



APEXIND INNOVATIVE INDUSTRY LLP

GLASS BATCHING 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 RAW MATERIAL
INTAKE TO FURNACE CHARGING, EXECUTED UNDER
SINGLE-POINT RESPONSIBILITY.**

**SINGLE-POINT
RESPONSIBILITY**

HONEST ENGINEERING

CONTINUOUS-DUTY DESIGN

INTRODUCTION TO GLASS BATCHING PLANTS

The batching plant forms the foundation of every glass manufacturing operation. Prior to melting, the raw materials must be received, stored, weighed, mixed, and conveyed to the furnace in precise proportions on a continuous basis. The batch house is responsible for executing this critical sequence with consistency and accuracy.

A glass furnace is highly sensitive to variations in batch composition. Even minor deviations in recipe formulation can result in product defects, inconsistent melt quality, and reduced furnace life. The batching plant must therefore fulfil three fundamental requirements: reliable handling of a wide range of raw materials, precise weighing and homogenization of recipe ingredients, and continuous, dust-free delivery to the furnace.

TYPICAL RAW MATERIALS HANDLED

Major batch ingredients include silica sand, soda ash, limestone, dolomite, and feldspar. Minor ingredients comprise sodium sulphate, alumina, nepheline syenite, refining agents, and colorants. Cullet, whether recycled or generated in-house, is handled on a parallel line and introduced downstream of the mixing stage.

PROCESS OVERVIEW

Raw materials are received in bulk tankers, jumbo bags, or open trucks. From the receipt point, materials are transferred to intake hoppers, screened to remove oversize and contamination, and elevated into storage silos through bucket elevators or pneumatic conveying systems.

Controlled extraction feeders draw material from the silos into batch weighing hoppers, where each ingredient is dosed by weight in accordance with the recipe. The weighed batch is discharged into a mixer for homogenization, after which the mixed batch is conveyed to the furnace charging hopper via belt conveyors and bucket elevators. Cullet is processed on a dedicated parallel line and introduced into the batch at the discharge stage.

The actual plant configuration, equipment selection, and capacity are tailored to the specific furnace tonnage, glass type, recipe complexity, and site conditions of each project.

EQUIPMENT SUPPLIED FOR GLASS BATCHING PLANTS

The complete range of material handling equipment required for the batch house, from raw material receipt up to the furnace charging system, is designed and manufactured in-house. The principal equipment categories supplied for a glass batching plant are outlined below.

- ❑ **Storage Silos, Hoppers and Bins:** Engineered to suit the bulk densities, flow characteristics, and abrasiveness of glass batch ingredients. Capacities range from a few cubic meters to 500 m³, fabricated in transportable sections. Designed with mass-flow geometries, level instrumentation, aeration provisions for fines, and integrated access platforms.
- ❑ **Bucket Elevators:** Used for vertical transport of sand, soda ash, limestone, dolomite, and other ingredients into elevated storage silos. Capacities from 10 TPH to 250 TPH, with belt or chain construction selected based on duty conditions.



