# Hot/Cold Recycling Plant

With the rising cost as well as depletion of natural resources and pressing environmental issue such as pollution and disposal, asphalt recycling has become an important aspect to the economy of a nation and asphalt hotmix producers. Linnhoff is committed to protect and conserve the basic road construction materials such as aggregates and bitumen by balancing between development and environmental protection through its innovative design and technology.

Recycled Asphalt Pavement (RAP) material is obtained through excavated asphalt pavement or when cold milling machine planes the asphalt pavement. Whereas screened cold milled material can be directly recycled, excavated chunks of asphalt pavement are crushed with a special mill crusher (granulator) to ensure the original grain size of aggregate is maintained and excessive fines or asphalt dust reduced.

Experience gathered in Germany enable Linnhoff to present a complete range of recycling technology to meet the cost effectiveness and quality of pavement produced through both Cold and Hot Recycling.

## Hot Recycling (Heating of RAP in Parallel Recycling Drum)

- A higher quantity upto 70% or more of RAP material can be utilized
- Heating of RAP is achieved in parallel recycling drum
- No direct contact of flame with RAP material with Hot air generator
- Heated RAP material stored in insulated buffer silo
- Separate RAP weigher required
- Heated RAP introduced into mixer via collecting belt or screw conveyor

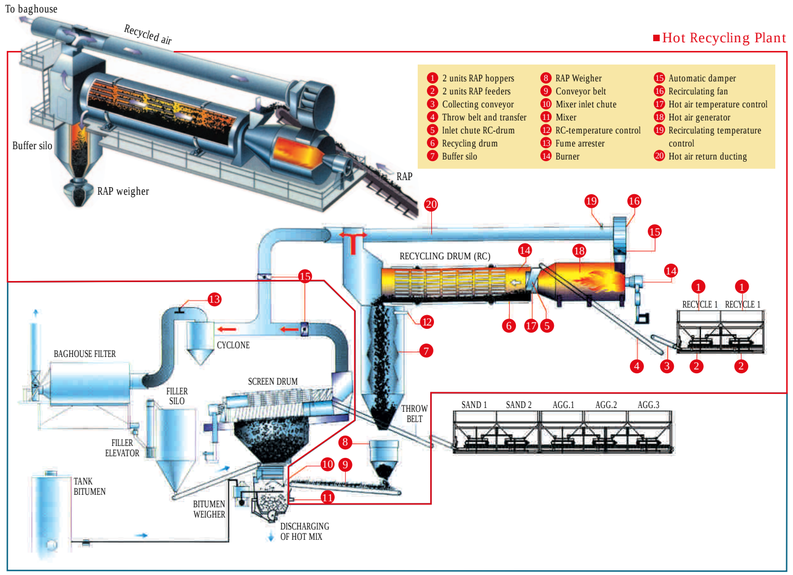
## *Cold Recycling (Direct Discharge of RAP into Mixer)

- Upto 20% of RAP material can be utilized by feeding through the mixer
- Cold RAP material is homogeneously mixed with virgin aggregates
- Feeding can be via collecting belt or screw conveyor
- Separate RAP weigher required

## *Cold Recycling (Continuous Heating of RAP via Heat from Mixer & Hot Bins)

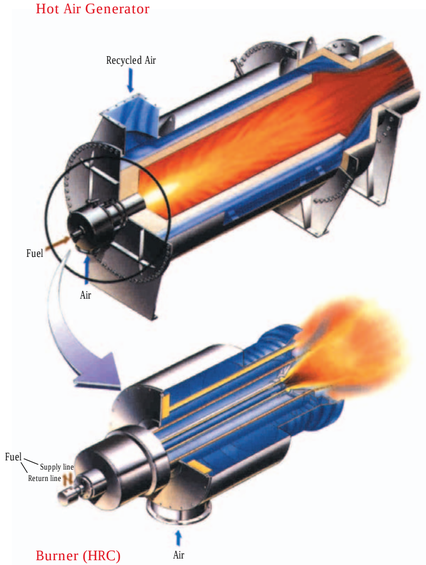
- Upto 30% of RAP material can be utilized
- RAP is kept separately in additional Hot Bin
- Heat from mixer & aggregate weigher directed through ductings to RAP Hot Bins
- Heated RAP weighed in aggregate weigher and mixed together with virgin aggregates in mixer

*Other recycling options




■Hot Recycling Plant

■Asphalt Mixing Plant




# Advantages

## Pollutants Reduction

The proper control of the temperature and recirculation of hot air minimizes the production of harmful fumes from the heating of asphalt.

The majority of the harmful substances recirculated are being expended at the hot air generator's flame zone thus giving a cleaner exhaust. Asphalt fumes not circulated are being captured by fines injected at the Fumes Arrester before going into the baghouse.

## Temperature Control

Full automatic control by the computer on the air flow through the control of the dampers and the temperature monitoring by the thermometer at various positions, bringing the RAP to the ideal temperature at reduced oxidation for the mixing with the virgin material.

## Energy Conservation

The burner uses high pressure to atomize the fuel out of the nozzle. All the air required for the combustion is supplied by an incorporated radial/axial flow fan coupled with a regulator plate regulating the fuel feed valve to ensure exact air-oil proportioning; thus ensuring fully combusted flame to be developed in the burner head. The fuel wastage is minimized giving the owner a significant saving over a year operation.The flame entering the hot air generator is further mixed with the returned air to give the air a final temperature of approximately 600°C for optimum heat transfer to the RAP. The special construction of the system ensures the optimum temperature of 140-150°C for the RAP before discharging into a buffer silo. By this method of recirculating the hot air, approximately 25% of energy is saved.

## Material Treatment

In the treatment of RAP it is always important to prevent excessive fines or asphalt dust being produced, reason being:

- the heated asphalt dust will normally choked up the pollution control system by coating onto the filter socks
- the plant circulation system and drum may be progressively coated with the asphalt thus requiring constant cleaning
- if too much hot air is in contact with the asphalt, there is a possibility of change in the properties of the RAP, such as oxidation, due to increased surface area