

Did You Know? Asphalt Drum Plant Operation

Asphalt plants can be generally characterized as either "batch" plants or "drum" plants. They produce hot mix asphalt in different ways. This edition will focus on "drum" plants. It includes a description of the components and how these facilities work to produce quality hot mix asphalt.

Baghouse (Secondary Collector)

The baghouse removes fine particulate matter from the dryer exhaust gases before they are released into the atmosphere.

Asphalt Cement Storage Tanks

Asphalt cement is stored in tanks while awaiting delivery to the drum. Asphalt cement in the tanks is heated between 300°F and 350°F depending on the grade and type of asphalt. Asphalt is delivered from the tanks to the drum for mixing with the aggregate.

Drum

The rotating drum first heats the aggregate then mixes the hot aggregate with asphalt cement. There are two basic types of drum mixers: (1) parallel flow (where the aggregate enters the drum at the same end as the burner and travels parallel to the hot air steam) and (2) counterflow (where the aggregate enters the drum at the opposite end from the burner and travels counter to the hot air stream). Asphalt is added to, and mixed with, the hot aggregate in the drum at different locations depending upon the design of the drum mixer.

Fines/Additive Silo

Some plants may have additional silos for storing mineral filler or fines from the baghouse (secondary collector) or special additives that are added to the mix.

Storage Silos

After the aggregate and asphalt cement are mixed in the drum, the resulting hot mix is discharged to the storage silos. Generally there are two types of silos: surge and storage. Surge silos are usually insulated but unheated and are designed to hold hot mix for short periods of time (several hours) between truck arrivals. Storage silos are well insulated, heated, near air-tight and are designed to hold hot mix for long periods of time (up to a week).

Truck Loading Area

Trucks are loaded from the storage silos. A weigh scale is typically located here to ensure trucks are loaded with the correct amount of mix.

Control Center

The control center manages operations from a central location. Most modern asphalt plants are sophisticated facilities and are computer controlled.

Primary Collector

The primary collector, located between the dryer and secondary collector, removes large dust particles from the exhaust gases before entering the more efficient secondary collector (baghouse).

Cold Feed for Reclaimed Asphalt Pavement (RAP)

RAP can be used in hot mix at ratios up to about 50 percent. RAP is generally loaded into its own cold feed bin then moved by conveyor belt to be discharged directly into the drum where it is heated by the already-hot aggregate.

Cold Feed Bins

Stockpiled aggregates are loaded into the cold feed bins for delivery into the aggregate dryer. Each bin holds a separate aggregate size or gradation. They have an adjustable gate that meters the aggregate onto the moving conveyor belt. The gate openings and the conveyor belt speed control the amount of aggregate introduced into the plant, and that controls the mix gradation.