- ❑ **Belt Conveyors:** Deployed for horizontal transport of raw materials and mixed batch. Troughed belts are used for major ingredients, while flat or covered belts handle mixed batch transfer to the furnace area. Capacities range from 50 TPH to 1,500 TPH. Supplied complete with transfer chutes, support galleries, walkways, and access systems.
- ❑ **Screw Conveyors:** Used for enclosed, dust-tight conveying of fine ingredients such as soda ash, sodium sulphate, and minor additives. Available in tubular or U-trough construction with capacities from 5 TPH to 250 TPH.
- ❑ **Drag Chain Conveyors:** Suitable for sticky or dusty materials and applications requiring fully enclosed horizontal conveying with zero spillage. Commonly applied for cullet and selected batch handling duties.
- ❑ **Vibratory and Rotary Screens:** Provided for removal of oversize material, lumps, and tramp contamination at the receipt stage and prior to silo storage. Vibratory screens up to 500 TPH and rotary screens up to 300 TPH, with screening media selected to withstand the abrasive nature of glass batch.
- ❑ **Feeders (Screw, Belt and Vibratory):** Designed for controlled extraction from silos and bins into the batching system. VFD-driven for adjustable feed rates, with capacities from 1 TPH to 500 TPH and accuracies of $\pm 5\%$ (volumetric) or $\pm 1\%$ (gravimetric).
- ❑ **Weigh Hoppers and Batching Hoppers:** Form the core of the batching system. Load-cell based, structurally isolated weighing systems delivering batch accuracies of $\pm 0.25\%$ to $\pm 0.5\%$. Designed for batch sizes from 50 kg to 2,500 kg, with continuous weigh feeders available up to 200 TPH.
- ❑ **Lean Phase Pneumatic Conveying Systems:** Employed for transfer of fine ingredients and recovered dust over extended distances without product loss or degradation. Suitable for soda ash, dust collector fines, and additive handling.
- ❑ **Rotary Airlock Valves and Two-Way Diverter Valves:** Critical accessories for system integrity. Airlocks provide sealing for pressurized conveying lines and dust collection points; diverter valves enable routing of material between multiple silos or batch lines.
- ❑ **Skip Hoists and Cullet Handling Equipment:** Designed for cullet collection, transfer, and delivery to the cullet weighing system. Robust construction is provided to withstand the abrasive and sharp-edged nature of glass cullet.
- ❑ **Storage Tanks for Liquid Additives:** Where the recipe requires liquid additives, MS or stainless steel tanks are fabricated to suit volume, hygiene, and dosing requirements.
- ❑ **Technological Structures and Plant Building Steel:** Multi-level batch tower structures, equipment supports, walkways, staircases, and ladders. Designed as an integral part of the equipment package and shop-fabricated to enable rapid site erection.



THE APEXIND TURNKEY SCOPE

Apexind undertakes complete glass batching plant projects on a single-point responsibility basis. Clients engage with a single team for the entire batch house, eliminating the complexity of coordinating multiple vendors.

- ❑ **Concept and Detailed Engineering:** Each project commences with a thorough understanding of the client's requirements, including furnace capacity, glass type, recipe formulation, and site conditions. Our engineering team develops the process flow diagrams, plant layout, equipment sizing, structural design, and 3D models. Both greenfield and brownfield projects are addressed, with designs validated for technical feasibility and future scalability.
- ❑ **Manufacturing and Fabrication:** All material handling equipment is manufactured at our 1.5-acre facility in Chakan, Pune. The facility is equipped with general-purpose machining infrastructure, welding stations, a 10 T EOT crane, and an experienced in-house workforce. This integrated capability ensures that engineering intent is translated directly into the manufactured product.
- ❑ **Supply, Installation and Commissioning:** Deployment teams operate pan-India to execute on-site activities, including equipment erection, structural assembly, alignment, no-load and load trials, and commissioning through to production handover.
- ❑ **Electrical, Instrumentation, Control and Automation:** The mechanical equipment forms only one component of a complete batching plant; the electrical and control system constitutes an equally critical element. Apexind integrates the entire EIC and automation package, including motor control centers, field instrumentation, level switches and radar sensors, load cells, weigh controllers, PLC and SCADA systems, recipe management modules, batch reporting, and operator HMIs. The integrated system enables fully automatic plant operation, maintains batch records for traceability, and provides operators with a structured interface for recipe and production management.
- ❑ **Equipment Outside Our Manufacturing Scope:** Certain items required for a complete batching plant fall outside our core manufacturing range, including dust collection bag filters, air compressors, belt scales, weighing electronics, PLCs and drives, specialty valves, and proprietary mixer assemblies. These items can either be procured by Apexind from established sub-vendors and integrated into our delivery scope, or supplied by the client on a free-issue basis for integration into the overall system. In either case, system integration responsibility and performance accountability remain with Apexind.

WHY APEXIND

• More than 2 decades of hands-on engineering experience • In-house design, fabrication, and field service capability • Strong vendor network • Honest project timelines • Honest costing • Single-point accountability.



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