stockpile management, and downstream processing performance. Poorly designed conveyors, feeders, hoppers, chutes, and transfer points can result in spillage, choking, belt damage, excessive dust, high maintenance, and frequent stoppages.

A well-designed mining material handling system must therefore fulfil four fundamental requirements: reliable movement of heavy and abrasive materials, controlled feeding to crushers and screens, dust and spillage control at transfer points, and robust construction suitable for continuous-duty mining operation.

TYPICAL MATERIALS HANDLED

Typical materials handled in mining applications include iron ore, coal, limestone, bauxite, manganese ore, copper ore, zinc ore, lead ore, chromite, dolomite, gypsum, stone aggregates, crushed rock, overburden, mineral rejects, screened fines, lumps, tailings-related dry solids, and process additives. Depending on the application, the material may be abrasive, dusty, wet, sticky, lumpy, heavy, or difficult to discharge from hoppers.

PROCESS OVERVIEW

Run-of-mine material is received from trucks, dumpers, loaders, or feed hoppers. The material is discharged into receiving hoppers and extracted through belt feeders, apron feeders, or vibrating feeders depending on lump size, impact loading, and capacity. The material is then conveyed to crushers, screens, storage bins, stockpiles, or processing equipment.

After crushing and screening, different material fractions are transferred through belt conveyors, bucket elevators, feeders, chutes, and storage systems. Oversize material may be returned to the crusher circuit, while undersize or finished material is conveyed to stockyards, silos, loading points, or downstream processing plants.

Dust extraction systems, covered conveyors, chute sealing, and proper transfer-point design are provided wherever required to control dust, reduce spillage, and improve plant housekeeping. The final plant configuration depends on mineral type, capacity, particle size distribution, moisture content, plant layout, duty cycle, and level of automation required.

EQUIPMENT SUPPLIED FOR STEEL & METAL INDUSTRY

Apexind can design, manufacture, fabricate, supply, install, and commission material handling equipment and associated fabricated systems for mining and mineral processing applications. The principal equipment categories supplied for mining industry applications are outlined below.

- **Belt Conveyors:** Used for continuous horizontal and inclined transport of ore, coal, limestone, aggregates, minerals, crushed material, screened fractions, and rejects. Conveyors are designed for heavy-duty service with suitable belt rating, idlers, pulleys, take-up arrangement, drives, holdbacks, scrapers, skirts, chutes, safety switches, galleries, trestles, and walkways. Special consideration is given to impact zones, belt protection, dust sealing, spillage control, and maintainability.
- **Belt Feeders:** Installed below hoppers, bins, crusher feed points, and storage systems for controlled extraction of bulk material. Belt feeders are designed for heavy-duty operation and can be provided with robust loading zones, skirt sealing, impact idlers, VFD-controlled drives, and suitable liners depending on duty.
- **Bucket Elevators:** Used for vertical lifting of crushed minerals, fines, limestone, additives, and processed material where vertical transfer is required. Belt or chain type elevators are selected based on capacity, particle size, bulk density, material abrasiveness, moisture content, and duty conditions.
- **Screw Conveyors:** Used for enclosed transfer of fines, dust, additives, mineral powder, and recovered dust. Screw conveyors can be supplied in U-trough or tubular construction with suitable liners, covers, inspection ports, and drive arrangements.
- **Vibratory Screens and Rotary Screens:** Provided for classification, scalping, de-lumping, and removal of oversize or unwanted material. Screens are selected based on material size, moisture content, capacity, separation requirement, abrasiveness, and maintenance access. Screening equipment helps protect downstream equipment and improves process consistency.
- **Vibrating Feeders:** Used for controlled feeding of ore, aggregates, crushed stone, minerals, and lumpy materials from hoppers or bins. Vibrating feeders are suitable where controlled discharge, uniform feed distribution, and rugged construction are required.
- **Storage Hoppers, Bins and Bunkers:** Engineered for storage and controlled discharge of ore, coal, limestone, crushed minerals, fines, and additives. Hopper design considers bulk density, angle of repose, moisture content, flowability, bridging tendency, impact loading, wear protection, discharge opening, and maintenance access.
- **Transfer Chutes and Wear-Lined Chutes:** Transfer chutes are designed to reduce impact, minimize dust generation, control material trajectory, and protect downstream equipment. Wear liners such as rubber, ceramic, manganese steel, hard-faced plates, or replaceable liners can be provided depending on material abrasiveness and duty.
- **Dust Collector System:** Bag Filter with Reverse Pulse Jet Cleaning: Dust collector systems are provided for dust extraction at transfer points, screening areas, crusher discharge points, silo vents, feeder discharge points, and loading stations. The system include suction hoods, ducting, bag filter housing, filter bags, reverse pulse jet cleaning arrangement, compressed air header, hopper, rotary airlock valve, exhaust fan, dampers, access doors, and control panel.

THE APEXIND TURNKEY SCOPE

Apexind undertakes mining industry material handling packages on a single-point responsibility basis. Clients engage with one team for design, fabrication, supply, installation, commissioning, and integration of the agreed equipment package.

- **Concept and Detailed Engineering:** Each project begins with understanding the mineral type, capacity, lump size, bulk density, moisture content, abrasiveness, plant layout, crusher and screen interfaces, stockyard arrangement, loading points, and operating philosophy. Apexind develops process flow diagrams, equipment sizing, conveyor layouts, chute designs, structural arrangements, access systems, and installation methodology.
- **Manufacturing and Fabrication:** Conveyors, feeders, elevators, hoppers, bins, chutes, gates, dust extraction ducting, support structures, galleries, platforms, and fabricated assemblies are manufactured and fabricated as per approved drawings and project specifications. Equipment is designed for rugged service, abrasive duty, and field maintainability.
- **Supply, Installation and Commissioning:** Apexind can execute site erection, structural assembly, equipment installation, alignment, conveyor belt laying, chute fitment, no-load trials, load trials, and commissioning support. Brownfield modifications and integration with existing mining plants can also be undertaken after proper site study and engineering assessment.
- **Electrical, Instrumentation, Control and Automation:** Apexind can integrate motor control panels, VFDs, field instrumentation, pull cord switches, belt sway switches, zero-speed switches, chute blockage switches, level switches, dust collector controls, PLC, HMI, alarms, interlocks, and sequence control. Automation can be developed for safe start-up, controlled stopping, interlocked conveying, dust extraction operation, and fault monitoring.
- **Equipment Outside Our Manufacturing Scope:** Certain items such as crushers, heavy apron feeders, high-capacity screens, magnetic separators, metal detectors, belt scales, compressors, PLC hardware, drives, specialty instruments, and proprietary mineral processing equipment may fall outside Apexind's direct manufacturing scope. These items can be procured from approved sub-vendors and integrated into the overall package, or supplied by the client on a free-issue basis for system integration.

WHY APEXIND

More than 2 decades of engineering experience • Strong understanding of bulk material handling • Practical experience with abrasive and heavy-duty applications • In-house design and fabrication capability • Dust control and transfer-point engineering approach • Strong vendor network • Honest costing • Honest timelines • Single-point accountability.

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